

328

Senior Secondary Course

Psychology

Part - 1



NATIONAL INSTITUTE OF OPEN SCHOOLING

(An autonomous institution under Ministry of Education, Govt. of India)

A-24/25, Institutional Area, Sector -62, NOIDA -201309 (U.P.)

Website: www.nios.ac.in, Toll Free No.: 18001809393

ISO 9001:2008 CERTIFIED

Published by:

Secretary, National Institute of Open Schooling

A 24-25, Institutional Area, Sector-62, Noida-201309 (U.P.)

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A Word with You

Welcome to the Senior Secondary course in Psychology. What is Psychology? It is nothing but the study of the way we, the human beings think, behave and react with the people and world around us. You must have noticed how your own family members behave and react to the same situation in different ways. Some of them will face the same situation in a calm and quiet way whereas the other panic. We here at National Institute of Open Schooling aim to give you a better understanding to these different aspects of human behaviours through the course in Psychology at Senior Secondary level.

The Psychology curriculum is comprises of two books having three modules each. In the first module you are going to study about the biological and psychological aspects of behaviour as well as about psychological enquiry. Second module consists of learning, memory, emotions and motivation. The third module brings to you all about the lifespan development from childhood to old age. The fourth module focuses on individuality, self and personality whereas the fifth module focuses on social psychology of interaction and behaviour. The last that is the sixth module in the second book is consisting of mental health and well-being and how to cope up from that.

For your practice, a sample question paper along with the question paper design and marking scheme is provided at the end of the book.

I am sure that you will find the lessons and their approach interesting and would be able to apply your knowledge in the real-life situations. So read all the lessons of this course carefully and be prepared for the examination with confidence. If you face any difficulty in your studies, please feel free to write me. Your suggestions are valuable for us.

Good luck and happy learning

Sarika Singh

Course Coordinator

How to use the Learning Material

Congratulations! You have accepted the challenge to be a self-learner. It means, you have to organize your study, learn regularly, keep up your motivation and achieve your goal. Here it is solely you, who is responsible for your learning. NIOS is with you at every step. NIOS has developed the material in Psychology keeping only you in mind. A format supporting independent learning has been followed. You can take the best out of this material if you follow the instructions given below.



Title: The title of the lesson will give a clear indication of the contents within. Do read it.

Introduction: This will introduce you to the lesson and also link it to the previous one.

Objectives: These are statements of outcomes of learning expected from you after studying the lesson. You are expected to achieve them. Do read them and check if you have achieved the same.

Content: Total content has been divided into sections and sub-sections. A section leads you from one content element to another and a sub-section helps you in comprehension of the concepts in the content element. The text in bold, Italics or boxes is important and must be given attention.

Intext Questions: Objective types self-check questions are asked after every section, the answers to which are given at the end of the lesson. These will help you to check your progress. Do solve them. Successful completion will allow you to decide whether to proceed further or go back and learn the unit again.

Notes: Each page carries empty space on the outer margins for you to write important points or make notes.

What You Have Learnt: It is the summary of the main points of the lesson. It will help in recapitulation and revision. You are welcome to add your own points to it also.

Terminal Questions: These are questions answered that provide you an opportunity to practice for better understanding of the whole topic.

Answers to Intext Questions: These will help you to know how correctly you have answered the Intext questions.

Activity: Activities, if done by you, will help you to understand the concept clearly.

Key Terms: The important terms used in the lesson are highlighted in this section. Do remember these terms.

Do and Learn: In this section certain activities have been suggested for better understanding of the concept.

Role Play: To make your learning interesting an imaginary situation is given based on any concept covered in the lesson. You are required to enact the imaginary situation through realistic behavior. You are free to choose any other concept/topic of your choice to play the role.

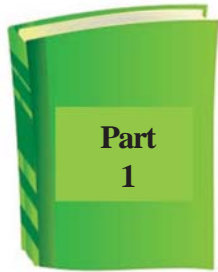
QR Code: A quick response (QR) code is given in every lesson which is a type of barcode that stores information and can be read by a digital device, such as a cell phone.

Audio: For understanding difficult or abstract concepts, audio programmes are available on certain content areas. You may listen to these on Mukta Vidya Vani, Community Radio FM-91.2 or on YouTube channel "niosradiovahini".

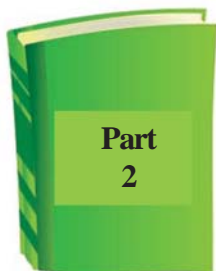
Video: Video programmes on certain elements related to your subject have been made to clarify certain concepts. You may watch these at NIOS live YouTube channel and also see live programs on PM e-vidya.



COURSE OVERVIEW



MODULE	LESSON
1. Foundations of Psychology	1. Understanding Psychology
	2. Bases of Human Behaviour
	3. Methods of Psychological Enquiry-I
	4. Methods of Psychological Enquiry-II
	5. Basic Statistics
2. Basic Psychological Processes	6. Attention and Perceptual Processes
	7. Learning
	8. Human Memory
	9. Motivation
	10. Emotions
	11. Thinking and Problem
3. Human Development	12. Life Span Perspective on Development
	13. Infancy and Childhood
	14. Adolescence and Young Adulthood
	15. Adulthood and Old Age



MODULE	LESSON
4. Individual Differences	16. Diversity and Individual variations
	17. Self and Personality
	18. Intelligence
5. Social Processes and Behavior	19. Group Processes
	20. Attitude
	21. Pro Social Behavior
6. Health and Well-being	22. Coping with Stress
	23. Mental Health Problems
	24. Psychology for holistic development

Psychology

Bifurcation of Syllabus

Psychology- 328

Total no. of Lessons=24

MODULE (No. & name)	TMA (40%) (No. of lessons -10)	Public Examination (60%) (No. of lessons -14)
1. Foundations of Psychology (5 Lessons)	L-2: Bases of Human Behaviour L-4 : Methods of Psychological Enquiry-II	L-1: Understanding L-3: Methods of Psychological Enquiry-I L-5: Basic Statistics Psychology
2. Basic Psychological Processes (6 Lessons)	L-9 : Motivation L-7: Learning	L -6: Attention and Perceptual Processes L-8: Human Memory L-10: Emotions L-11: Thinking and Problem
3. Human Development (4 Lessons)	L-12:Life Span Perspective on Development L-15 : Adulthood and Old Age	L-13: Infancy and Childhood L-14: Adolescence and Young Adulthood
4. Individual Differences (3 Lessons)	L-16 : Diversity and Individual variations	L-17: Self and Personality L-18: Intelligence
5. Social Processes and Behavior (3 Lessons)	L -21 : Pro Social Behavior	L-19 : Group Processes L-20: Attitude
6. Health and Well-being (3 Lessons)	L -22 : Coping with Stress L -24 : Psychology for holistic development	L-23 : Mental Health Problems

CONTENTS

MODULE	LESSON	PAGE NO.
1. Foundations of Psychology	1. Understanding Psychology	01-16
	2. Bases of Human Behaviour	17-34
	3. Methods of Psychological Enquiry-I	35-58
	4. Methods of Psychological Enquiry-II	59-78
	5. Basic Statistics	79-104
2. Basic Psychological Processes	6. Attention and Perceptual Processes	105-126
	7. Learning	127-146
	8. Human Memory	147-158
	9. Motivation	159-170
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	11. Thinking and Problem	185-206
3. Human Development	12. Life Span Perspective on Development	207-224
	13. Infancy and Childhood	225-242
	14. Adolescence and Young Adulthood	243-256
	15. Adulthood and Old Age	257-274
Curriculum		i-xi

Note: The syllabus has been bifurcated into two sections -

(i) Lessons for the Tutor Marked Assignment (TMA) 

(ii) Lessons for public examination question paper 

The details of the different sections are on the next page.

MODULE -1

Foundations of Psychology

The module aims at developing an understanding about the subject of psychology, its evolution, different branches, relationship with other disciplines and applications of psychology. It would also help the learners to understand the bases of human behaviour, different methods used in studying psychology and orientation towards basics of statistics.

1. Understanding Psychology
2. Bases of Human Behaviour
3. Methods of Psychological Enquiry-I
4. Methods of Psychological Enquiry-II
5. Basic Statistics



Notes

UNDERSTANDING PSYCHOLOGY

Human beings are biological organisms. Among various systems that run our body, the job of the nervous system is to control the functioning of the human body. It is built of nerve cells that transmit information to and from different parts of our body. It controls our sense organs and also our abilities to attend, perceive, think, learn, memorise, recall, feel and behave in the context of our environment. An immense need is felt to understand these diverse processes. The common man's perspective of Psychology is quite different from that of a trained psychologist. The scientific view considers that psychological research and studies will help us observe, describe, control, predict and improve human behaviour and emotions.

Most of our everyday life experiences are based on principles of Psychology, of which we may not be aware. For example, providing care to one's ailing grandmother explains that compassion and love are crucial. Another example may be that of a very hardworking girl who had to leave school due to financial constraints but was able to sustain her family by working part-time. Her positive behaviour helps her family in overcoming financial challenges. Some of you may (have high 'willpower') have an interest in human behaviour or a determination to learn, hence you joined this course. In order to manage time to study this subject, you may have to delay some of your needs or tasks that give you pleasure. This refers to self-control and is practised by many of you. Now, you can also think of such examples from your life. The subject matter of Psychology is vast and covers each aspect of human living.

Foundations of Psychology



Notes



LEARNING OUTCOMES

After studying this lesson, learner :

- explains the need for the study of Psychology as a discipline;
- describes the nature of Psychology;
- states and explains that Psychology is both a Science and Social Science;
- discusses the evolution of Psychology;
- enumerates the relationship of Psychology with other disciplines; and
- describes the applications of Psychology.

1.1 NATURE OF PSYCHOLOGY

Psychology is a scientific study of all these experiences, behaviours and mental processes like knowing, thinking, reasoning, understanding etc. These mental processes are also part of human cognition. The study of Psychology is important as it helps improve the lives of people. It enables them to develop an insight into their thoughts and actions.

Human beings are endowed with the ability to think. This makes them different from many other organisms. Before starting this course you must have thought about whether you should study Psychology or any other subject. You must have discussed it with your family members or your friends. Similarly, every day you (may) have many other thoughts of some or the other issue in your life. For example, you must also have thought of what to wear when you were visiting your aunt for the weekend. Many such thoughts occur in your mind. This thinking leads us to behave in one or the other manner. This behavior can be (sometimes) observable, i.e. others can see our actions. For example, when you are playing a Cricket match everyone can see and know that you are playing. Thus, playing is an observable behaviour. On the other hand, when you are playing a game of Snakes and Ladder the persons around you may not come to know your next move as the behaviour is covert, i.e. it cannot be (known) seen by others. The past behaviors and thoughts will help you in forming your experiences. These experiences are also determined by external factors like climate, home, family, school, neighbourhood etc. Some of these factors may not be under your control. Your experiences are also very specific to you. For example, your experiences of weather conditions may be different in your village than that of your cousin's in her village. Your experiences may also be determined by your feelings and emotions which

are an inherent part of your 'self'. Human beings try to know their own self and the environment around them.



ACTIVITY

Try to think of all that you did or thought yesterday. Enlist them under various subheadings of behaviour or mental processes.



INTEXT QUESTIONS 1.1

1. The study of Psychology includes knowing more about
 - a. Experiences
 - b. Behaviour
 - c. Mental processes
 - d. All of the above
2. Thinking, reasoning, concentration and attention are included in
 - a. Human memory
 - b. Human cognition
 - c. Human emotions
 - d. Human experiences

1.1.2 Is Psychology A Natural Science Or A Social Science ?



ACTIVITY

Mark the following statements as T for true and F for false.

1. Psychology studies human behaviour in the social context .
2. Psychologists study the effect of culture on perception.
3. Psychologists study how reward and punishment can affect behaviour.



Notes

Foundations of Psychology



Notes

4. Psychologists study the functioning of endocrine glands.
5. Psychologists study the effect of motivation on task performance.
6. Psychologists study the impact that physical injury has on feelings.
7. Psychologists study that hormonal changes affect emotions.
8. Psychologists study the functioning of the human nervous system
9. Psychologists study that socialization agents like school, family and peers affect a child's behaviour and learning.
10. Psychologists study the relationship between positive thinking and overall wellbeing.

The answer to all the above statements is 'True'.

Now let us know some Myths about Psychology

Myth: Psychology Majors Are Mind-Readers

Myth: Psychology Is Not Really a Science

You will be surprised to note that psychologists study the physiological functioning of the human body scientifically. They also study the effects of culture and society on a human being, also, in the most scientific manner. Psychologists are aware of the vast cultural and ethnic diversity. These differences are recognized and are included in the effort made by of psychologists to understand human behaviour. Human beings are studied in the social context to understand their interactions with one another on the basis of their culture. Culture is the man-made part of the environment. It influences humans over generations. Parenting and socialization practices influence the child rearing practices, behaviours, interpersonal relationships, attitudes and most of our attributes.

Thus, Psychology tries to navigate the pertinence of sociocultural (values) environment in understanding human experiences, emotions and actions. Therefore, Psychology is recognized as a Social Science.

Psychology is a systematized body of knowledge. In that, it has a scientific orientation. Scientific knowledge is gathered by conducting experiments, making systematic observations and measuring events. The data collected and recorded is open to objective verification, replication and analysis. Measurement and data collection in Psychology is not an easy task. The attributes being measured can be sometimes abstract. Thus, certain rules and controls are framed in order to get unbiased results.

Experiments in Psychology are also based on a hypothesis. A hypothesis is a tentative statement which is to be proved through the research. (You will learn more about this in another chapter). This research also helps in predicting by summarizing and interpreting the results of research. Psychology is also considered a Natural Science as it uses the scientific methods. The scientific authenticity of much of the research undertaken throughout the various behavioral science fields is also much debated. But it is clear to us that Psychology is both a Science and a Social Science.



INTEXT QUESTIONS 1.2

1. Psychology is a natural science because it
 - a. is based on empirical, verifiable data
 - b. studies aspects of Biology
 - c. studies aspects of Physics
 - c. studies aspects of both Biology and Physics
2. Psychology is also a Social Science because
 - a. it studies various cultures
 - b. it studies various aspects of geographical conditions influencing a culture
 - c. it studies about human being in the social and cultural context, where it is difficult to gather data.
 - d. it is related very clearly to Sociology, Economics and Geography.

1.2 EVOLUTION OF PSYCHOLOGY

Early psychologists were encouraged to think that mental processes, behavior and experiences could be studied using scientific methods. Study of Psychology evolved from Philosophy about 150 years ago, when scientific thoughts led to experimental advances in the field of Psychology. The subject matter of interest to psychologists evolved over the years, as various schools of thoughts emerged with varying ideologies and theories. The following are the major schools of Psychology.



Foundations of Psychology



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Structuralism

Structuralism was an early school of Psychology. The structuralists established that Psychology is the study of the structure of mind and consciousness (awareness). The method used by them to understand conscious processes was introspection. Through introspection the subject describes his/ her conscious experiences. The first psychological laboratory was established by William Wundt, a structuralist, in Leipzig, Germany in 1879.



ACTIVITY

Observe your parents, sibling, or someone from your neighbourhood. Enlist all that you can think about their mental processes and experiences. Now, talk to them to find out their own interpretations of their experiences and mental processes. In the next column write all that they tell you about the same.

Functionalism: This new field focused not on the structure of mind (structuralist view), but on its functions. Psychologists such as William James, John Dewey and James Angell proposed that Psychology as a discipline should focus on how behaviour functions and what a mind does rather than the components or structure of the mind. Thus, the term functionalism was used to represent this school of thought.

Gestalt perspective: The Gestalt school of Psychology was founded in Germany by Max Wertheimer and his colleagues Kurt Koffka and Wolfgang Kohler. The Gestalt school emphasizes that perception is organized into wholes. Our perception and understanding of objects are more meaningful than its smaller parts. In figure 2.1 (and) it is observed that the figure is not merely a collection of dots, but the shape of a square and a circle respectively. Thus according to the gestaltists the whole is much more than the sum of its parts.

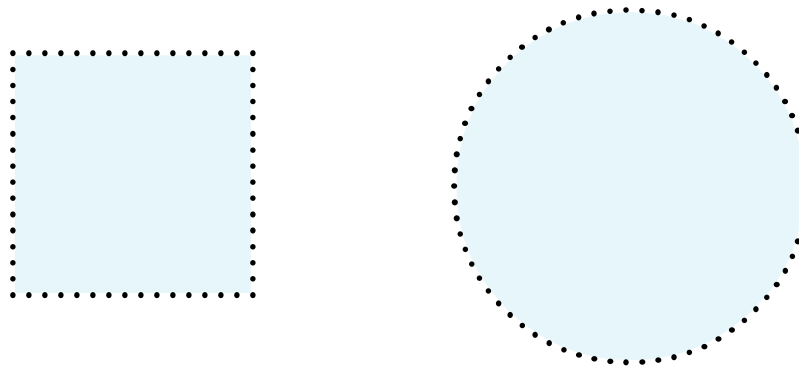


Fig. 1.1



ACTIVITY

Draw some shapes with dots and ask your friends about the names of those shapes. You will be surprised to know that though the figures are dots and have open surfaces, yet they are perceived as a whole.

Behavioristic perspective: This school of thought suggested that the study of Psychology should focus on observable behavior that can be observed and measured in a scientific manner. John B Watson was the first behaviorist. He proposed that one can gain an understanding of a behavior by studying and modifying the environment in which people operate. The processes involved in human learning are the basis of behaviorism. Learning by conditioning and reinforcement was studied by Skinner and Pavlov. You will know and study more about it in the chapter on Learning.

Psychodynamic perspective: Psychoanalysis was founded in Vienna, Austria by the psychiatrist Sigmund Freud. Freud elaborated on the theme of unconscious motivation. According to him, human behavior is a manifestation of the unconscious motives, needs and desires of which a person is not aware. Freud's contribution in areas of hypnosis and dream interpretation is of interest to many researchers.

Humanistic perspective: The humanistic perspective emphasizes on the person's sense of self. A person needs to enhance the understanding of self in order to achieve his/ her ideal self. Carl Rogers and Abraham Maslow emphasized that the discrepancy between real self and ideal self can be reduced by understanding one's potential and striving towards self-actualization. These different approaches help us in understanding the development of study of Psychology.

Cognitive perspective: This perspective views human mind as an information processing system where the information, that we receive from the environment, is processed, transformed, stored and retrieved like in a computer. According to constructivists human mind is actively constructing itself through exploration into the physical and social world.

1.3 DEVELOPMENT OF PSYCHOLOGY IN INDIA

In the early twentieth century, Psychology was at a nascent stage. The Western influence was predominant due to the impact of Britishers on Indians. Most of the early Indian Psychologists were philosophers. The establishment of the first psychological laboratory in India at Calcutta in 1916, marked the beginning of Psychology as a discipline.



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Foundations of Psychology



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Narendra Nath Sen Gupta was a Harvard-educated Indian psychologist and philosopher. Sen Gupta was also the founder of the Indian Psychological Association, and the founding editor of the first official Psychology journal in India, the Indian Journal of Psychology. Indian Psychologists also started looking for Indian theories of cognition. In 1934, Jadunath Sinha wrote a book on Indian theories of perception and another one on Cognition. Many books have appeared in the field of Indian Psychology.

There is a Journal of Indian Psychology published from Andhra University. Andhra University also has an Institute of Yoga and Consciousness. Many attempts are being made to integrate ancient Indian Psychology with modern Western Psychology.



INTEXT QUESTIONS 1.3

1. Structuralism states _____ as an important method of knowing about a person.
 - a. free association
 - b. introspection
 - c. hypnosis
 - d. dream interpretation
2. The humanistic perspective emphasizes on a person's need to
 - a. enhance the understanding of self.
 - b. perceive objects as a whole.
 - c. interpret one's dreams.
 - d. able to learn through imitation.

1.4 PSYCHOLOGY AND OTHER DISCIPLINES

Psychology, as a scientific study of mental processes, behavior and experiences in different contexts, cannot be studied in isolation. Its subject matter is based on other disciplines too. In fact no discipline can be studied in isolation, as all disciplines are interrelated. It will be interesting to know that Psychology being both a pure Science as well as Social Science, is well connected with all the disciplines that are of interest to educationists today. Psychology shares its knowledge with Sociology, Zoology, Biology, Medicine, Neurology, Philosophy, Economics, Political Science, Law and Criminology, Computer Science, Architecture, Engineering, Mass Communication, Literature, Performing Art and Music. All disciplines gain and share knowledge from

each other. They empower people to learn from others and better understand the world. The major disciplines linked to the field of Psychology can be studied below.

Sociology

Sociology is the study of how social, cultural and environmental factors influence a person. Factors related to group norms, leadership, attitudes, collective behaviour, sociocultural factors etc are interrelated. They help in developing and understanding of both Social Psychology and Sociology.

Economics

The study of Economics is more meaningful when human behaviour is understood. Understanding human wants (which may be infinite) , consumer behaviour, savings, allocating funds for causes etc helps an economist understand decision making behaviour. Psychologists too need to have an in-depth awareness about levels of incomes, population, infrastructural reforms, poverty, income disparities, planning and other economic concerns. The choices one makes helps an economist to predict consumer sentiments and economic growth. Therefore, micro level economic behaviour is studied through an understanding of Psychology. Behavioural economics is an emerging subject that deals with this.

Political Science

Study of Psychology helps in understanding leadership behaviour, exercise of powers, voting behaviour, political conflicts, human rights, gender equality, discrimination, stereotypes, conformity and exercise of powers by governments. The practices followed by democrats, socialist, capitalist, or even dictators can be understood from a psychological perspective.

Philosophy

Psychology was born of Philosophy and the major concern of Philosophy was to know the nature of the human mind and how do humans behave in a particular manner. Until the end of 19th century Edward Titchener and other structuralists used experimental and observational methods to understand the various domains of human nature. Psychology, thus evolved as a discipline.

Medicine

Both Psychology and Medicine use scientific methods to understand human body, mind and behaviour. The mind and the body are inseparable for diagnosis, treatment and healthy healing. Most medical practitioners are aware about this aspect Thus, a



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**Foundations of
Psychology****Notes**

successful doctor takes assistance from clinical and counselling psychologist in treating patients suffering from chronic diseases like anxiety disorders, heart ailments, AIDS, cancer, paralysis etc. Therefore, the two disciplines are needed to function in harmony with each other.

Law and Criminology: Law seeks to regulate human behaviour, while Psychology seeks to understand human behaviour in a particular context. Knowledge of Psychology is applied to legal studies and studies of criminal behaviour. Psychology helps the legal professionals to develop an understanding of the social and cognitive principles such as eyewitness memory, jury bias, constructive memory, decision-making, trials, investigations, ethical codes and human rights, interviewing skills, punishment, parole, rehabilitation etc

Computer Science: Development in the field of Computer Science has aided in enhancing the knowledge of Psychology and its application. Similarly, the study of Psychology has been imperative in developing Computer softwares, HCIE (Human Computer Interaction Engineering) and AI (artificial intelligence). Computer engineers rely on research in Psychology and use research methods developed by psychologists in developing computer programs that mimic the human mind. Thereby enhancing the understanding of cognitive sciences.

Engineering and Architecture: Engineers are meant to design and develop products for use by human beings. Understanding human cognition and emotions helps them in being able to make the products user friendly. Architects too understand spaces from a psychologist's perspective. The connect between architects and engineers with human beings enhances the technological effectiveness of the design and its practical utility. Thus, designing and planning cities, roads, railway stations, malls, airports etc are done keeping in mind the behavior of people utilizing these facilities.

Music, Fine Arts, Dance and other Performing Arts: Psychologists aim at understanding and improving the behavior and performance of an individual. Studies have revealed that music and ragas heal the mind. The rhythms in music have a calming impact on human beings. Fine arts, drawing and painting and performing arts help a person vent out negative feeling. The person is able to identify his potential and live a more fulfilling life. Dance and Theatre is therapeutic and is widely used by psychologists. It enables a person to develop an understanding of oneself.



INTEXT QUESTIONS 1.4

Fill in the blank choosing the correct option.

1. Edward Titchener and others structuralists usedand observational methods to understand the various domains of human nature.
 - a. Case study
 - b. Interview
 - c. Questionnaire
 - d. Experimental

2. A successful doctor takes assistance from in treating patients suffering from chronic psychological disorders.
 - a. Clinical and counselling psychologist
 - b. Organizational psychologist
 - c. Forensic psychologist
 - d. Educational psychologist



Notes



ACTIVITY

Talk to experts from any two disciplines. Compare and enlist their areas of study. Find the human influence and relationship of the enlisted components with Psychology.

1.5 APPLICATION OF PSYCHOLOGY

The theories developed from ardent research in Psychology are applied and utilised in day to day life situations and circumstances. The study of Psychology is helpful in knowing and understanding a vast array of human thoughts, emotions and behaviours. In the practical situations these theories blend with the requirements of everyday living. Study of Psychology can prepare one for developing an understanding of human beings in different areas and professions. Over the years, as this scientific study of Psychology has grown, it has given rise to various subfields where people work. The following are some of the areas where psychologists work.

Clinical Psychology

Clinical Psychology deals with the causes, diagnosis and treatment of psychological disorders. Clinical psychologists use standardized tests as an aid to diagnose these

Foundations of Psychology



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disorders. Unlike psychiatrists they do not have medical degree and cannot prescribe medicines to treat the disorders. They have a degree in Psychology and are trained to provide psychotherapy which involves helping clients learn to make choices, so that they can cope with troublesome thoughts, feelings and behaviours. The aim of Psychotherapy is to alleviate the client's distress.

Counselling Psychology

Counselling psychologist helps people deal with issues that they face, such as choosing a career, marriage, raising a family, performing at work etc. These problems do not involve psychological disorders. They provide vocational testing to help people decide which occupation best suits their abilities and interests. They deal with people who have milder emotional and personal problems. They sometimes provide psychotherapy but may have a more limited knowledge of therapeutic techniques than clinical psychologists.

Educational and School Psychology

Educational psychologists study all aspects of the educational process. They apply principles of learning, perception and motivation to the curriculum to deal more effectively with the learning situations. Thus, much of the work of educational psychologists is devoted in areas of curriculum planning, teacher training and instruction design. They plan and devise a curriculum that is based on the student's abilities and needs. Moreover, this suggested curriculum and teaching methodology is inclusive, student friendly and helps in generating interest of the students. Educational Psychology may include School Psychology where Psychologists work with educators, and sometimes families of students, devising ways to improve the cognitive, emotional and social development of children at school. They are devoted to counselling children, in elementary and secondary schools, who have academic, emotional or behavioural problems.

Developmental Psychology

Developmental psychologist examines how people grow and change from the moment of conception (through) till death. The developmental changes take place in physical, motor, cognitive, emotional, behavioral, social, and linguistic domains through the lifespan. These changes are of interest to the Developmental Psychologists. They suggest strategies through counselling to alleviate problems at any developmental stage. They research and teach the development of mental processes and behaviour as per the individual's (with) age and experience.

Social Psychology

The presence of other people, with whom we may or may not interact with, affect us

significantly. Social Psychology studies all aspects of social behaviour and social thought. How and what we think when we interact with others determines one's adjustment patterns, self-esteem and self worth. It is the study of how people's thoughts, feelings and actions are influenced by others. Social psychologists deal with topics such as interpersonal processes, aggression, intergroup conflict, attitudes, stereotypes, prejudice and discrimination, self-concept, social cognition, social influence, group processes, polarisation etc

Industrial /Organisational Psychology

Industrial/Organisational Psychology is concerned with the Psychology of the workplace. Various intelligence and aptitude tests are used by companies in their hiring and placement programs. All aspects of work settings like leadership, communication within the organisation, supervision of personnel, productivity, interpersonal and intergroup relations, cause of industrial strife, counselling employees, allocating work, managing team morale, goal setting, motivational and emotional concerns, job design etc are assisted by organisational psychologists at work place. In order to improve the conditions of work setting and enhancing the quality of work, various interventions for organisational development take place.

Community Psychology

Community psychologists help the community and the institutions in alleviating problems related to physical and mental health as well as community problems like lack of employment, social discrimination, participation in group decisions, health promotion, child rearing practices, encouraging positive interactions, and participation in community programs. They reach out to the community to help through various rehabilitation programs like care of elderly, support to the physically or mentally challenged, or even for de addiction programs. They help all those affected because of their sufferings, and may have lost hope.

Environmental Psychology

Environmental psychologists consider the relationship between people and their physical environment. The physical factors like land, vegetation, climate, crowding, pollution, humidity, natural disasters etc. play an imperative role in a person's day to day functioning. Perceiving the environment as respectful, helps in establishing positive attitude towards the environment. This prevents any further exploitation of the same. Thus, the conditions of living and work improve with the rational and sustainable use of environmental products.



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ACTIVITY

Find any two professionals and interview them to know (of) their (psychological) viewpoint, related to use of Psychology in their professions. Enlist your findings.

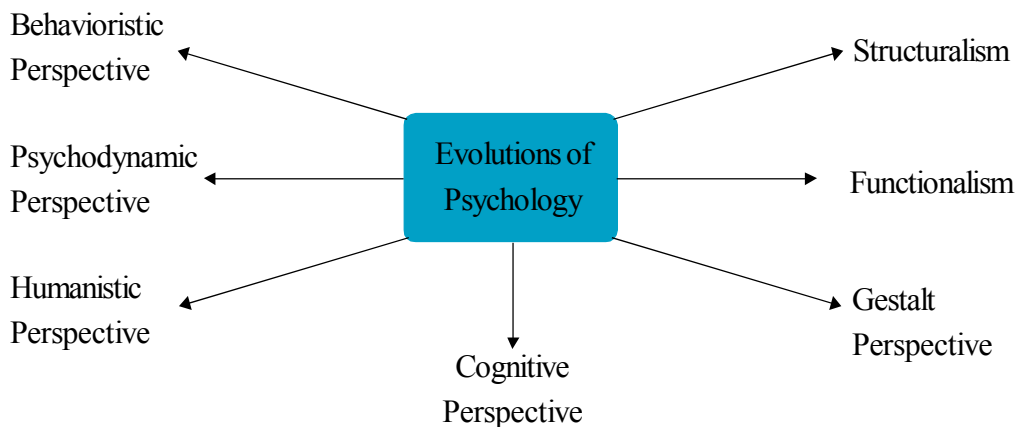


ACTIVITY 1.5

1. The ecological consequences of human actions can best be known by
 - a. Counselling Psychologist
 - b. Clinical Psychologist
 - c. Social Psychologist
 - d. Environmental Psychologist
2. are able to help alleviate the ill effects of substance use and abuse. They also help in rehabilitation after de addiction programs.
 - a. Social Psychologist
 - b. Developmental Psychologist
 - c. Community Psychologist
 - d. School Psychologist

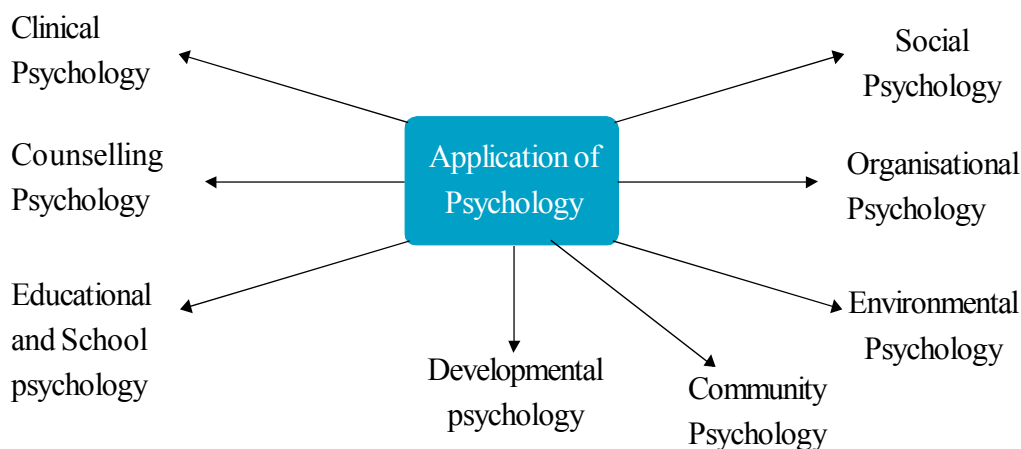
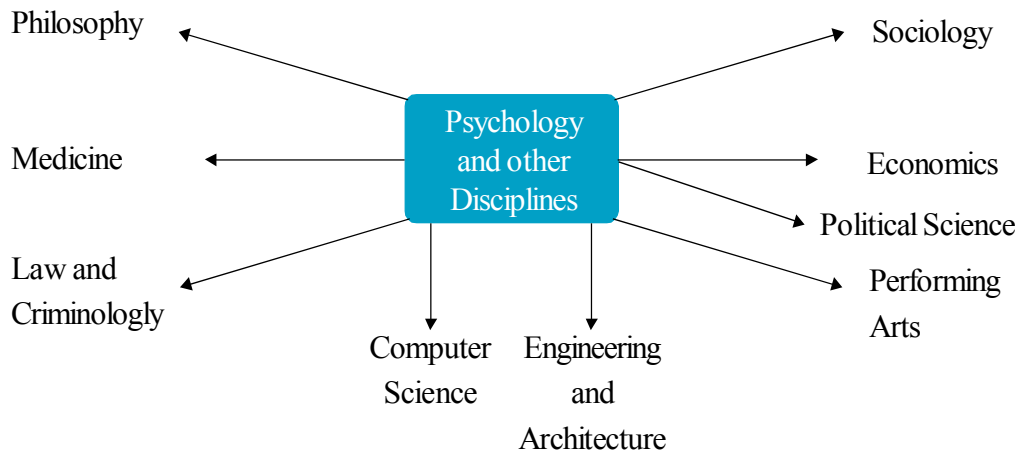


WHAT YOU HAVE LEARNT





Notes



TERMINAL EXERCISE

1. What is the nature of Psychology as a discipline?
2. Is Psychology a Natural Science or a Social Science? State reasons for your answer.
3. How is the behavioural perspective different from the structuralist and functionalist viewpoints.
4. 'In India attempts are being made to integrate ancient Indian Psychology with modern Western Psychology'. Explain the statement with reference to development of Psychology in India.
5. Explain the evolution of Psychology from the late nineteenth century to the modern time.
6. How does Music ,Fine Arts, Dance and other Performing Arts influence our behaviour and cognition?

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7. 'The subject matter of Psychology is based on other disciplines and vice versa'. With reference to this statement, explain the relationship between the following.
 - a. Psychology and Engineering
 - b. Psychology and Computer Science
8. Enumerate the relevance of Psychology in various other disciplines that you study.
9. Explain the role that Psychologists play in hospitals and organizations.
10. What is the area of work of educational and school psychology?



ANSWERS TO INTEXT QUESTIONS

1.1

1. d. All of the above
2. b. Human cognition

1.2

1. a. is based on empirical, verifiable data
2. c. it studies human beings in the social and cultural context, where it is difficult to gather data.

1.3

1. b. introspection
2. a. enhance the understanding of self.

1.4

1. d. Experimental
2. a. Clinical and counselling psychologist

1.5

1. d. Environmental Psychologist
2. c. Community Psychologist



Notes

BASES OF HUMAN BEHAVIOUR

While ironing her clothes, Zoya accidentally touches the hot iron surface and instantly pulls her hand back. Aman closes his eyes the moment his sister flashes a torch on his face. Both these responses (withdrawal of hand and shutting of eyes) occur in less than a second's time. These fast reactions indicate a special kind of functioning of the body, known as autonomic responses, carried out by the brain. Our behavior and actions are controlled by different parts of the brain.

The previous chapter talks about the basics of Psychology, the study of behavior. The behavior a person exhibits requires flow of information in the body which is carried out by neurons. In this chapter, we will elaborate on 'neurons' and other biological bases of behavior facilitated by the nervous and endocrine systems. We will also look into how socio-cultural and ecological factors affect the development of an individual.



LEARNING OUTCOMES

After studying this lesson, learner :

- describes the structure and function of neuron and nervous system;
- explains the role of heredity and environment on human behavior; and
- elaborates the socio-cultural and ecological factors underlying human behavior.

2.1 STRUCTURE AND FUNCTION OF NEURON

Neuron is the most basic unit of the brain. The human brain is estimated to contain at least 150 billion **neurons**, also known as nerve cells. Each of these neurons is connected

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to many other neurons, making uncountable connections. These connections between neurons are called **synapses**. A neuron is a specialized cell in the nervous system that receives and sends messages within the system. Neurons act as messengers of the body and possess a very special structure.

Neurons come in many shapes and sizes, yet there are certain common features. The part of neuron that receives messages from other cells is called **dendrites** (branches). The dendrites are attached to **soma** (cell body) that contains the nucleus and keeps the entire cell alive and functional. As we move further, follows **axon**, a fiber like structure attached to the soma whose job is to carry messages to the other cells (to other neurons, muscles or glands).

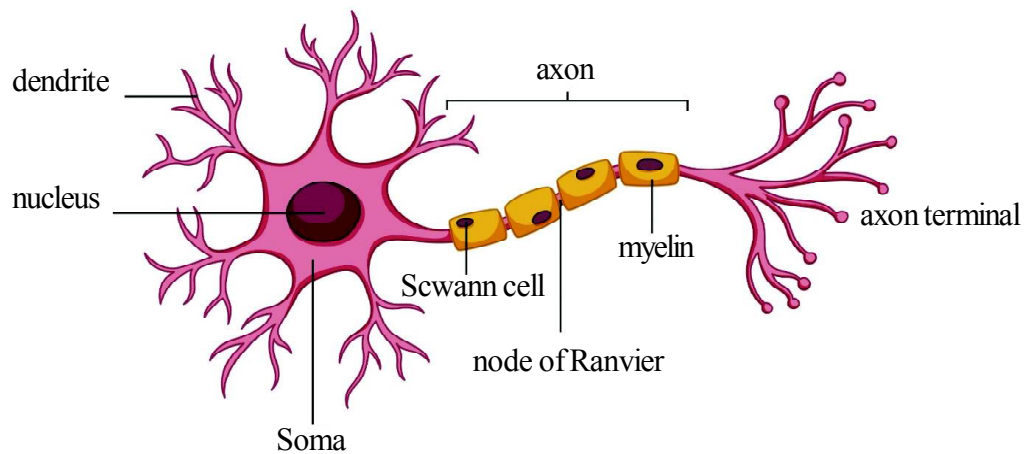


Figure 2.1: Neuron Anatomy

Neurons make up only 10% of the cells in the brain. The other 90% of the brain is composed of glial cells. **Glial cells** serve as a sort of structure on which the neurons develop and work, and also work as nutrients and oxygen supplier to the neurons. They hold the neurons in place. A special type of glial cells called **Schwann Cells** produce **myelin** to coat axons and clean up waste products and dead neurons. The axons may or may not have myelin sheath. Even when it is there, it is interrupted at the Nodes of Ranvier. A neuron which has the myelin sheath conducts the message faster than the neuron which is not covered by myelin sheath. Bundles of myelin-coated axons travel together in cable like structures called neurons. Axons of neurons found in the body are also coated with a thin membrane called **Schwann's Membrane**. They serve as a tunnel through which damaged nerve fibers can repair themselves. Unfortunately, axons of the neurons in brain and spinal cord do not usually have this coating and are therefore more likely to be damaged on a permanent basis.

2.1.1 Types of Neurons

Based upon the number of processes that extend directly from the cell body, neurons are divided into three categories-

- Nerves conducting excitation from the sense organs of the skin to the brain and spinal cord, i.e., sensory nerves are comprised of **Unipolar Neurons**.
- The **Bipolar** (two processes) **Neuron** has a single axon and a single dendrite. It is believed to be the primitive type.
- A **Multipolar** (many processes) **Neuron** has several short dendrites and a single axon and is therefore connected to many neurons.

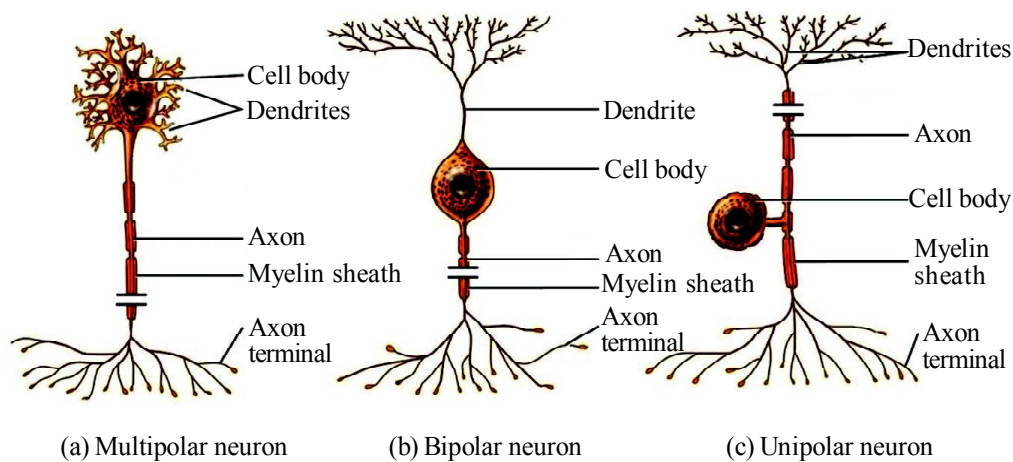


Figure 2.2: Types of Neurons

2.1.2 Functions of the Neurons

Neurons function on the basis of “**All or None**” law. Depending upon the stimulus intensity, i.e., if it reaches a critical value it will fire with total strength, if below, then there will be no excitation. So, nerve impulses are electrical events of very short duration that move along the axon. During this transaction, when the neuron is not conducting any impulse i.e. resting, the inside of the membrane has a negative electrical charge. When the cell membrane is excited by the stimulus, the cell becomes little less negative from the inside. As the stimulus reaches a threshold level, the membrane changes its characteristics- certain channels open to allow sodium from outside to enter the cell.



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Since sodium ions are positively charged, the inside of the cell becomes momentarily positive (for a millisecond). This results in nerve impulse.

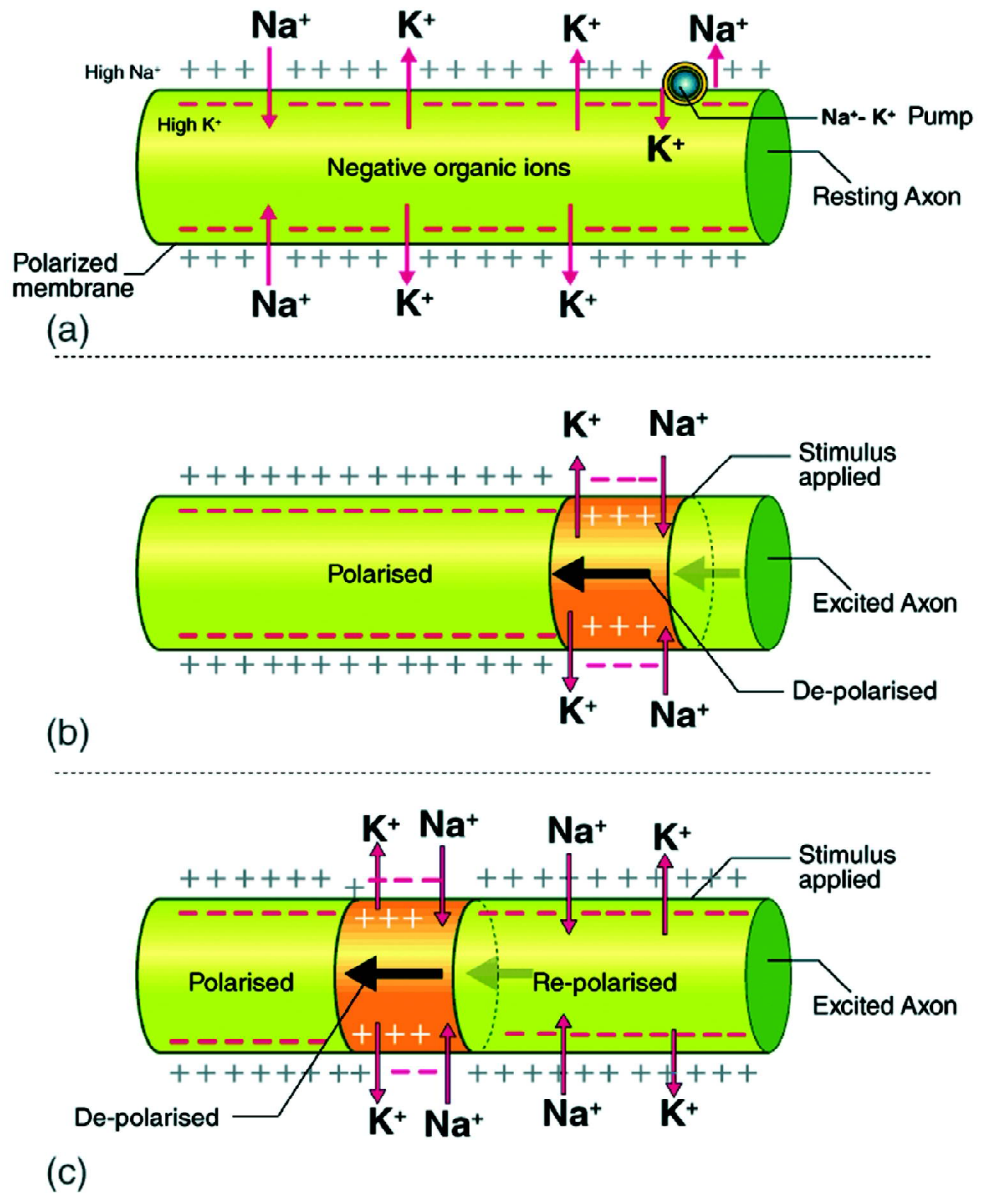


Figure 2.3: Nerve Impulse

After a millisecond, to restore the potential, potassium ions move out to neutralize charges (sodium-potassium pump). In an axon, the active portion triggers a spike (nerve impulse) in the next region and so on down the axon. Once the potential has been restored at the point of initial activity, it becomes ready to carry another impulse from a subsequent stimulation. The tip of the axon makes a functional connection (though never connected physically) with the dendrites/cell bodies of the following neurons, called Synapse. The gap between the axon terminal and dendrite is known as

the **Synaptic Cleft**. There are small packets (vesicles) at the terminal position of the axon that contain neurotransmitters. Neurotransmitters can either excite or inhibit transmission of impulse in the receiving cell.

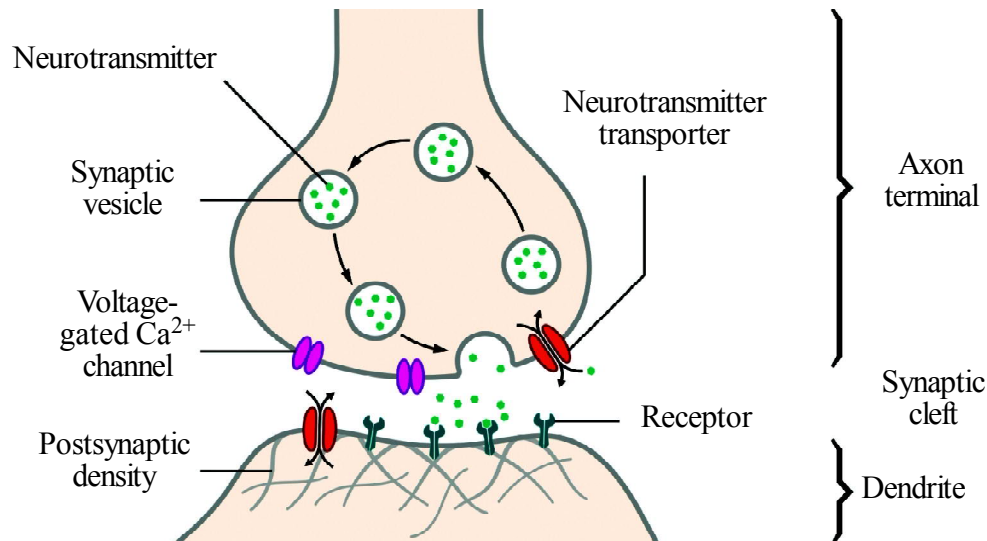
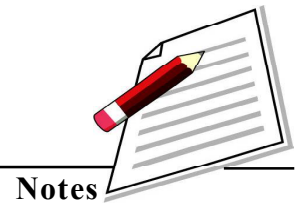


Figure 2.4: Nerve Impulse at Synapse



INTEXT QUESTIONS 2.1

Match the following.

- | | |
|---|------------------|
| 1. Smallest unit of nervous system | A. Dendrite |
| 2. Receives messages from other neurons | B. Myelin Sheath |
| 3. Structure on which neurons develop & works | C. Bipolar |
| 4. Helps in conduction of message | D. Neuron |
| 5. A type of neuron | E. Glial Cells |

2.2 ROLE OF NERVOUS SYSTEM AND ENDOCRINE SYSTEM IN HUMAN BEHAVIOUR

Signals from the nervous system and hormonal release from the endocrine system are the internal sources for the behaviour, undertaken as action or reaction. Before moving on to endocrine system, let us understand the categorization of nervous system and its functions. Nervous system can be understood in a simple manner by categorizing it on the basis of its location and function. On the basis of location, the nervous system can be branched into:-

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a. **Central Nervous System (CNS)**

Central Nervous System (CNS) comprises of brain and spinal cord which lie within the bony cases of skull and spine, and

b. **Peripheral Nervous System (PNS).**

PNS is parts of the nervous system outside the skull and spine- comprising of autonomic and somatic nervous system.

a. **Central Nervous System:** It is comprised of brain that continues as the spinal cord in the form of long stalk. Brain integrates the inputs from the sensory organs, analyzes it (cognitive appraisal) and carries out the motor activities as per the requirement. However, brain would be useless without the functioning of the spinal cord.

2.2.1 The Spinal Cord:

A bony case known as the spinal column encases the spinal cord. There are 31 segments of the spinal cord. The nerves that follow the dorsal pathway contain the sensory fibers, and the ones that follow the ventral pathway contain the motor fibers.

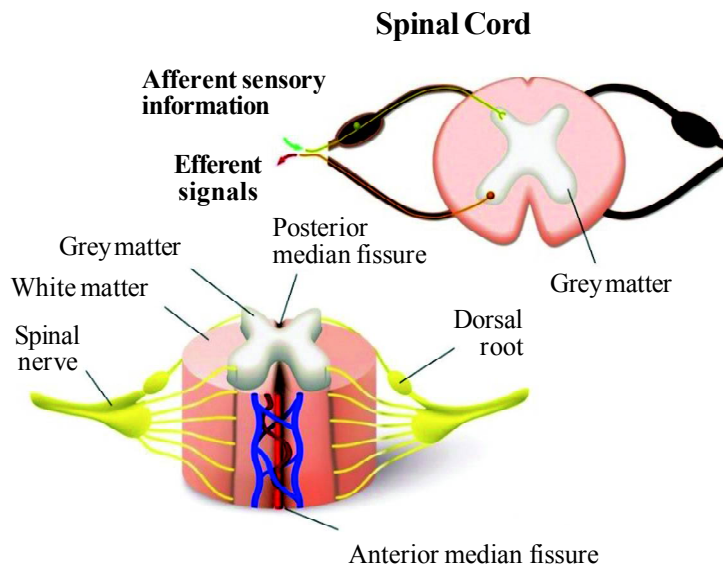


Figure 2.5: Cross-Section of Spinal Cord and its Functions

The cross-sectional image of the spinal cord appears like a butterfly. The central part,

which is majorly comprised of neuron's cell bodies appears grey, and hence popularly known as the grey matter. The outer part, mainly composed of axons and nerves, looks white. The outer section is responsible for carrying to and fro information from the brain to various parts of the body (message pipeline). The other major function taken care by the spinal cord is the **reflex action** (example knee jerk, reaction on touching hot and eye blinking). The three types of neurons involved in the process are sensory (afferent- carry messages from senses to the spinal cord) neurons, motor neurons (efferent- from spinal cord to muscles and glands) and interneurons that link the sensory and motor neurons and form the inside of the spinal cord and the brain itself.



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2.2.2 The Brain:

The spinal cord progresses in the upward direction into brain stem, near the junction of the skull that encapsulates the brain. For a better understanding, brain can be categorized on the basis of the major functions it carries out, i.e.,

- (i) Survival
- (ii) Motivation and emotion, and
- (iii) Higher mental processing.

Anatomy of the Brain

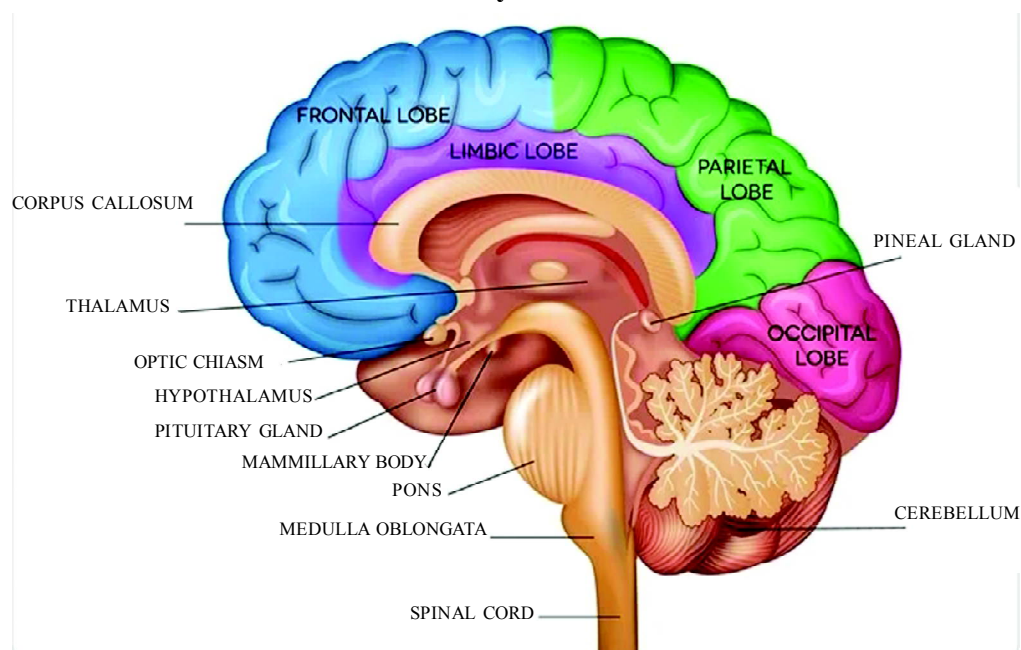


Figure 2.6: Brain

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- (i) **Survival Function:** It is carried out by the brain stem. Brain stem covers medulla, pons, cerebellum, and reticular activating system (popularly known as Midbrain). Medulla and pons are placed above the spinal cord. **Medulla** is found to be responsible for heartrate and breathing. **Pons** facilitates the passing of sensory and motor information and they are responsible for sleep-arousal, muscle tone and cardiac reflexes. The **cerebellum** lies at the back of the brain stem. It transmits the information to the higher parts of the brain and controls the movements. **Reticular Activating System** activates/arouses central cortex and is involved in sleep-arousal, regulation of muscle tone and cardiac reflexes.
- (ii) **Motivation & Emotion:** Motivational behaviours like eating and aggression are controlled by a small structure that lies in the deep layers of the brain i.e., Hypothalamus. **Hypothalamus** also plays role in controlling autonomic nervous system. Quite near the hypothalamus, around the center of the brain also lies thalamus. **Thalamus** receives sensory inputs from various parts of the nervous system and transmits the information to the cerebral hemispheres and other parts of the brain. Emotional reactions and behaviours are regulated by the **limbic system** that comprises of a set of small structures found in deep layers of brain. Largest among these structures is **Hippocampus** which is responsible for making memories. **Amygdala**, which is near hippocampus, is responsible to people's reactions to dangerous situations. It controls fear responses and memory of fear.
- (iii) **Higher Mental Processes:** Abilities like reasoning, planning, remembering, and imagining are taken care by **cerebral cortex**. It covers the entire surface of the brain. Although, the structure of the two hemispheres that comprise cortex seem identical, but functionally the two are responsible for different functions. The left hemisphere is predominantly responsible for language aspects, and right hemisphere takes edge in image formation, spatial relationships and pattern recognition. The two hemispheres are interconnected with myelinated fibers, Corpus Callosum, for transmitting and receiving information. On the basis of functionality, cerebral cortex is divided into four lobes- Frontal, Parietal, Temporal, and Occipital. As the name suggests, **frontal lobe** lies in front of the central fissure, and is responsible for cognitive functioning, like attention, thinking, memory, learning and reasoning, and is also responsible for inhibitory effects on autonomic and emotional responses. **Parietal lobe** is placed behind the central fissure. It is responsible for processing information from skin and internal body receptors for touch, temperature and body positioning. The **temporal lobe** is placed behind the temples. The main function this lobe is responsible for is

hearing. It is also responsible for memory of symbolic sounds, understanding of speech and written language. **Occipital lobe** is placed at the base of the cortex, towards the back of brain. It is responsible for the visual information from eyes, in the form of visual impulses, and memory for visual stimuli.

The functional division that is explained above gives us an understanding of brain and its functions. Nothing works in isolation to each other; it is just that an area predominates over others in carrying out the routine functioning in everyday life. Example when we say that we are going to watch a movie, the visual system gets activated which is a predominant role of occipital lobe, the dialogues and music, are interpreted through temporal lobe, the comfort level of the seats are experienced through parietal lobe, and the relation we are able to make between various scenes is through frontal lobe. The emotions we experience while watching the movie are controlled by the hypothalamus, thalamus and limbic system. The point is to emphasize that nothing happens in isolation; all the functions in the brain are interlinked and well-coordinated, with its subsystem performing their key roles.

(b) **Peripheral Nervous System (PNS):** PNS consists of the nerve fibers or axons which:

- 1) carry nerve inputs from the sensory receptors to the body, inward to the CNS;
- 2) carry nerve impulses for the movement of muscles and the excitation of certain glands outward from the CNS. It comprises of Somatic Nervous System (SNS) and Autonomic Nervous System (ANS). SNS takes charge of activating the striped muscles (example arms and legs) through motor fibers and carry information from the sensing organs (ear, nose, touch receptors of the skin) through sensory fibers. All the involuntary muscles, organs and glands are controlled by Autonomic Nervous System (ANS). Here, motor fibers activate smooth muscles (bodily organs) as the stomach, activate secretion from certain glands like the salivary glands and regulate activities in certain type of muscles of heart. Sensory fibers under ANS carry information from the internal organs that is perceived as pain, warmth, cold or pressure.

(c) **Autonomic Nervous System (ANS):** It is further categorized as **Sympathetic** and **Parasympathetic Nervous System**. Let's look into an example, Prateek, while going for interview, notices certain changes in his body- his heartbeat increases, his breathing becomes fast, he starts sweating and his mouth becomes

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dry. After the interview gets over, no matter how good or bad it was, his breathing becomes normal, heartbeat lowers, the dryness in his mouth goes away and he stops sweating. Now, what Prateek experiences is something we all have experienced at some point of time or the other. These changes are controlled by the sympathetic and parasympathetic part of ANS and are involuntary in nature. The sympathetic division of the ANS is primarily located on the middle of the spinal column. Commonly, it is known as the **“fight or freezing” system**, as it helps people to deal with the stressful events in their lives. During its activation, pupils' dilate, heart rate increases, and digestion of food and excretion of waste tends to be inhibited. The parasympathetic division (PSD) is known as the **“eat-drink- & rest” system**. The neurons responsible for its activation are placed at the top and the bottom of the spinal column, on the other side of the sympathetic division neurons. PSD helps the body to restore the normal functioning after a stressful situation ends. It slows the heart rate and breathing, constricts the pupils, and reactivates digestion and excretory functions of the body.

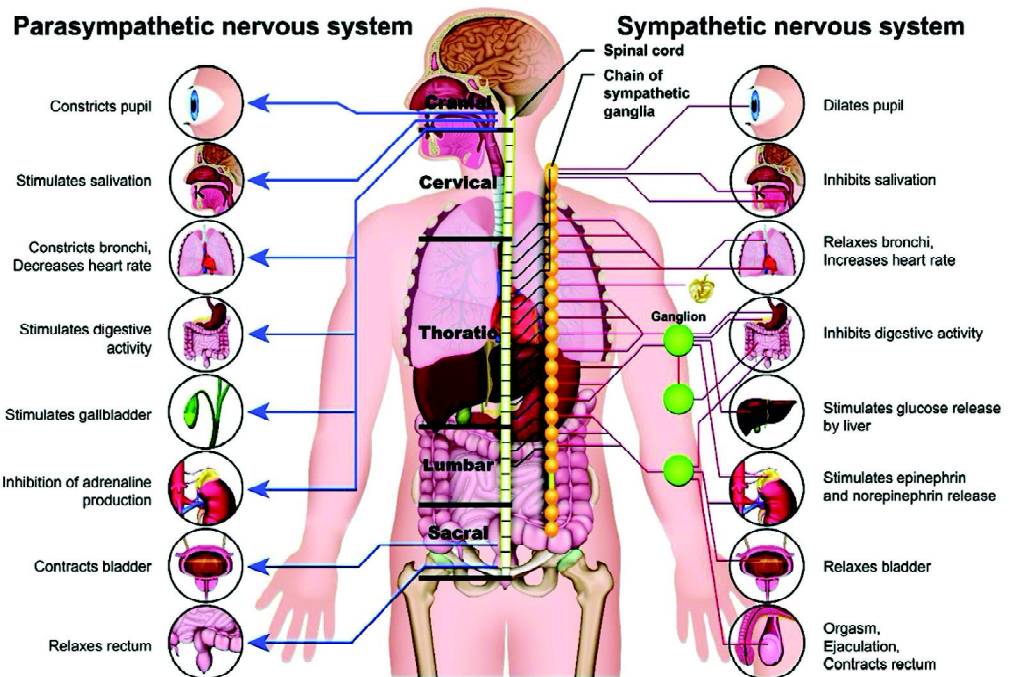


Figure 2.7: Sympathetic & Parasympathetic NS



INTEXT QUESTIONS 2.2

One Word Answers

1. Name the part of the neuron that receives messages from adjacent cells.
2. The neurons of the motor pathway control _____.
3. Name the cell which is responsible for the reproduction of other cells of the body.
4. Damage to which brain part may lead to difficulty in heart rate and breathing.
5. Damage of which part of brain may lead to difficulty in forming new memories.

2.3 THE ENDOCRINE GLANDS

The nervous system also controls the endocrine glands and their secretion of hormones into the bloodstream. The functioning of nervous system and endocrine system (endocrine glands) is together known as Neuro-endocrine System.

Endocrine glands are different from other glands (sweat or salivary glands) as they are ductless glands. Unlike other glands, they do not secrete directly into the tissues, rather they secrete into the bloodstream to have their impact on the desired organ. The secretion that is released from the endocrine glands is known as Hormones. These hormones, when correctly fit in the receptor organs, help in bringing out the desired behaviour. These hormones have been found to be responsible for the functioning of the heart, pancreas, and sex organs. They are also found to influence our emotional reactions and excitatory or inhibitory effects of brain activity. There are different types of endocrine glands which are as follows-

Pituitary: It is located in the brain and is also known as the ‘master gland’ because it influences other hormones secreting glands. It releases hormones responsible for human growth.

Pineal: It is placed near the base of cerebrum and regulates sleep-wake cycle through the release of melatonin hormone.

Thyroid: It is found in the neck region and releases thyroxine that regulates the metabolism rate of the body.

Pancreas: It is found in the abdomen region and releases insulin that controls the level of blood sugar in the body.

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Gonads: They are also known as sex glands, ovaries in females and testes in males. They control sexual behavior and reproduction.

Adrenal: The adrenal glands are placed just above each kidney. They are divided in two sections- adrenal medulla and adrenal cortex. Adrenal medulla controls the secretion of epinephrine and norepinephrine that in turn regulates sympathetic arousal (helps people during stress). The adrenal cortex releases 30 different types of hormones, called corticoids. These hormones control physical stress (of illness, surgery, temperature), psychological stress (emotional aspects), salt intake and functioning of nervous system.

For the overall functioning of the body, regulated release of various hormones is important. They are responsible for the optimal functioning of various parts of the body, including the nervous system. They also control our reactions to external environment.



INTEXT QUESTIONS 2.3

Fill with suitable answers

1. Endocrine glands release _____ in blood stream.
2. Pineal gland is placed near the base of _____.
3. _____ are male gonads.
4. Insulin is secreted in blood stream by _____.
5. Metabolism is controlled by _____.

2.4 THE ROLE OF HEREDITY AND ENVIRONMENT IN HUMAN BEHAVIOUR

When a child is born in the family, you must have observed that the family members say that the child's nose is exactly like her father's, her eyes look like her mother's, and so on. Every child inherits equal number of chromosomes from both mother and father. The combination is so unique that apart from identical twins, all children born to same set of parents have their unique genetic makeup. In this backdrop, one can understand genetics as the study of inheritance of physical and psychological makeup among offspring from their parents (ancestors in the larger domain). For example, hair color of the child is usually genetically determined; and certain psychological factors like emotional expression are also influenced by parental behavior.

The genes are found in the chromosomes, which are present in the nucleus of the zygote, the beginning stage of the new life. Zygote has 23 pairs of chromosomes, 23 contributed by mother and father equally. The 23rd pair of chromosome determines the sex of the child.

Genes: Chromosomes contain tiny little structures called genes. They are the codes or commands that are responsible for the physical and psychological development of the offspring. These genes are the carriers, responsible for the similarity among parents, their ancestors and the offspring, i.e. the basic unit of heredity. The genes do not work within their own system. They take information from the environment, adapt according to the changes required for the betterment of the individual (Darwin's theory of survival of the fittest).

Nature Vs. Nurture

Is a child's development and behavior governed by his/her unique genetic makeup or the environment s/he lives in? Well, the answer to this question is an ongoing debate with no certain conclusions. For example, Sharon displays aggressive behavior. So, does she exhibit this behavior because her mother is aggressive and so she has inherited aggression from her mother (nature), or she learned that kind of behavior from her mother through observation and interaction (nurture). Like it is mentioned earlier, it is difficult to answer this question.

It would be better to say that nature and nurture both play an important role in a child's development. We inherit some features, while others are what we develop over time as a result of interacting with our environment.

In short, heredity and environment interplay determine our physical and psychological makeup. Psychologists usually undertake studies on twins (identical and fraternal twins) to understand the role of heredity and environment.

2.5 THE SOCIO-CULTURAL AND ECOLOGICAL FACTORS UNDERLYING HUMAN BEHAVIOR.

The behavior of an individual does not occur in isolation; it is determined by both genetics and environment. The term environment is encompassing of physical, psychological, and socio-cultural environment. Example the food intake behavior of humans is to satisfy the biological need of hunger. But unless and until we are hungry, are we ready to eat when food is provided to us? The answer for most of us is 'No'. We have our individual food preferences, based on our taste, choice, mood, and availability in time and situation, i.e. it is guided by our psychological, socio-cultural



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upbringing and the ecological environment that we are part of. The important role environment plays in a child's development process can be understood by the **Ecological Systems Theory** given by **Urie Bronfenbrenner**, and so popularly known as **Bronfenbrenner's Bioecological Model**.

Bronfenbrenner's Ecological Systems Theory

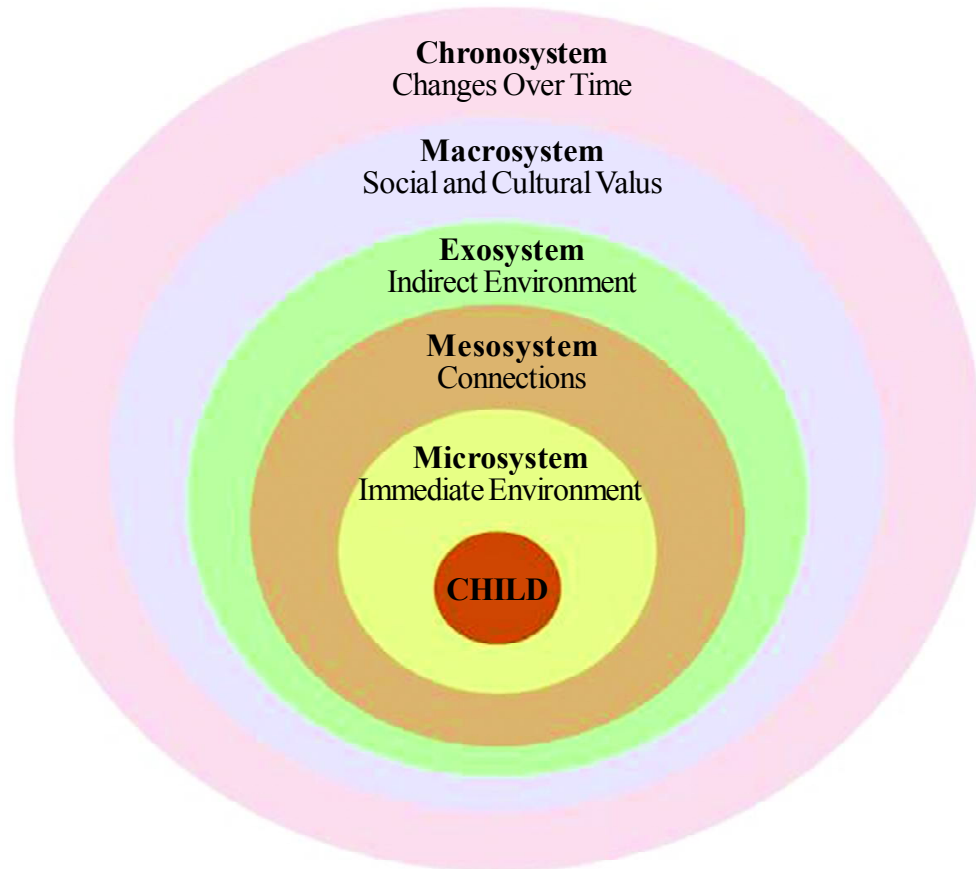


Figure 2.8: Bronfenbrenner's Model

The Bronfenbrenner's model focuses on interconnection between the individual and the environment at various levels. The model has five systems or levels at which this interconnection can be understood.

- i. **Microsystem-** The environment that a child comes in immediate contact with and lives in is the microsystem, like the family, school and peers. It also encompasses the various ways in which the parents, siblings, teachers, friends etc. interact with the child. The more supportive these interactive patterns are the better is the development of the child.



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- ii. **Mesosystem-** This level talks about the relationship between the various components of the microsystem, i.e. how do the parents interact with the teachers, what connection is there between the parents and peers of the individual, etc. Such experiences affect the kind of relationship the individual has with others. For example, during parent-teacher meetings, if parents use supportive and positive words for the child instead of complaining about him/her, the child's confidence boosts up and s/he learns to talk positively about others in a social setting.
- iii. **Exosystem-** The environmental factors that have an indirect effect on the development of individual, like workplace of parents. The child may not be interacting with these factors, but they do impact the developmental process of the child. For example, if the father doesn't get his idea approved in the office meeting, he might show his anger at home, which will in turn affect the child in a negative way.
- iv. **Macrosystem-** It comprises of the culture in which an individual is brought up. The values, ideas and beliefs, all come under this system. Culture is the phenomenon which differs from society to society. For example, children brought up in Western culture will be more individualistic than the children from the collectivistic Eastern cultures of the world.
- v. **Chronosystem-** It includes the changes in the environment of an individual that occur over time. It includes instances like transfer of either of the parent to a new place which might result in shifting among new people. Another example could be birth of a sibling. When a younger sibling is born, the entire pattern of interaction that the child had earlier, changes. If in such situations, the child is neglected due to change in the circumstances, the child might develop behaviours such as inferiority complex which are not good for his/her development.

2.6 MAJOR SOCIAL AGENTS THAT GUIDE HUMAN BEHAVIOR

As discussed in the Bronfenbrenner's Model, the role of various contributors that help in the socialization of the child cannot be denied. The way we perceive, attend, analyze and reciprocate to the external environment is affected by social agents like parents, siblings, peers, school, and media that are discussed below.

- i. **Parents:** Parents are the first social contact that a child experience. Child's behavior is shaped by the regular parental interactions like talking, eating, guiding, rewarding certain behaviors and punishing other behaviors, level of control

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exerted, etc. The way parents behave with each other, their interaction with the rest of the family members; various social groups etc. also affect the behavior of the child.

- ii. **Siblings:** The influence that siblings have on each other cannot be overlooked. They are the ones that spend a lot of time together. Living with a brother or sister teaches a child various things like adjustment, sharing, respecting the other person's space, and dealing with conflicts. If a child shares a good relationship with his or her sibling, it helps in better growth of the child.
- iii. **School:** Next social system a child comes in contact with is school. This is a child's first exposure to structured social system. It helps children learn rules and regulations, gives them platform to develop self-initiative and help in developing relations beyond parents in the form of teachers, peers, friends, etc. So, children start socializing with others who are different from family members.
- iv. **Peers:** Within the school system and beyond, as the child grows, peers become a major influencing group. Being of same age, peers become most relatable social agents. They help a child in inculcating the habits of sharing, caring, mutual understanding, trust, etc. Children also learn to assert their viewpoint along their interaction with peers.
- v. **Media:** As discussed earlier, culture is influenced by changing times. Media, which is a scientific development of the virtual world, has been identified as a significant contributing agent of socializing. The exposure to harmonious, violent, and funny content on television influences a growing child through imitation. The media (virtual world) has enabled children to grab information with the touch of a button. The information hence sought should be guided and monitored to prevent children from developing undesirable behaviour through this social agent.

In summary, human behavior is very complex which is largely determined by several factors such as heredity, environmental, social and cultural values.



INTEXT QUESTIONS 2.4

Fill in the blanks with suitable answers

1. At the beginning stage of the new life. Zygote has _____ pairs of chromosomes.
2. _____ and _____ interplay determines our physical and

psychological makeup.

- The Bronfenbrenner’s model focuses on interconnection between the _____ and the environment at various levels.

State whether these statements are True or False

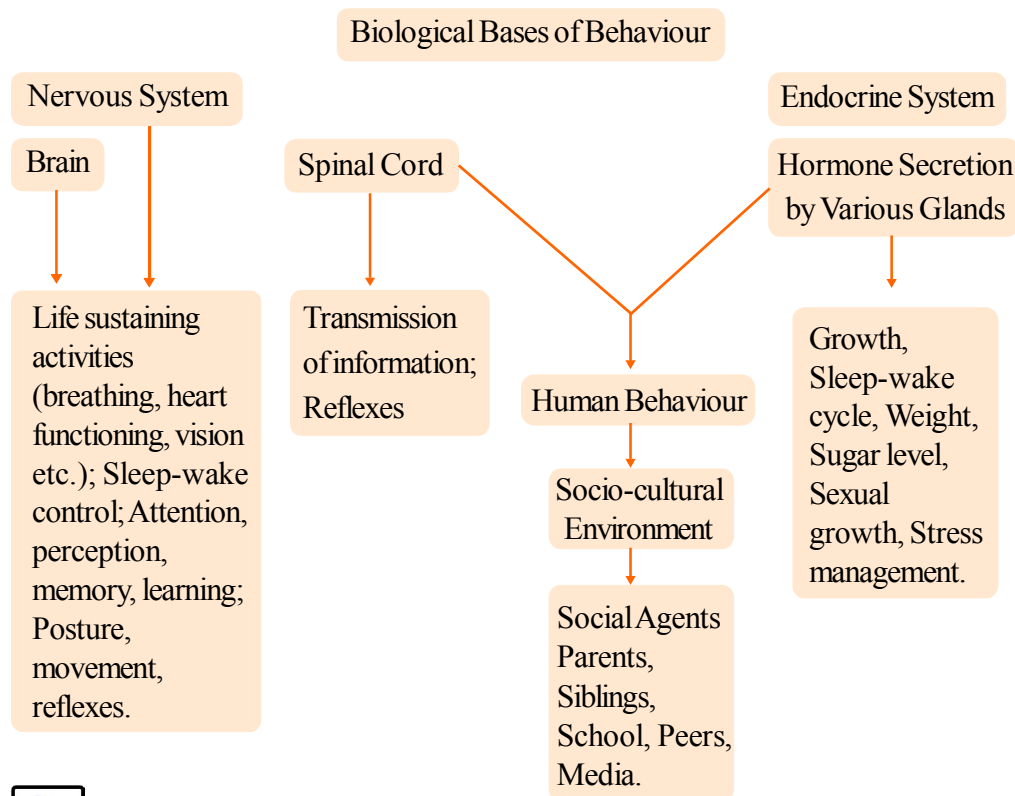
- The Bronfenbrenner’s model has been divided into three levels.
- The exposure to harmonious, violent, and funny content on television influences a growing child through imitation.
- Genes are the codes or commands that are responsible for the physical and psychological development of the offspring.



Notes



WHAT YOU HAVE LEARNT



TERMINAL EXERCISE

- Discuss the function of neurons and their structural composition.
- Describe the process involved in information transmission between neurons.

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3. Why are psychologists concerned with the role of heredity and environment while studying human behavior?
4. Discuss the functioning of human behavior.
5. Elaborate the role of endocrine system in human behavior.
6. What are the major social agents that guide human behavior?
7. Explain different levels of Bronfenbrenner’s model that focuses on interconnection between the individual and the environment.
8. Differentiate between CNS, PNS and ANS.
9. Describe major functions of brain.
10. Cerebral Cortex covers the entire surface of the brain. How its different lobes function in transmitting and receiving information?



ANSWERS TO INTEXT QUESTIONS

2.1

(1-D), (2-A), (3-E), (4-B), (5-C)

2.2

1. Dendrite, 2. Voluntary muscles, 3. Stem cells,
4. Medulla, 5. Hippocampus

2.3

1. Hormones, 2. Cerebrum, 3. Testes,
4. Pancreas, 5. Thyroxin

2.4

1. 23, 2. Heredity and environment, 3. Individual
1. False, 2. True, 3. True



Notes

METHODS OF PSYCHOLOGICAL ENQUIRY-I

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

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



LEARNING OUTCOMES

After studying this lesson, learner :

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

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

3.1 WHAT IS SCIENTIFIC PSYCHOLOGICAL RESEARCH?

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



Figure 3.1 showing the scientific aspect of psychological research



Notes

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

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

3.2 GOALS OF PSYCHOLOGICAL RESEARCH

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

Research in Psychology has five basic goals:

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

For example- Rajat seems unable to finish his homework.

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

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

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

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

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

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

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

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



INTEXT QUESTIONS 3.1

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



ACTIVITY

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



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

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

3.3 TYPES OF PSYCHOLOGICAL RESEARCH

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

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

1. On the basis of Goals

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

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

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2. On the basis of Setting

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

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

3. On the Basis of Methods of Research Employed

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

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



INTEXT QUESTIONS 3.2

State whether the following statements are True or False

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



Notes



ACTIVITY

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

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

3.4 RESEARCH DESIGNS

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

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

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3.4.1 Characteristics of Research Designs

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

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

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

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

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

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

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

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

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

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

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



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

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



Figure 3.1: Steps in conducting an Experiment

b. Different types of experiments used in Experimental Design are

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

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

In a nutshell these are the characteristics of true experiments:

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

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

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



Notes

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

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

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

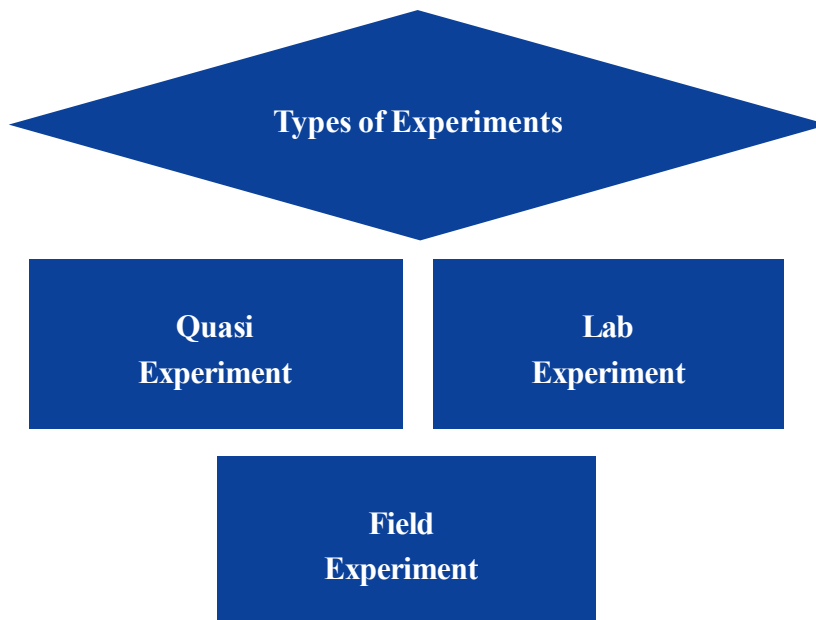


Figure 3.2: Types of Experiments used in Experimental research design

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Notes

c. Strengths and Limitations of Experimental Research

Strengths:

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

Limitations

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

iii. Correlational Research

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



Notes

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

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

Different types of correlations

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

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

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

b. Strengths and Limitations of Correlational Research

Strengths

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

Limitations of Correlations

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

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

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

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

Summing Up: Types of Research Designs

Table 1: Comparative description of the three research designs

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

**Notes****ACTIVITY**

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

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

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Notes

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

Ans.

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



INTEXT QUESTIONS 3.3

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

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

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

3.5 USE OF STATISTICAL METHODS IN PSYCHOLOGICAL RESEARCH

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

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

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

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

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

Figure 3: Depicting frequency table

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

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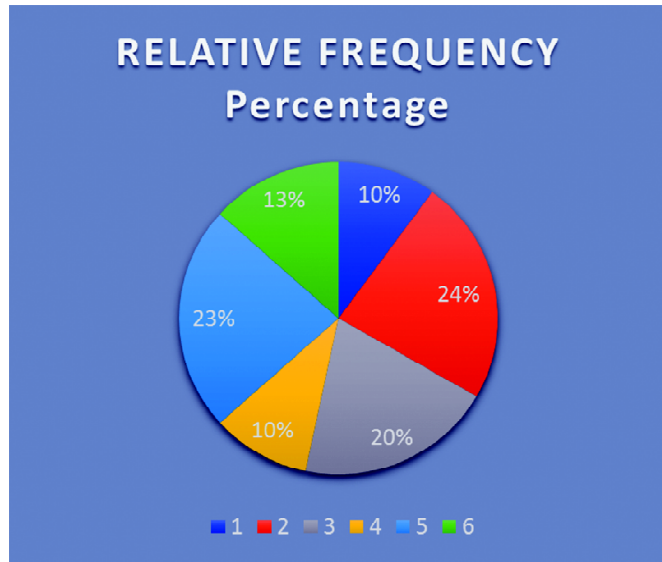


Figure 3.3: Depicting Pie Chart

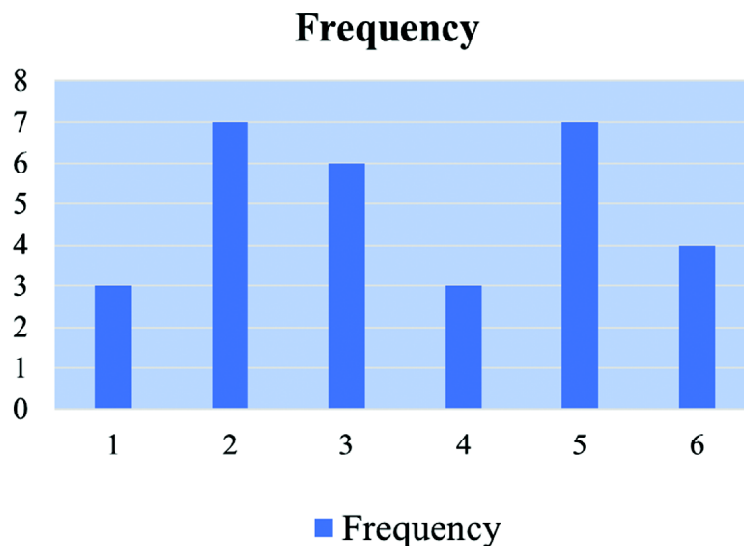


Figure 3.4: Depicting Bar diagram

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

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

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

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



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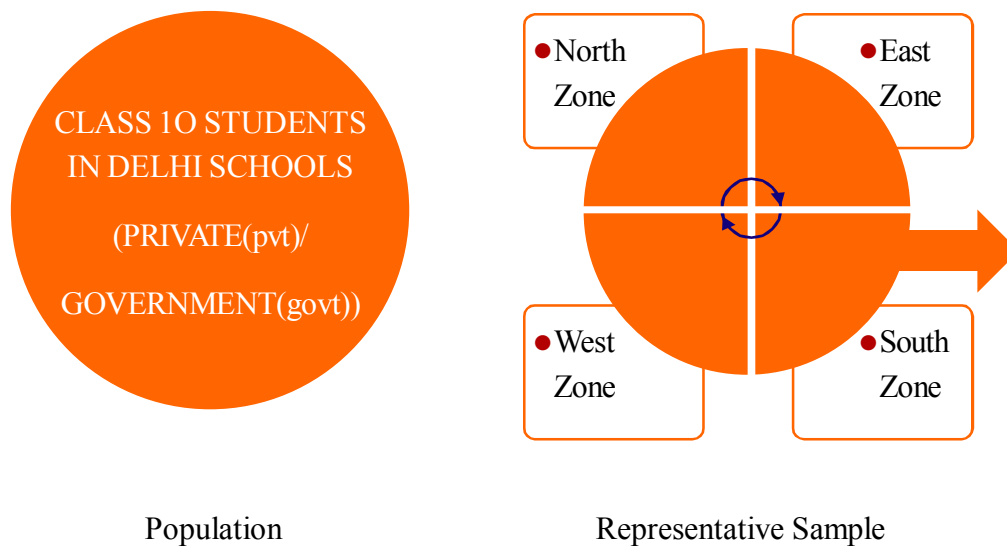


Figure 3.5: Depicting sample (Note: The figure is depicting population and sample)

Role of Statistics in Psychological Research

Statistics play a very important role in psychological research because:

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

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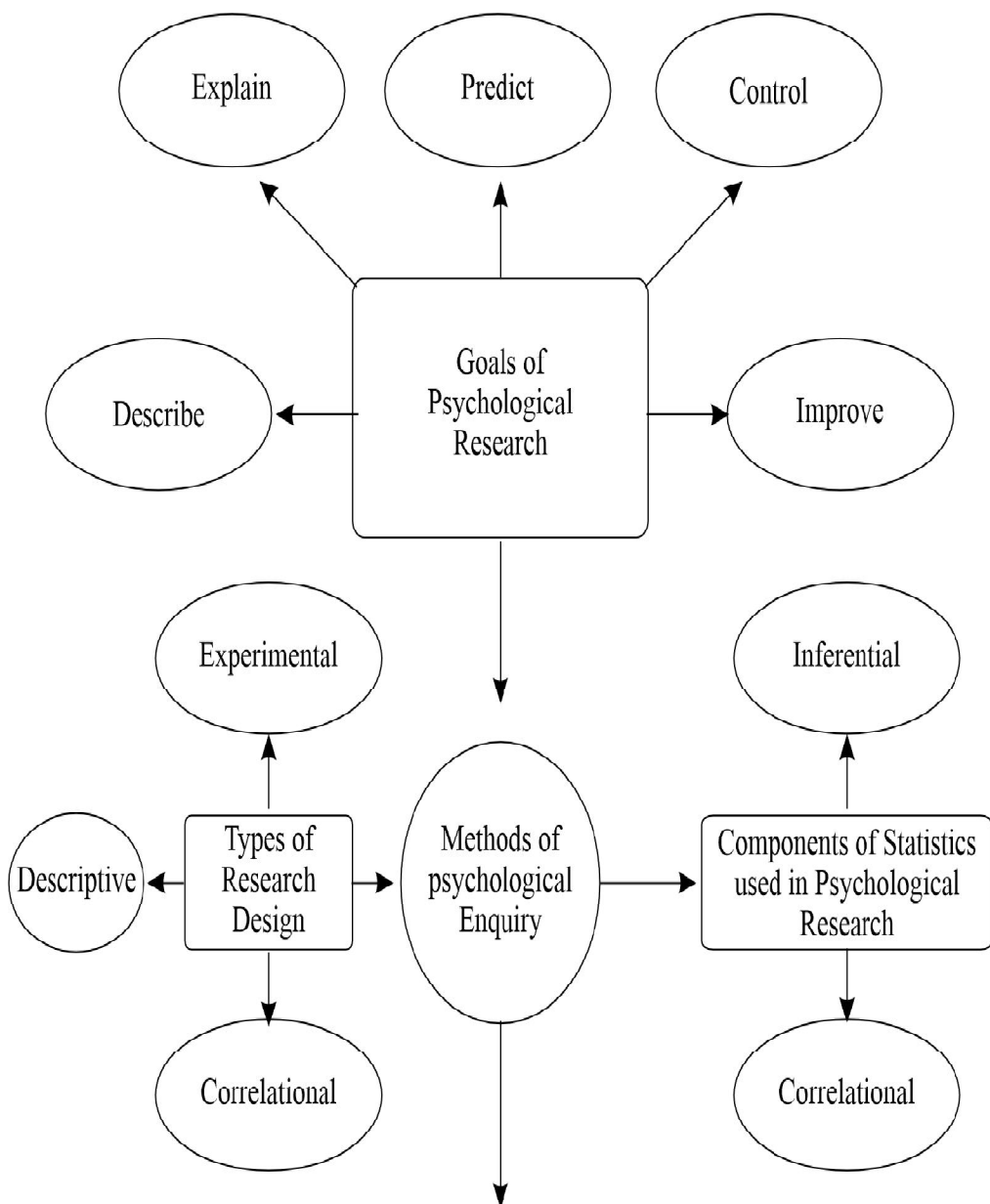


INTEXT QUESTIONS 3.4

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

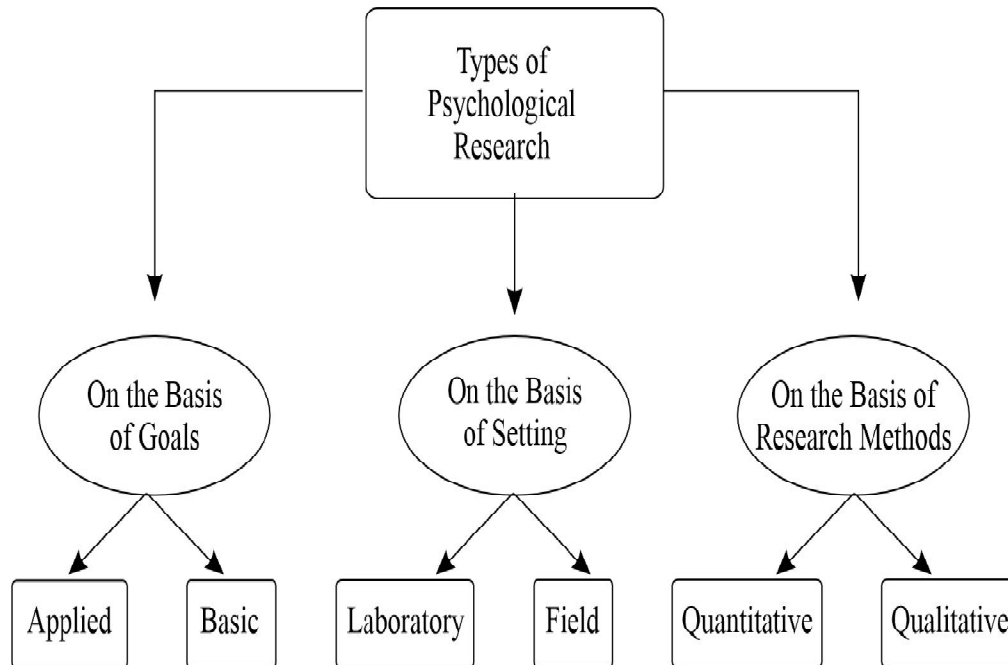


WHAT YOU HAVE LEARNT





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TERMINAL QUESTIONS

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

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ANSWERS TO INTEXT QUESTIONS

3.1

1. Goals of Psychological Research

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

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

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

3.2

True and False

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

3.3

1. True and False

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

2. Three types of research design

Descriptive research

Experimental research

Correlational research

3. Match the following

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



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3.4

1. Five goals of Psychological Research are:-

Describe, Explain, Predict, Control, Predict

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

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



METHODS OF PSYCHOLOGICAL ENQUIRY-II

“Dr. Shalini is a school principal. She has been worried about the issue of examination stress and anxiety that her students have been reporting of late. She wishes to study this situation, therefore all the class teachers were instructed to ask a set of questions to all the students individually and record their answers. The students responses were analysed and it showed a decline in academic performance even for those students who have been performing consistently well otherwise. Dr. Shalini feels alarmed by the realisation that the stress and pressure is taking a toll on her students’ performance. She then further wants to investigate which are the classes wherein the students are getting most affected. After identifying those grades, she wants the school counsellors to have a word with these students and get an insight into what are their areas of concerns. She feels that till the time a communication is established between the affected students and the school authorities, a concrete solution for this problem cannot be achieved.” The stated example clearly highlights the need and importance of certain methods of research which enables a systematic enquiry into the experiences of people. Such research methods follow a qualitative approach where the focus is on understanding the nature of underlying psychological aspects.

In the previous chapter, you have learnt about certain methods used in psychological research, which are Experimental and Correlational; their basic quantitative nature, applications as well as strengths and limitations. As we know, Psychology is a scientific discipline that seeks to understand the complexities of mind and behaviour by diverse methods of enquiry. In this chapter, you will study some other methods of psychological research with a special focus on their diverse nature and application. Later in the chapter, ethical issues pertaining to research would be discussed so that the learner

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understands not just the theoretical aspects of research methods but also the ethical considerations to be kept in mind for effective application of the methods.



LEARNING OUTCOMES

After studying this lesson, learner :

- outlines basic research skills in Psychology;
- examines different methods used in Psychological research;
- explains the various ethical issues in Psychology; and
- relates on various ethical concerns when conducting Psychological Enquiry.

4.1 WHAT IS DESCRIPTIVE RESEARCH?

In the previous chapter, we have discussed about experimental and correlation research in detail. Now in this chapter we will be discussing another type of research i.e. descriptive research. **Descriptive research** is used to describe the existing condition in great detail. It is used to describe general or specific behaviours and attributes that are observed and measured. In conditions where enough research is not available in a particular area, designing an experiment becomes difficult. In such cases, a researcher often begins with a non-experimental approach, such as a descriptive study, to gather more information about the topic before designing an experiment or correlational study. Descriptive research can also be used as an extension of experimental study in order to describe the existing status of events i.e. once a solution suggested by experimental analysis is implemented. Thus descriptive method is useful in both the initial and final stages of investigation.

Descriptive analysis describes what exists and tries to pave the ground for finding new facts. It includes gathering of data related to individuals, group of individuals, events and situations and then organize, tabulate, depict and describe the obtained data. As the name suggests, this approach is applied to describe variables rather than to test predicted relationship between variables. Its main objective is description. It does not make predictions and does not determine cause and effect.

This type of research focuses on the questions like *Who*, *What*, *Where* and *How*. For example: Descriptive approach could be applied to investigate the following questions:

- Do teachers hold favourable attitudes toward using computers in schools?

- What are the positive and negative aspects of your job?
- What are the negative aspects of your home environment?
- Do students prefer reading print based textbooks or online books?
- How has student involvement in outdoor activities changed over the last 10 years?

Descriptive research can be either quantitative or qualitative in its approach. It can involve collections of quantitative information that can be tabulated in numerical form, such as the quantitative difference in the frequency of using emoticons in text messages across different age groups, or it can qualitatively describe categories of information such as the issues and concerns raised by female travellers pertaining to safe public transport. Across the quantitative and qualitative continuum, the most commonly used methodological approaches are interviews, surveys, observational studies, case studies.

Before going further, it is important to understand that these research methods can be of two types i.e., a cross sectional study or a longitudinal study.

Cross sectional study is one in which data is collected from a population at a specific point of time. It is more commonly used by researchers than the longitudinal design as it is easier to conduct and yields quick results. This design becomes useful when the goal is to understand characteristics of a population at that particular point of time. This implies that if the study is to be repeated, fresh participants will need to be recruited.

For example, academic performance of Class X students in Mathematics and Science.

Longitudinal study, on the other hand, involves data collection from the same sample repeatedly over a period of time. Depending on the type of information required, longitudinal studies can extend from few years to decades. This design becomes useful when the purpose of the study is to observe change and development in an individual or group over a time span. Needless to say, it is time consuming and the success of such studies is highly dependent on the continued and active participation of the individuals.

For example, research on the cognitive abilities of individuals at ages 5, 15 and 25.

4.2 TYPES OF DESCRIPTIVE RESEARCH METHODS

The most common methods used for **descriptive research design** are *surveys, observation, case studies and interviews*. *These methods vary along the*





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Quantitative-Qualitative continuum with respect to the degree of quantification involved.

4.2.1 Descriptive Methods with Quantitative Approach

Surveys and observation are the two methods that employ a more quantitative approach of data collection and analysis. We shall learn more about them in this section.

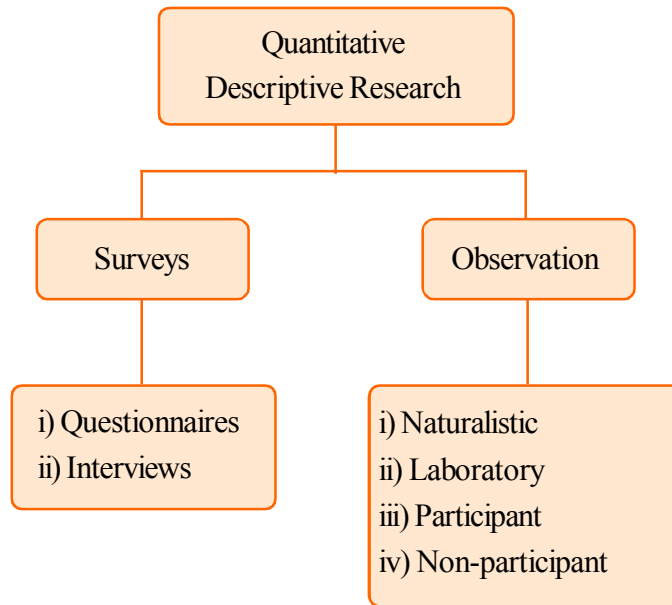


Figure 4.1: Types of Quantitative Descriptive methods

4.2.1.1 Survey Method

Survey methods are widely used in descriptive research to study beliefs, opinions, attitudes, motivation and behaviour of individuals. Survey method focuses on various attributes of individuals that emerge on the basis of their membership of certain social groups such as gender, income, political and religious affiliations etc. It also considers attributes that are psychological in nature such as opinions, beliefs, etc.

Data for survey can be collected through two primary modes- questionnaires and interviews.

- i. **Questionnaires**-Typically, a questionnaire is a paper-and-pencil instrument that is administered to the respondents. Certain types of questions that are included in the questionnaire are:
 - ❖ *Open-ended questions*: Open-ended items are useful when researchers do not know how participants might respond or when they want to avoid

influencing their responses and when in depth information is required. Open-ended responses are mostly qualitative in nature.

For example, “Please describe the time when you felt you were unable to handle exam pressure.”

- ❖ *Close-ended questions:* Close-ended questions are used when researchers have a good idea of the different responses that participants might make and the respondent has to choose from the given options. They are more quantitative in nature.

For example, “Do you like to exercise?” Yes / No

- ❖ *Rating questions:* A rating question is used to find out how survey-takers would rate something. It’s quite useful to gauge peoples’ opinions across the board.

For example, “How would you rate a restaurant’s service on a scale of 1-5?”

- ❖ *Multiple choice questions:* Such questions provide multiple response options for the respondents to choose from.

For example, “The last cricket world cup was played in the year- 2016 | 2017 | 2018 | 2019”

Modes of Questionnaire Administration in Survey Research

Surveys can be administered in four ways: through the mail, by telephone, in-person or online. When deciding which of these approaches to use, researchers consider: the cost of contacting the study participant and of data collection, the literacy level of participants, response rate requirements, the complexity of the information that is being sought and the mix of open-ended and close-ended questions.

- ii. Interviews:** Between the two broad types of surveys, interviews are more personal type of surveys which enables probing. Probing questions are usually instantaneous, based on the answer of the respondent, and allow the interviewer to get more insights into the required area. Questionnaires do not provide the freedom to ask follow-up questions to explore the answers of the respondents, but interviews do.

An interview includes two persons - the researcher as the interviewer, and the respondent as the interviewee. There are several survey methods that utilize

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interviews. These are the personal or face-to-face interview, the telephonic interview, and more recently, the online interview. The interview method will be discussed in detail in subsequent section.

Table 1: Comparative Analysis of The Two Types of Data Collection Instruments in Survey

Method	Purpose	Advantages	Disadvantages
Questionnaires	To gather large information in a short period of time	- Sample group can remain anonymous -Cost effective -Can generate large amount of data	-Difficult to gain deeper information
Interviews	To reflect emotions and experiences, and explore issues more deeply	- Process of data collection can be directed - Specific type of information can be collected	-Time consuming -More expenditure to arrange interviews, travelling etc.

Strengths of the Survey Method

- Access to a wide range of participants.
- Faster data collection than other methods.
- Relatively inexpensive data collection.

Limitations of the Survey Method

- Data may /may not be in depth.
- Sample used for data collection may lack representativeness.
- Data may get impacted by researcher’s own perception and biases.

4.2.1.2 Observation Method

Observation is a fundamental technique of data collection that refers to watching and listening to the behaviour of other person over time without manipulating and controlling it. It is always a directed activity that can be used to study the following categories of behaviour:

Nonverbal behaviour: focuses on body language including eye movements, facial expressions, body postures, gestures etc.

Linguistic behaviour: focuses on speech content

Extra linguistic behaviour: focuses on any behaviour that accompanies speech such as tone, intensity, pitch, volume etc.

Types of Observation Method:

- i. **Naturalistic/ field observation** is a study where a researcher observes the subject in its natural environment. It involves collecting information from some environment of interest just by watching what goes on. This makes the observations more true to what happens in the natural world.

For example, a researcher wants to study difference in classroom behaviour in public and private schools, s/he might visit the schools/classrooms and observe the behaviour of the students with each other as well as with the teachers.

- ii. **Laboratory observation** is one in which the researcher observes the subject in a controlled environment. The researcher decides where the observation will take place, at what time, with which participants, in what circumstances and uses a systematic procedure.

For example, to study the effect of different type of video games on the level of aggression, the participants might be put in different groups and are made to play different categories of video games. Their behaviour will then be observed and recorded to look for aggression level.

- iii. **Participant observation** is one in which the researcher is an integral part of the observation setting. The researcher freely interacts with other group members, participates in various activities of the group, becomes immersed in the events and adopts the routine patterns of the group to be observed. The behaviour is thus studied with an insider's perspective.

For example, a manager may be interested to study communication effectiveness of employees with clients. He/she may involve them in certain group activities while participating along with them and in that engagement observe their communication skills.

- iv. **Non-participant observation** is one in which the researcher adopts a distant perspective and observes an event or behaviour as an outsider without engaging with the group to be observed. Unlike participant observation where the



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researcher adopts an active role by engaging with group members, in non-participant observation the researcher adopts a relatively passive role by just carefully observing and restricting any other form of engagement.

For example, a teacher may organize a group activity for students and observe them for leadership qualities, without participating in the student’s activities in any manner.

Strengths of Observation Method

- Since it is mostly done in real life settings, it helps in generalising the findings.
- Large amount of data gets collected within a short amount of time. This means a large sample can be obtained resulting in the findings being represented and having the ability to be generalized to a large population.
- Can be used to explore new areas and to generate novel ideas.

Limitations of Observation Method

- The researcher needs to be trained to be able to recognise aspects of a situation that are psychologically significant and worth further attention.
- It is susceptible to observer bias i.e. subjective bias of the observer can impact the findings.



ACTIVITY

Based on your own experience or on things you have already learned about Psychology, list two settings you would like to explore using naturalistic observations and laboratory observations respectively.



INTEXT QUESTIONS 4.1

1. State whether the following statements are ‘True’ or ‘False’
 - i) Participant observation has no involvement of the observer with the group to be observed. True/False
 - ii) Surveys can be used for large scale data collection. True/False
 - iii) Qualitative research involves only numerical data. True/False

2. Match the following

- i. Laboratory Observation a. careful observation in real life settings
- ii. Naturalistic Observation b. distant observation without any active participation in activities of the observed group.
- iii. Non participant Observation c. controlled observation in artificial setting



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4.2.2 Descriptive methods with Qualitative approach

As already mentioned in the beginning of this lesson, descriptive research can be either quantitative or qualitative. It can involve collections of quantitative information such as number of times a person chooses to blow horn or honk while driving, or it can describe categories of information such as the difference between males and females in their reasons behind excessive honking.

Descriptive research with quantitative focus involves gathering data that describe events which are then numerically organized and tabulated. Whereas with qualitative focus, in-depth, narrative descriptions of few numbers of cases, are used as a tool to organize data into patterns during analysis. These rich qualitative descriptions can emerge using certain methods such as case study and interviews.

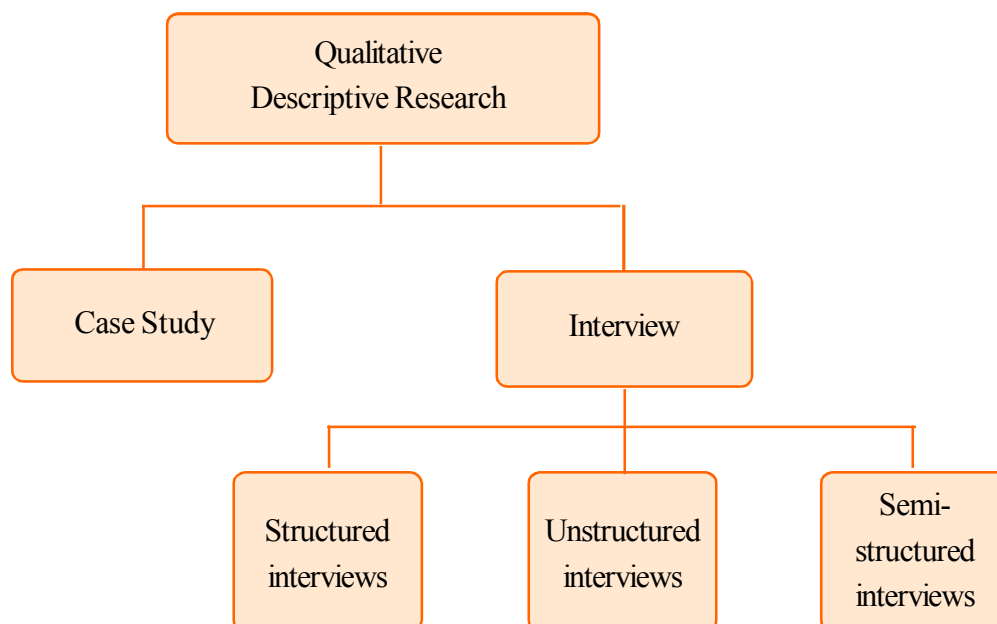


Figure 4.2: Types of Qualitative Descriptive methods

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4.2.2.1 Case Study

Case study method in descriptive research involves detailed study of a single case, typically over an extended period of time. It can involve naturalistic observations, and include psychological testing, interviews, diaries, archival data etc. These are often intensive detailed histories of people’s lives or descriptive accounts of important aspects.

What is a case?

A single case doesn’t have to mean just one single person. It might be a family, a social group, or even a single organisation. In fact a case study can involve dealing with quite a number of individuals.

Main Characteristics of the Case Study

- a. *Descriptive-* The data collected in case studies constitute descriptions of psychological processes and events, and of contexts in which they occurred (qualitative data). The main emphasis is always on the construction of verbal descriptions of behaviour or experience but quantitative data may also be collected. Also, high levels of details are provided.
- b. *Narrowly focused-* A case study that typically offers description of only a single individual, and sometimes about groups. Often this type of case study focuses on a limited aspect of a person.
- c. *Combines objective and subjective data-* The researcher may combine objective and subjective data. All data is regarded as valid data for analysis, and also as a basis for inferences within the case study- which includes both the objective description of behaviour and its context along with details of the subjective aspect, such as feelings, beliefs etc.

Table 2: Types of cases

Type of case	Description
Person	The study of one single individual, generally using several different research methods
Group	The study of a single distinctive set of people, such as a family or small group of friends.

Location	The study of a particular place, and the way that it is used or regarded by people
Organization	The study of a single organisation or company, and the way that people act within it.
Event	The study of a particular social or cultural event, and the interpretations of that event by those participating in it.

Source: http://www.psyking.net/HTMLobj-3838/Case_Study_Method.pdf

Strengths of Case Study Method

- Can gather extensive information, both qualitative and quantitative.
- Helps in providing insight into phenomena or experience which can't be gained otherwise.

Limitations of Case Study Method

- Since only one case is involved, generalization to the rest of the population is extremely limited.
- Can be very time consuming
- Due to the extensive and prolonged engagement of the researcher, their beliefs, opinions and biases can influence findings.
- Replication of findings is not possible.

4.2.2.2 Interviews

As we have already mentioned about interviews as one of the techniques of data collection under survey method, in this segment we will focus on the interview technique in detail. Interviews can be defined as a qualitative research technique which involves asking questions to a small number of respondents to explore their perspectives on a particular idea, program or situation. They can be conducted on individuals, as well as in groups. Individual interviews are the ones where one person is interviewed at a time, whereas in group interviews, multiple candidates are interviewed simultaneously.

There are three different formats of interviews: structured, semi-structured and unstructured.



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- i. **Structured interviews** : These consist of a series of pre-determined questions that all interviewees answer in the same order. Data analysis usually tends to be more straightforward because researcher can compare and contrast different answers given to the same questions. Structured interview is a way of trying to ensure comparability across the sample. The questions in a structured interview may be phrased in such a way that a limited range of responses is elicited.

For example, “Do you think that health services in this area are excellent/good/average or poor?” This is an example of a closed question where the possible answers are defined in advance.

- ii. **Unstructured interviews:** Unstructured interviews or in-depth interviews are the ones in which questions are not prepared prior to the interview and data collection is conducted in an informal manner. The interviewer approaches the interview with the aim of discussing a limited number of topics, sometimes as few as one or two, and frames successive questions according to the interviewee’s previous response. It is often used to obtain detailed accounts of an individual’s experience. Unstructured interviews can be associated with a high level of bias and comparison of answers given by different respondents tends to be difficult due to the differences in formulation of questions.

For example, a researcher wants to study the cultural values of a community. For that she/he might not prepare any questions in advance, instead have a conversation with community members and then dig into the cultural values as the conversation unfolds.

- iii. **Semi-structured interviews:** These contain the components of both structured and unstructured interviews. In semi-structured interviews, interviewer prepares a set of same questions to be answered by all interviewees. At the same time, additional questions might be asked during interviews to clarify and/or further expand certain issues. With semi-structured interviewing, the open-ended nature of the question defines the topic under investigation, but also provides opportunities for the interviewer and interviewee to discuss some topics in more detail. If the interviewee has difficulty answering a question or provides only a brief response, the interviewer can use cues or prompts to encourage the interviewee to consider the question further. In a semi-structured interview, the interviewer also has the freedom to probe the interviewee to elaborate on the original response or to follow a line of inquiry introduced by the interviewee.



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For example, a policy maker wants to study how the new policy affects the work of doctors. For this s/he makes develops a set of questions (like, ‘Are you aware that a new policy has been made?’, ‘Do you think it is in the favour of healthcare professionals?’) and also keeps scope to add questions on the spot, based on the answers of the participants (like, if the participant answers that the policy is in their favour, the policy maker might ask ‘what part of the policy do you think favours doctors?’, and if the participant says that it isn’t in their favour, s/he might enquire about the suggested changes that might make the policy favourable to them.)

With semi-structured interviewing, the open-ended nature of the question defines the topic under investigation, but also provides opportunities for the interviewer and interviewee to discuss some topics in more detail. Semi-structured interviews are useful when collecting attitudinal information on a large scale. If the interviewee has difficulty answering a question or provides only a brief response, the interviewer can use cues to encourage the interviewee to consider the question further.

Let us understand the process of interview with the help of the example given in the box.

EXAMPLE

Interviewer: “I’d like to hear your thoughts on whether changes in traffic rules have changed the traffic scenario on the roads.”

Interviewee: “Absolutely! There is a remarkable change. No doubt about it.”

Interviewer: “In what way has it changed?”

Interviewee: “I think people have become more careful on roads and their awareness about traffic rules has also increased.”

Interviewer:” What do you think has led to that kind of a change?”

Interviewee: “... Well... I think there’s strict monitoring and implementation of traffic rules that has worked out quite well. Also, the revised traffic penalties have also made people more cautious on roads.”

Conducting the interviews: As mentioned earlier, interviews can be conducted individually or in a group setting. The researcher must first decide whether s/he wants to interview one person at a time or a group of people at once. Having decided on individual or group approaches, she/he now needs to decide which method of interviewing she/he wishes to use

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There are three primary ways to conduct qualitative interviews on the basis of modalities:

- a. **Face to face:** Here the researcher and respondent meet together. This is the most frequently used technique, and enables attention to be paid to non-verbal behaviour and establish a rapport over an extended period of time. Face-to-face or personal interviews are very labour intensive, but can be the best way of collecting high quality data. Face-to-face interviews are preferable when the subject matter is very sensitive, if the questions are very complex or if the interview is likely to be lengthy. Interviewing skills are dealt with in more detail later in this module.

Compared to other methods of data collection, face-to-face interviewing offers a greater degree of flexibility. A skilled interviewer can explain the purpose of the interview and encourage potential respondents to co-operate; they can also clarify questions, correct misunderstandings, offer prompts, probe responses and follow up on new ideas in a way that is just not possible with other methods.

- b. **Telephone:** This can be used where a face-to-face interview is not possible, and may be appropriate where the topic is not sensitive and non-verbal behaviour is less important. Telephone conferencing may enable focus groups, but there are major problems in 'turn taking' and ensuring all are able to participate. Video conferencing adds a further dimension to this kind of distance interviewing.

Telephone interviews can be a very effective and economical way of collecting data where the sample to be contacted are all accessible via the telephone. They are not an appropriate method of data collection for a very deprived population where telephone ownership is likely to be low. However, telephone interviewing can be ideally suited to busy professional respondents, such as general practitioners, when the telephone numbers can be easily identified and timed appointments set up. Telephone interviews are also particularly useful when the respondents to be interviewed are widely distributed geographically.

One of the main disadvantages of a telephone interview is that it is difficult to incorporate visual aids and prompts and the respondents cannot read cards or scales. The length of a telephone interview is also limited, although this will vary with subject area and motivation. Nevertheless it is possible to make prior appointments for a telephone interview and send stimulus material for the respondent to look at in advance of the interview. A prior appointment



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and covering letter may enhance the response rate and length of interview.

- c. **Web Interviews:** The Internet provides opportunities through chat rooms for interviewing, and is a growing method of conducting in-depth interviews. There are clearly major problems in establishing rapport, and non-verbal behaviour will be missed entirely. However, some research suggests that respondents may be willing to be more open about personal matters in this kind of format. Issues of authenticity of identity may also be an issue. Methods of using the web include e-mail interviews, bulletin boards and interactive web sites. Chat rooms can be used to simulate focus groups.

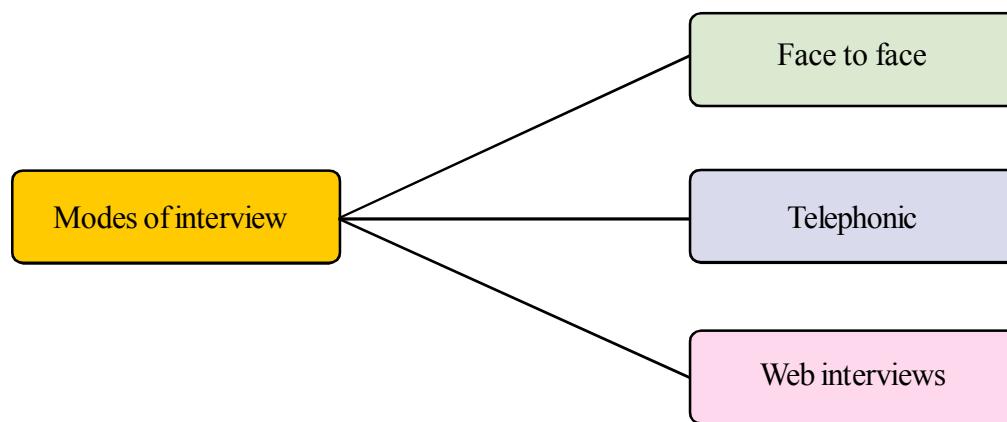


Figure 4.3: Modes of conducting interview

Strengths of Interview Method

- It provides in depth information about the area of interest.
- Ambiguities and doubts can be clarified, improving the quality of data.
- It helps in discovering how individuals think and feel about a topic and why they hold certain beliefs, values and opinions.

Limitations of Interview Method

- It can be very time consuming and expensive.
- The interviewers need to be trained to conduct effective interviews.
- The quality of data obtained from interviews depends on the communication skills of both the participant and interviewee to an extent.

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INTEXT QUESTIONS 4.2

1. State whether the following statements are 'True' or 'False'
 - i. Structured interviews make comparative analysis impossible.
True/False
 - ii. Case study technique involves brief information about a case.
True/False
 - iii. An event can be a subject matter of case study analysis.
True/False
 - iv. Unstructured interviews allow in depth information.
True/False
2. Answer which is the most appropriate interview approach (structured/ semi structured/ unstructured) in each of the following studies?
 - i. A researcher wants to compare the criterion of job satisfaction reported by manager and subordinates.
 - ii. A health worker wants to study the attitudes pertaining to importance of menstrual hygiene in teenage girls.
 - iii. A psychologist wishes to understand coping experience of terminally ill patients.
 - iv. A researcher is interested to study the opinions of youngsters about the importance of social media in today's world.

4.3 ETHICAL CONCERNS IN PSYCHOLOGICAL RESEARCH

The British Psychological Society (BPS) and the American Psychological Association (APA) have provided an ethical framework for psychologists to attempt to adhere to when conducting psychological research. Some of the ethical concerns are:

- i. **Protection from harm-** Perhaps the most important ethical principle is that during the course of research, participants should be protected from harm, psychological or otherwise. Researchers must ensure that the physical conditions in which the research is being carried out are not detrimental to the physical wellbeing of the participants. Similarly, the psychological wellbeing needs to be

protected as well. For example: researchers can do their utmost to prevent any undue stress on their participants.

- ii. **Right to Withdraw-** Another ethical concern is to ensure that the participants have the right to withdraw from the research. It does not involve just informing them that they can leave the study *at any time*, but also informing them that they have the right to withdraw their results from the study at any time.
- iii. **Confidentiality-** Maintaining confidentiality is an ethical principle that ensures that the results of the research are kept anonymous and confidential. Further access to the research and participant information should be safeguarded against any form of misuse. Ideally no one should be able to identify the participants from the results.
- iv. **Informed Consent-** For any research to be ethical, the researcher must have gained informed consent from the participants. The ‘informed’ part of this ethical principle is the most important part, wherein the participants are made aware of the nature of the study, and their rights in the present research. They are also informed about the risks and/or benefits involved in the study. It is of no use to gain consent from participants without bringing all this to their knowledge.
- v. **Deception-** Some studies require that the participants are not informed about the real purpose of the study beforehand, for example Milgram’s (1963) experiment on obedience, where the participants were made to believe that they are giving electrical shock to the fellow participants (who were actually confederates), when in reality there was no electrical shock involved. This experiment was conducted to study obedience towards authority figure. Deception is majorly used in research to prevent demand characteristics and socially desirable behaviour which can impact the responses of the participants.
- vi. **Debriefing-** Debriefing is conducted with the participants after the study has taken place. It is done to ensure that the participants are aware of the intent of the study and also about how the collected data will be used. It has a number of aims. Firstly, it aims to ensure that none of the participants have been harmed in any way by the study. Secondly, it aims to make sure that the researchers have obtained informed consent regarding the use of data. Thirdly, it allows the participants an opportunity to remove their results from the study. Finally, it allows the participants to ask any questions about the study to make sure they fully understand its content.



Notes

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Notes



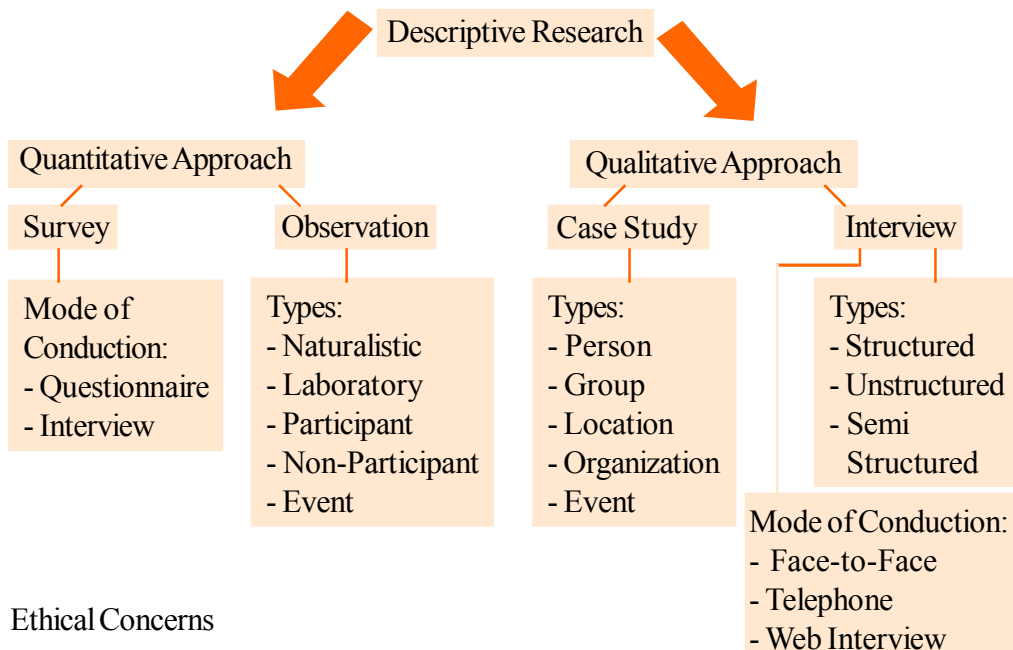
INTEXT QUESTIONS 4.3

Fill in the blanks with suitable answers

1. Maintaining _____ is an ethical principle that ensures that the results of the research are kept anonymous.
2. Another ethical concern is to ensure that the participants have the _____ from the research.
3. Participants are also informed about the _____ and/or _____ involved in the study.
4. Deception is majorly used in research to prevent _____ and _____ which can impact the responses of the participants.
5. The _____ and _____ have provided an ethical framework for psychologists to be followed when conducting psychological research.



WHAT YOU HAVE LEARNT



Ethical Concerns

- Protection from harm
- Right to withdraw

- Confidentiality
- Informed consent
- Deception
- Debriefing



TERMINAL QUESTIONS

1. What are cross sectional and longitudinal methods of research?
2. How is the descriptive research different from experimental and correlational research?
3. Explain the different types of observation techniques along with their strengths and limitations?
4. Discuss the case study method of research in detail.
5. Differentiate between the different formats of interview.
6. List the various ethical concerns in Psychological research?
7. What are the different strengths and limitations of case study method?
8. Compare different primary ways to conduct qualitative interviews on the basis of modalities.
9. What are the types of questions that are included in the questionnaire under survey method?
10. Observational method is used to study the different categories of behaviour. Identify the different categories of behaviour.
11. What are the main characteristics of the case study?



ANSWERS TO INTEXT QUESTIONS

4.1

1. i. False ii. True iii. False
2. i. c.



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- ii. a.
- iii. b

4.2

1.
 - i. True
 - ii. False
 - iii. True
 - iv. True
2.
 - i. Structured
 - ii. Semi structured
 - iii. Unstructured
 - iv. Semi structured

4.3

1. Confidentiality
2. Right to withdraw
3. Risks and/or benefits
4. Demand characteristics and socially desirable behaviour
5. The British Psychological Society (BPS) and the American Psychological Association (APA)



Notes

BASIC STATISTICS

Numbers play an important role in our lives. We use numbers everyday to know the temperature, weather conditions, our height, weight, blood pressure etc. These numbers also help us in comparing our selves with others. For example, one person may be taller than the other, but may have lesser weight. Two individuals will not exhibit the same attributes in the same strength when measured on a scale. This makes understanding of basic statistics crucial for us.

In the previous lesson you have learnt about the various methods of psychological research. Some of these are observation, interview, case study etc. The skills involved in carrying out research were also explained. You learnt and reflected on the various ethical concerns that must be kept in mind while doing research. Initially the data is raw and unorganized. We then apply statistics to enhance the understanding of the results. Statistics is a branch of Mathematics which deals with selection, classification, tabulation, organisation and analysis of numerical facts. The data is used for description, comparison and prediction. For statistics to give meaningful results the objective of the research should be clear. Statistics has a wide application. It is indispensable in Psychology as it consists of various techniques to organize, summarize, and interpret the raw data. It is used by researchers to conduct various studies in order to examine and understand the relationship between various variables. Psychologists rely on statistical applications to establish the reliability, validity and norms of a test. It is also used to make the collected information and data more meaningful and comprehensive.

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LEARNING OUTCOMES

After studying this lesson, learner :

- defines the concept of central tendency;
- explains the purpose and function of three types of central tendency (i.e., mean, median and mode);
- enlists the characteristics of mean, median and mode;
- calculates the mean, median and mode from the given data;
- explains the organization of raw data and presenting it in the form of a frequency distribution;
- describes that data can be presented in a graphical manner, through bar diagram, histogram, frequency polygon and pie chart;
- enumerates the key features of bar diagram, histogram, frequency polygon and pie chart;
- enlists the limitations of graphical representation of data;
- explains the difference between raw data and grouped data;
- describes the various types of grouping of the data;
- enumerates the relevant points to be kept in mind while graphically representing a data;
- draws a bar diagram, histogram, frequency polygon and a pie chart for a frequency distribution; and
- explains the importance and limitations of graphically representing the data.

5.1 MEASURES OF CENTRAL TENDENCY

A Central tendency reflects the significance of the entire data by accurate calculation of the average, or the central score, for a set of scores. It is a representative value of a statistical series of data. The three measures of central tendency are explained as follows.

5.1.1 Mean

It is the simple average of all items in a series. Therefore it is calculated as the sum of all observations, divided by the number of observations. For example, Raghav scored 83, 90, 82, 87, 88, 92 on six tests. We will add the scores $83 + 90 + 82 + 87 + 88 + 92$. This is equal to 522. Now, divide the sum, ie 522, by the number of observations, ie 6.

$$83+90+82+87+88+92=522$$

$$522/6=87$$

Therefore the mean is 87. You will note that the mean is very sensitive to extreme scores. If any score is extremely low or high the mean will also fall or rise respectively. The formula for mean is stated as follows:

$$X=\Sigma F/N$$

Where X =mean, ΣF = sum of all frequencies, and N is total number of entries

Let us take another example.

Neha was able to recall the following number of words, from the list of words shown in various languages.

Table 5.1.1

SUBJECT	NO. OF WORDS LEARNT
Hindi	20
Sanskrit	20
Bengali	18
English	18
Assamese	24

Thus, the average number of words recalled is calculated as follows:

Formula is $X=\Sigma F/N$

$$20+20+18+18+24=100$$



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$100/5=20$

The average number of words recalled is 20.

The mean has the following characteristics

- It is simple and easy to understand.
- It is also easy to calculate.
- It takes all observations into consideration.
- It is affected very much by extreme values.
- The average of scores may not reflect whether the performance of a person has improved or declined. To understand this, the entire data needs to be viewed. For example, two students obtain the marks as follows in various tests.

	TEST 1	TEST 2	TEST3	TEST4	MEAN
Student A	30	49	55	70	51
Student B	68	54	52	30	51

It is observed that the average score of both students A and B is the same. But, we can see that student A's performance is improving whereas student B's performance is declining.

- The mean value may not figure in the series at all. In the above example the average score of 51 does not exist in any of the observations.

5.1.2 Median

Median is a measure of central tendency which reflects a score in a distribution that divides the distribution into half. It indicates the midpoint of an array of scores in a distribution. In a research study, the number of hours of sleep of each student of the dormitory was noted. Refer to Table 5.1.2 given below.

Table 5.1.2a

Student's name	Number of hours of sleep
A	7
B	10

C	6
D	8
E	8
F	9
G	7
H	7
I	6
J	8



Notes

Arranging the scores in descending order we will get the following distribution.

Table 5.1.2b

Name of student	Hours of sleep in descending order
B	10
F	9
E	8
D	8
J	> 8
G	> 7
A	7
H	7
C	6
I	6

The median is calculated by adding the centre most values and dividing it by 2 (Hence we calculate median as $8+7=15$, which is divided by 2). Thus the median is the score of 7.5 that divides the distribution into half. Here the number of entries is 10. Thus we

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have the median lying between the 5th and the 6th entry. If we had data of only 9 students, the median value would be the 5th entry. Since 9 is an odd number, it becomes easy to calculate the median.

Activity 5.1.1

Draw and cut paper in the shape of squares of seven different sizes. Now arrange them in descending sizes, start by putting the largest on top, then smaller, and the smallest at the bottom. Now try to locate the median.

Interesting fact about the median

You can quickly find the location of the median by using the expression $n+1$ divided by 2.

$$\text{Median} = \frac{n+1}{2}$$

The letter n is the total number of data values in the distribution. If n is an odd number, the median is the middle value of the ordered data (ordered smallest to largest). In the previous example if $n=9$ (which is an odd number), then the median value is $9+\frac{1}{2} = \frac{10}{2} = 5$ th entry. If n is an even number, the median is equal to the two middle values added together and divided by two after the data has been ordered.

Let us take another example, the number of items recalled from the given list of words is as follows:

Table 5.1.3

Name of the person	Number of words recalled
M	18
N	24
O	22
P	30
Q	30
R	10

S	17
T	5
U	28

Arranging the scores from highest to lowest we get 22 as the median as shown in the table below:

Table 5.1.4

Name	Words recalled
P	30
Q	30
U	28
N	24
O	> 22
M	18
S	17
R	10
T	5

The following are the characteristics of median.

- It is a simple measure of central tendency.
- It is not affected by extreme scores.
- It is easy to understand and calculate.
- It is possible to derive the median value even when the data is incomplete.
- In case of even numbers of observations, the median cannot be determined directly.



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5.1.3 MODE

Mode is an important measure of central tendency. The mode has the highest frequency in the distribution. The literal meaning of the word 'mode' refers to something that is in vogue or fashion. Hence, it is determined by the maximum number of entries/scores. It is also a measure of reference and popularity.



ACTIVITY

Fill in the blanks with an approximate value.

- Most women in your village/town have a height of _____ cms .
- _____ is the fruit that most of the people in your village like to eat.
- The brand of mobile phones that most people bought is _____.
- The most watched TV serial is _____.
- The most worn colour of shoes is _____.

Once you have filled these, you will have an understanding of the concept of mode. For example, as shown in the table below, the number of marks that 10 children get in Mathematics is 60, 48, 50, 60, 39, 50, 60, 27, 60, 42. The mode will be 60, as the maximum number of children scored 60.

Table 5.1.5

Serial number	Name of child	Marks scored
1	Debjit	60
2	Arav	48
3	Raghu	50
4	Rekha	60
5	Namita	39
6	Taran	50
7	Nafeeza	60

8	Indra	27
9	Ramesh	60
10	Tanya	48

Now, you will note that the number of children scoring a particular marks is as follows:

Table 5.1.6

Marks	Number of children scoring the particular marks
27	1
39	1
48	2
50	2
60 (is the mode)	4

Characteristics of Mode

- It is easy to calculate the mode. Just by inspection we can know the mode.
- It is easy to understand.
- It is applied in our daily lives.
- It is not affected by extreme values.



ACTIVITY 5.1.3

Make ten paper cards. Choose any nine numbers. Write any of these numbers in bold on each of these 10 paper cards. You can repeat any one number, as you have only 9 numbers to be written on ten cards. Invite ten of your friends, siblings and/or cousins for this activity. Distribute the number card each to your friends and cousins. Now, let each person hold the number, so that it is visible to everyone. Play music and ask them to stand in descending order. Now find the mean, median and mode of the numbers that they are holding.



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INTEXT QUESTIONS 5.1

1. State whether the following statements are True or False.
 - a. The mean ,median and mode can never be the same.
 - b. When we calculate a student's average marks,we are calculating the mean.
 - c. Any change in scores will change its mean value but may or may not change the mode.
 - d. The mode can be known by mere inspection.
 - e. The mean can be known by mere inspection.

2. 10 people from Areema's town walk to the old age home everyday to help the senior citizens of the town. The distance travelled by each person is shown in the following table . Calculate the value of the mean, median and mode of the distance travelled.

Person's name	Distance walked in kms (To help the senior citizens in old age home)
Ahmad	2
Bela	4
Celia	2
Deepak	3
Emily	3
Farida	2
Gauri	1
Hemant	3
Isha	3
Jasbir	3

5.2 REPRESENTATION OF DATA

In the previous module, you have learnt about the mean, median and mode. They are the measures of central tendencies. Understanding of measures of central tendencies also helps us in our day to day life situations. By knowing the average number of hours to be devoted to study and sleep one can not only make a plan, but also effectively follow it. This data can also be shown graphically. This module will explain how data can be shown in the form of a frequency distribution, and further in a graphical or pictorial form.

5.2.1 Raw data and data grouping

Researchers collect data adopting various methods of research. Data refers to information in the form of numerical figures or a set of given facts. Data is collected by the researcher which is in an un-organised form. This is called raw data. This data needs to be organised and interpreted. The raw data needs to be divided into various classes/groups to enhance our understanding of the same. It can then be used for further algebraic and graphical representation. Items/scores are arranged into various groups/classes in a tabular manner, on the basis of similarities. This condensed data helps to know the salient features of the data. You will now study various types of data grouping.

5.2.1.1 Individual Series

Individual series is in the form of collected data which is raw. For example, the number of trees planted by 5 students is 6, 2, 1, 3, 4. Another example of individual series is as follows.

The marks of 10 students in Sanskrit are 92, 80, 70, 88, 75, 60, 55, 90, 85 and 92. Thus, in an individual series items are listed singularly. Hence, the name 'individual series'. This can then be arranged in either ascending or descending order. When the number of items is large, this organisation of data is tedious and lengthy. Computers are a big aid in arranging large number of items in ascending or descending order for better understanding of data.

5.2.1.2 Discrete Series

When the frequency of observations is taken into consideration in order to organise



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the data, a discrete series can be prepared. A frequency table that is prepared indicates the number of scores within each group. The number of occurrences of observations for each item is noted in the form of tally, and a frequency table is prepared. Discrete series is also known as a frequency table. In this there are no class intervals, and particular item in the series is numbered. Let us understand this through the following example:

20 students of class 12 secured the following marks

10, 15, 10, 12, 16, 10, 16, 17, 15, 17, 18, 20, 15, 17, 20, 20, 15, 17, 20, 17. The table below presents this data in the form of a frequency table. Items are arranged in a descending order. The tally bar represents every single entry. The frequency is noted in front of each item to signify the number of times that item occurs in the series.

Marks	Tally bars	Frequency
10	///	3
12	/	1
15	////	4
16	//	2
17	###	5
18	/	1
20	////	4

5.2.2 Frequency Distribution For Grouped Data

In this frequency distribution, data is classified into different classes with a range. This range determines the class interval. For example 0-5, 6-10 etc. These are the class intervals in which all observations falling within the range are shown. Each item in the series is written against a particular class interval. The number of times an observation occurs is shown as frequency against the class interval. The following table offers an illustration of a frequency distribution with class intervals. For example:

Exposure to various social media sites influences a person's attitude towards physical activities like swimming, walking etc. To know this a researcher noted the number of people aged 15 - 40 years who had facebook accounts. This is shown in Table 5.2.1 which is a frequency distribution.

Table 5.2.1 Frequency distribution for
Number of people on facebook in various age groups.

Class Interval	Frequency
Age in years	Number of people on facebook
15-20	12
20-25	38
25-30	34
30-35	10
35-40	6
Total	100

From the above table you can note that in the class interval 15-20, number of people on Facebook is 12, whereas the same is 38 for range 20-25 years. This shows that the maximum number of people using facebook 38, which is in age group 20 to 25 years old. The frequency (ie number of people having facebook account) can thus be clearly seen from this frequency distribution. This helps us in comparing the various age groups with respect to facebook accounts.



INTEXT QUESTIONS 5.2

1. State whether the following statements are True or False.
 - a. Raw data is very meaningful.
 - b. The data collected by the researcher is in a raw format.
 - c. Raw data can be arranged in both ascending as well as descending order.
 - d. Discrete series is also known as individual series.
2. Fill in the blanks.
 1. The number of times a particular observation occurs is known as its _____.



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2. _____ is the group into which raw data is arranged .It consists of the lower limit and the upper limit of the class .

5.2.3 GRAPHICAL REPRESENTATION OF DATA

A frequency distribution can be represented by means of lines, curves or bars on a graph. This is a widely used technique to represent memory, learning, intelligence and many more psychological concepts and relationships. The two axis, i.e. X and Y axis are perpendicular to each other. Showing the frequency against the scores on the graph makes the data meaningful and simple to understand. Just by looking at the graph, the meaning of the observations is clear. Graphical representation acts as a visual aid and the image can be recalled with comparative ease .It also facilitates the comparison of two or more frequency distributions.

Some relevant points to be kept in mind while constructing a graph are as follows:

- The heading should be precise and suitable and should explain the nature of information presented in the graph.
- The points should be plotted from left to right on the X-axis ,and upwards from bottom to top on the Y-axis.

Some of the important types of graphical representation are considered below.

5.2.3.1 Bar Diagram

These are columns or rectangles which represent the data, or the value of the variable, in the form of bars. The following should be kept in mind while presenting the bar diagram

- A bar diagram is drawn on an X and Y axis.
- The length or height of the bars is drawn in accordance to the value of the variable. However, the breadth of each bar remains the same.
- Bars can be both vertical or horizontal. However, they are usually used in the vertical form. Bars should be equidistant from each other.
- The bars may be shaded to make them more attractive.
- Two or more sets of data may be shown in a bar diagram simultaneously. This is known as a multiple bar diagram.

For example

The following frequency distribution can be represented through a bar graph in the following manner.

Table 5.2.2 Frequency distribution for
Number of people on facebook in various age groups.

Class Interval	Frequency
Age in years	Number of people on facebook
15-20	12
20-25	38
25-30	34
30-35	10
35-40	6
Total	100

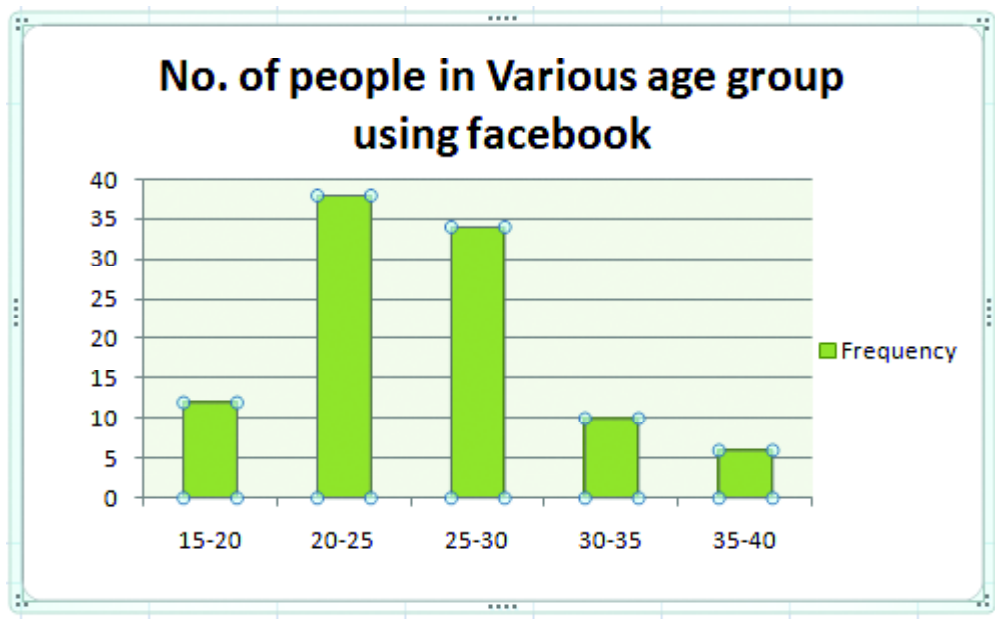


Fig 5.1 : Bar diagram showing no. of people in various age groups using facebook

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INTEXT QUESTIONS 5.4

1. State whether the following statements are True or False.
 - a. The height of bars in a bar diagram need not be equal .
 - b. When more than two sets of data is to be presented simultaneously we use the multiple bar diagram.
2. Choose the correct option from the options given below and fill in the blanks.
 - i. A bar diagram is _____.
 - a. a one-dimensional diagram.
 - b. a two dimensional diagram .
 - c. a diagram with no dimension.
 - d. none of the above
 - ii. Bars in a bar diagram can be _____.
 - a. vertical or horizontal
 - b. only drawn as lines
 - c. only horizontal
 - d. only vertical

5.2.3.2 Histogram

A histogram represents a grouped or classified data. The X- axis represents the class limits, or the class boundaries. The Y-axis shows the frequencies. The columns or rectangles are drawn by taking the X-axis as the base and the Y-axis to represent the height ,ie frequencies.

A linkmark (~~~~) may be drawn on the X axis ,to show the continuity. (when there is a gap between 0 and the first class interval) The rectangles may be shaded to give a clear understanding to the histogram. The breadth in a histogram is not arbitrary, it is determined by the class size. If the class intervals are discontinuous, they have to be changed to continuous form for a histogram to be drawn. The following frequency distribution of IQ of 30 students is followed by aHistogram representing this data.



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Class interval	Frequency
20-40	1
40-60	3
60-80	4
80-100	10
100-120	10
120-140	2

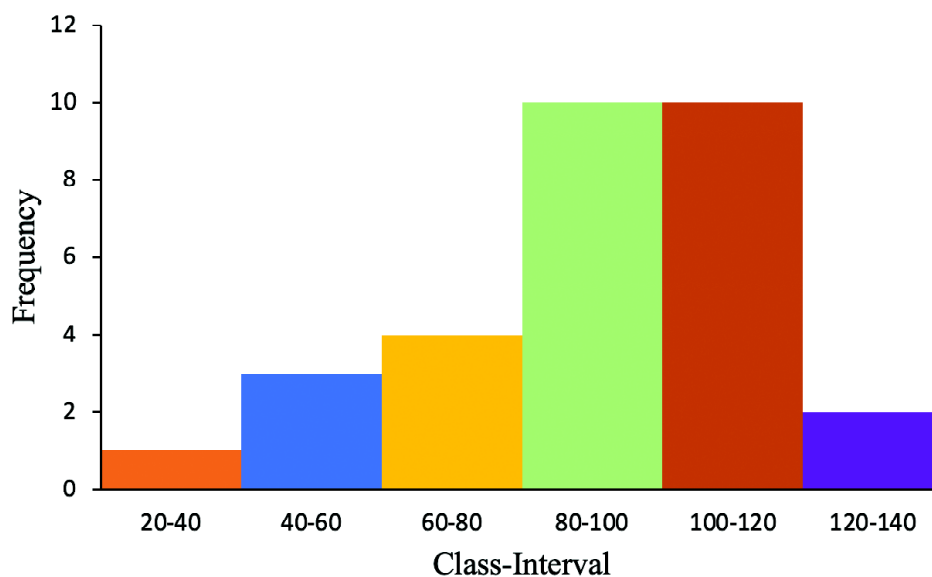


Fig 5.2 : Histogram showing marks distribution of students

5.2.3.3 Frequency Polygon

In a frequency polygon the midpoints of the class intervals are calculated and shown on the X axis. The frequencies are shown on the Y-axis. After plotting the points on the graph, they are joined by straight line segments. Both sides of the frequency polygon are extended to meet the X-axis.

Consider the following example

The following frequency distribution of marks of various students is further represented through a Frequency Polygon by joining the mid points.

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Marks	Number of students
10-20	2
20-30	5
30-40	9
40-50	8
50-60	9
60-70	10
70-80	7

We will first mark the mid points of the class interval.

(Class Interval)

Marks	Mid point	Number of students
10-20	15	2
20-30	25	5
30-40	35	9
40-50	45	8
50-60	55	9
60-70	65	10
70-80	75	7

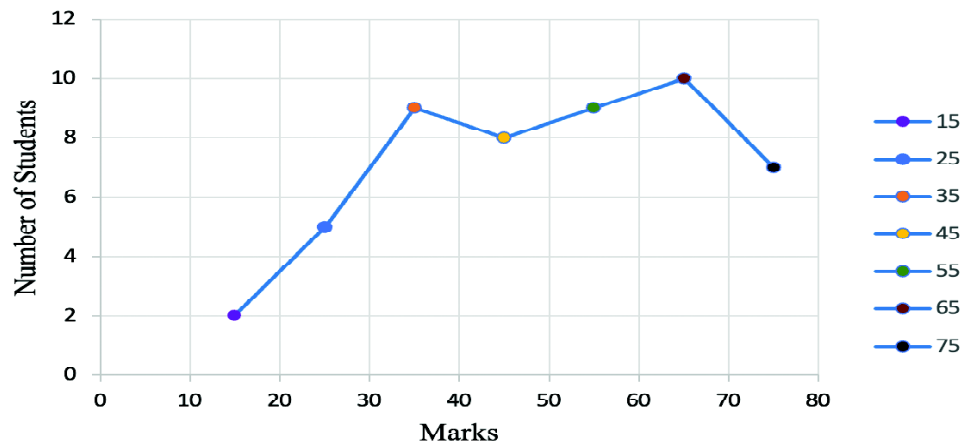


Fig 5.3 : Frequency polygon showing marks distribution of students

**INTEXT QUESTIONS 5.5**

Choose the correct option and fill in the blanks.

- (i) The breadth of columns in a histogram is determined by _____.
- frequency
 - frequency distribution
 - class size
 - all of the above
- (ii) In order to draw a histogram the class interval should be.....
- Large
 - Continuous
 - Discontinuous
 - None of the above
- (iii) In a histogram the frequency is shown as
- a circle
 - a line
 - a curve
 - None of the above
- (iv) In a _____ the mid points of the class intervals are considered.
- Bar diagram
 - Histogram
 - Frequency polygon
 - None of the above
- (v) In order to draw a frequency polygon, _____
- a histogram should be drawn.

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- b. a bar diagram should be drawn.
- c. Both, histogram and bar diagram, should be drawn.
- d. No other diagram is required.

5.2.3.4 Pie Chart

Pie chart reflects the percentage of frequencies in a particular class interval or a group. A circle is made up of four right angles and is measured as 360°. This 360 degree is also a representation of aggregate of all frequencies. In accordance with the percentage of total frequency each segment of the circle is marked. The pie chart does not show absolute values, it shows percentages.

The steps can be understood from the example below.

There are 40 children in a class . Their interest in various activities is as follows

Area of interest	Frequency (Absolute value)
Music	4
Painting	6
Theatre	8
Sports	16
Poetry	6

Now, the absolute values will be converted to percentage, which is further converted to degrees, to mark the required segment.

Interest	Frequency (Absolute Value)	Value (percentage)	Value (degree)
Music	4	10	36
Painting	6	15	54
Theatre	8	20	72
Sports	16	40	144
Poetry	6	15	54

Interest of students in various activities

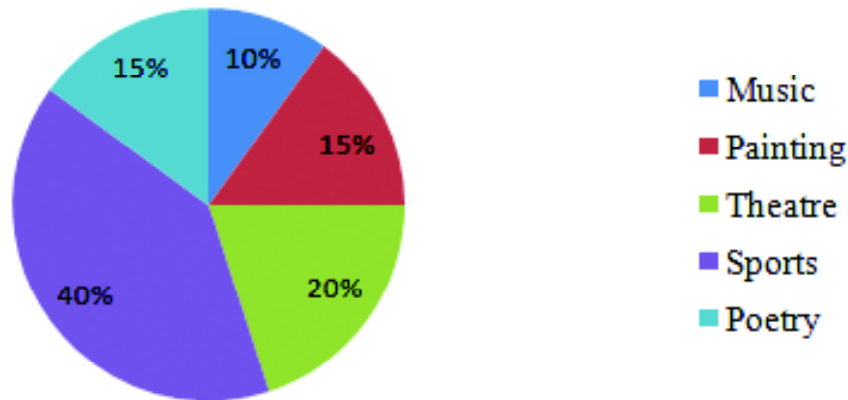


Fig 5.4 : Pie chart showing interest areas of students

Step 1

The absolute values are converted to percentage. For eg, from the table it is observed that four children, from a class of 40 children, like music. This means that 4 upon 40 into 100 is equal to 10% of children like music. Similar calculation is done for all areas of interest.

Step 2

Draw a circle and from the centre point draw perpendicular to find the value of percent score from 360 degree (ie total frequency). We will divide the persons score from hundred and multiply with 360. Thus, 10 children are interested in music which makes it 10 upon hundred into 360 is equal to 36 degrees.

A similar calculation will be done for all domains.

Step 3

Each value in terms of degree is shown on the circle. Hence from the pie chart each component is clearly visible. It can be observed that sports is of interest to 40% percent children, poetry to 15% and music is liked by only 10% of the children. The area in the circle represents each area of interest, in the right proportion.



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Limitations of graphical representation

- A small change in the scale of a graph can lead to a lot of difference in structure of the graph. Therefore, a wrong meaning is attributed to the graph.
- Actual values are mostly not clear from the graph. They just give a general tendency of the scores.
- Sometimes the graphical representation is difficult to comprehend. A layman is most likely to misinterpret it.

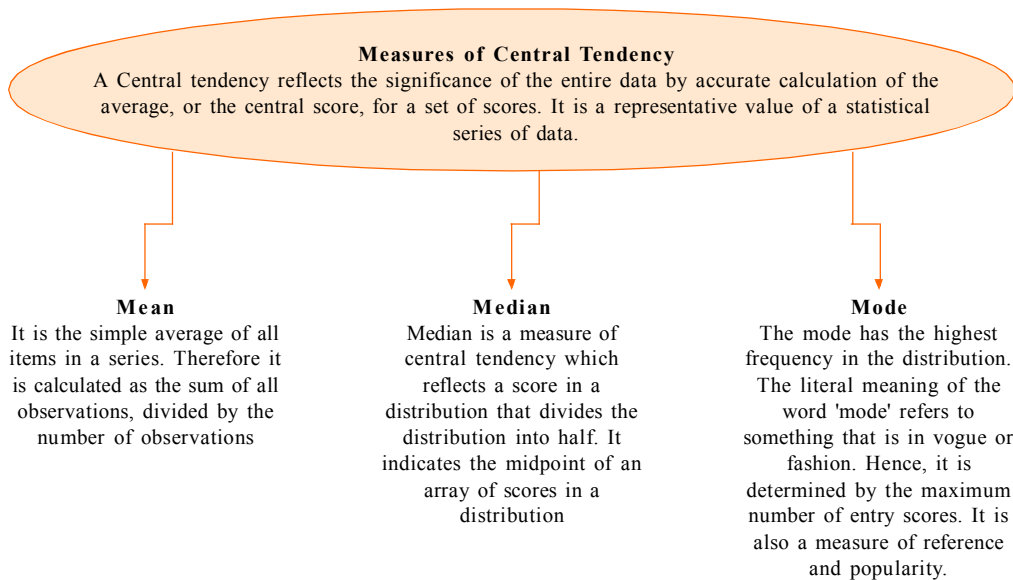


INTEXT QUESTIONS 5.6

- (i) A pie chart depicts the data as a proportional part of a (Fill in the blank).
- (ii) The largest part on the pie chart reflects the minimum frequency.(State whether True or False).



WHAT YOU HAVE LEARNT



**TERMINAL QUESTIONS**

1. Data indicating the number of months a person spends on tours, while holding a job is as follows:

3;15; 16; 4;11; 12; 13

15;16;2;6;4;13;8;11;15,16;6;7

Calculate the mean, median and mode from the above data.

2. An aptitude test was conducted for 10 students. The scores on mathematical comprehension were as follows :

10,8,6,12,8,x,2x, 2,5,7. The mean of the scores is 7. Find the value of x and 2x. Also find the median and mode of the data.

3. By the end of 2021, Facebook had many users in India. The following table shows the number of users in different age groups in a town. Construct a bar graph and pie chart using the following data.

Age groups	Number of Facebook users
0-10	0
10-20	100
20-30	95
30-40	80
40+50	75
50-60	42

4. Twenty-five students who were randomly selected were asked the approximate number of movies they watched every month. The results were as follows.

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Number of movies	Frequency(number of people)
0-1	5
1-2	8
2-3	6
3-4	3
4-5	1
5-6	2

Draw a frequency polygon and histogram of the above data.

- The people who visit the neighbouring park are mostly infants, children, college students, working adults, and retirees. The distribution shows the five age groups and the number of people in the park from each age group. Construct a pie chart showing the proportions.

Age groups	Number of people
Infants	22
Children	34
College students	10
Working-age adults	8
Retirees	26

- What are the important things to keep in mind while presenting a bar diagram?
- What is a frequency distribution for grouped data and how is it classified into different classes?
- What is the formula for calculating the mean of a statistical series of data?
- What are the characteristics of the median as a measure of central tendency? How the median is affected by extreme scores and is it possible to determine the median when the data is incomplete?
- What are the characteristics of mode as a measure of central tendency and why is it important?



ANSWERS TO INTEXT QUESTIONS

5.1

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

5.2

Mean = 2.6 Median = 3 Mode = 3

5.2.1

- a. False
- b. True
- c. True
- d. False

5.2.2

- a. frequency
- b. Class interval

5.2.3

- a. True
- b. True

5.2.4

- i. a. one dimensional diagram
- ii. a. vertical or horizontal

5.2.5

- i. c. class size
- ii. b. continuous
- iii. d. none of the above
- iv. c. frequency polygon
- v. d. No other diagram is required.

5.2.6.

- i. Circle
- ii. False



Notes

MODULE -2

Basic Psychological Processes

To make the learners aware about how information gathered through different sense modalities influences attention and perception, and the laws that govern these processes. The learners will also become aware of how learning and memorisation take place and the influences on these underlying processes. The learners will understand how and why forgetting takes place, along with techniques of enhancing memory. The students will become aware of motivation as extrinsic and intrinsic and how different needs and aspirations the process of achievement and effort. They will also understand how emotions facilitate our well being and will learn to manage emotions better. This module will introduce them to thinking processes and the role of language.

6. Attention and Perceptual Processes
 7. Learning
 8. Human Memory
 9. Motivation
 10. Emotions
 11. Thinking and Problem
-



Notes

ATTENTION AND PERCEPTUAL PROCESSES

Remember the first time you went to a movie hall? What did you experience when you entered the hall? Did you enjoy watching all the images, light and sound being flashed on the screen before you? Did you wonder how you could feel, see and experience everything which was not actually there?

This is an activity for you to understand yourself

1. Think how far away a candle should be for you to see its flame on a clear, dark night?
2. How much salt you would need to add to 500 liters of water so that you can taste it?
3. In an average three-room home, how much room freshener will be needed to diffuse through?
4. How far should you stand to be able to hear the ticking of a clock in very quiet conditions? (answers given at the end of the chapter)
5. What kind of visual cues do we need to judge distance and depth?
6. How can TV commercials inspire you to buy the product? What makes the advertisement so appealing?



LEARNING OUTCOMES

After studying this lesson, learner :

- describes attention, sensation and perception;

Basic Psychological Processes



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- differentiates between laws of perceptual organization;
- applies cues of depth perception in the real world; and
- identifies what are illusions and understand what is Extra Sensory Perception.

You must have read about the sense organs and how sensations are received by the body. These sensations are like the window to the outside world- receiving information continuously. However, all sensations are not attended all the time. As you walk down the road there are different stimuli which arouse different sensations- like the aroma of a hot samosa or the sight of a colourful kite in the air or even the feel of the wind in your face and maybe the voices of the vendors calling out to sell their wares. All these stimuli are impinging upon different sense receptors but it is only few that we actually pay ‘attention’ to. How do we distinguish between good and not so good wares, aromas or colours? Some people like one set of colours, others do not – so what is it that makes us ‘perceive’ the stimuli that we receive? We need to understand this process, called Perception. Our perceptual processes are the tools that we use to understand the innumerable sensations which we experience all the time.

6.1 WHAT IS ATTENTION?

As you watch the Republic Day parade or remember your physical training sessions at school, the first thing you are taught to respond to is ‘Attention’!

The moment this command is used, we become attentive- which is a state of vigilance, alertness and focus – when you ‘ready’ yourself. Thus the process through which you pick up certain stimuli from a group of others is generally referred to as attention. It is a central process and perception may not take place if you do not attend to the stimuli. Thus, attention precedes perception. The process of attention helps organize perceptions and other cognitive functions. The functions of attention include:

1. **Alerting Function:** In this state there is a complete physiological and mental preparedness. For example- when waiting for orders, the parade waits for further instructions from the platoon commander.
2. **Selective Function:** Here one selects the object of attention. It may be noted that it is not possible to pay attention to more than one thing at a time. Can we attend to more than one thing at a time?

In everyday life we seem to attend to several things at the same time. You may have seen people driving a car and talking to a friend or attending to phone calls on a mobile while listening to music. If you notice there is more effort to driving



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than to other activities, even though some attention is given to other activities. It means that sometimes attention can be given to more than one thing; However, this happens only *with highly practiced activities*, because one activity then becomes almost automatic and does not require so much attention. This process is then called **automatic processing** which has three main characteristics.

- (i) It occurs without intention,
 - (ii) It takes place unconsciously, and
 - (iii) It involves very little (or no) thought processes (e.g., we can read words or tie our shoelaces without giving any thought to these activities).
3. **Limited Capacity:** There is only a selected number of articles or stimuli that one can attend to. For example, you see so many things on the class blackboard but you choose to notice or pay attention to only few.
4. **Vigilance:** Paying attention to a task continuously, for a long time, like looking at a screen at the ATC (Air Traffic Control), is called vigilance or sustained attention. It has been found that attending to a task for long is taxing, particularly if the task is monotonous and it can lead to decrease in performance.



HOW DO YOU

Explain The Nature Of Attention?

Attention has a focus as well as a fringe.

When the field of awareness is centred on a particular object or event, it is called focus or the focal point of attention. But when the objects or events are away from the centre of awareness and one is only aware of them in the periphery-they are said to be at the fringe of attention.

Eg stare at- E

Now you notice what else is surrounding this alphabet- edge of the paper, desk, or those in the back ground....

6.1.1 Classification of Attention

Attention has been classified in a number of ways. A process-oriented view divides it into two types, namely *selective* and *sustained*.

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Selective Attention

Selective attention is concerned mainly with the selection of a limited number of stimuli or objects from a large number of stimuli. It means that at any moment we focus our awareness only on a limited aspect of all that we are capable of experiencing. Example listening to a class teacher over other sounds coming in through the corridor. You block information coming from periphery (fringe).

Another example of selective attention is to attend to only one voice amongst many. While talking to a group of people at a party, if someone in the far corner of the room utters your name in a conversation, you are still able to attend to it even though you are not engaged in that conversation. This is called cocktail party effect, a term that was coined by the English cognitive scientist Colin Cherry in 1953, and refers to our ability to focus our attention on a particular person's voice amongst other voices and background noise.

Since our perceptual system has a limited capacity to receive and process information, it can deal only with a few stimuli at a given moment of time. Which of these stimuli will get selected and processed? Psychologists have identified a number of factors that determine the selection of stimuli.

Sustained Attention

While selective attention is mainly concerned with the selection of stimuli, sustained attention is concerned with concentration. It refers to our ability to maintain attention on an object or event for longer durations. It is also known as "vigilance" as discussed above. Sometimes people have to concentrate on a particular task for many hours. Air traffic controllers and radar readers provide us with good examples of this phenomenon. They have to constantly watch and monitor signals on screens. The occurrence of signals in such situations is usually unpredictable, and errors in detecting signals may be fatal. Hence, a great deal of vigilance is required in those situations.



INTEXT QUESTIONS 6.1

1. The process of selection of few/certain stimuli over the others is called ____.
2. ____ in this state there is a complete physiological and mental preparedness to receive information.
3. Nature of attention includes ____ and ____.

4. There are two types of attention ____ and ____.
5. The term _____ was coined by the English scientist Colin Cherry in 1953.

You must be thinking why we pay attention to some stimuli and not to others. These are the factors which we will discuss now.

6.1.2 Factors Affecting Selective Attention

Several factors influence selective attention. They are generally classified as “**external**” and “**internal**” factors.

External factors / Outer / Physical factors

These factors are determined by the features of stimuli so they are called external factors. Other things held constant, the **size**, **intensity**, and **motion** of stimuli appear to be important determinants of the selection of stimuli to which we attend to.. Large, bright, and moving stimuli easily catch our attention. Stimuli, which are **novel** and moderately **complex**, also easily get into our focus. Studies indicate that **human photographs** are more likely to be attended to than the photographs of inanimate objects. Similarly, **rhythmic auditory stimuli** are more readily attended to than verbal narrations. **Sudden and intense** stimuli have a wonderful capacity to draw attention. These factors pertain to particular aspects of objects which are inherent in objects also called objective factors.

a. Movement

A moving object draws our attention more easily than a stationary object. For example, flickering lights draw our attention more than non-flickering lights. Ambulance, police cars, fire brigades use flickering and flashing lights to attract attention.

b. Intensity

More intense light, sound or smell draws our attention easily than the less intense one. For example, a neon sign is noticed more than a normal intensity light, or a very loud sound is noticed more over a normal sound.

c. Novelty

New kinds of objects draw our attention quickly. Advertising agencies adopt



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this technique very effectively, for example, by adding the latest and new features to a phone, fridge, fan or cooler or air-conditioners.

d. Size

A bigger or a smaller object draws attention of people very easily than an average sized object. For example, a small advertisement on a full page will draw more attention or a big hoarding or banner.

e. Change

Any change in our environment draws our attention quickly. For example, regular sound of a moving clock does not draw our attention, but the movement it stops, our attention is drawn to it, a radio playing songs stopping due to electricity failure draws our attention.

f. Repetition

When a stimulus is presented repeatedly our attention is drawn, for example, repeated horn of a fire brigade or ambulance, jingles in advertisements.

g. Clarity

An object or sound which can be experienced clearly draws our attention more than the stimuli which are not clear. For example, the shrill sound of a siren on the road always draws our attention.

h. Colours

Colourful objects draw our attention more easily than black or white objects. Advertisers use this continuously by showcasing bright colours.

i. Contrast

An object that is strikingly different from its background draws our attention. For example: Stains of curry or ink on a white shirt.

Internal Factors / Psychological Factors

These are the factors that lie within the individual. They are dependent on the need, interest and emotion of the person.

a. Need

A need would be related to our biological or psychosocial needs. When we are hungry, we notice even a faint smell of food or when we are hot and thirsty our

attention is drawn towards water or a cold beverage. For example, a student taking an examination is likely to focus on the teacher's instructions more than other students.

b. Interest

Objects or events, which appear interesting, are readily attended to by individuals. For example, whilst shopping a sportsperson will be attracted towards display windows wherein sports goods are placed, whereas an MS Dhoni fan will immediately pay attention to his match if it is playing on television.

c. Emotional state

Attention is affected during an emotional state. For example, when a person is highly excited at a jubilant event, he or she is not aware of others in the vicinity; may not listen or understand what others say.



INTEXT QUESTIONS 6.2

Complete the sentences given below

1. Internal factors of attention are also called ___ factors.
2. The internal factors that can draw our attention are: ____, ____ and ____.
3. During festivals the movement of lights on shops is an example of __ factor of attention.
4. If we suddenly pay attention to the electricity when there is a sudden power breakdown, it is an example. of _____ factor of attention.



ACTIVITY

Identify any two settings/events in your surrounding which would qualify as sustained and selective attention.

6.2 UNDERSTANDING THE ROLE OF SENSATION IN PERCEPTION

Sensation is the activation of sensory receptors by environmental stimuli.

To consider how psychologists understand the senses, and more broadly, sensation and perception, we need to define the two: sensation is the activation of the sense



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organs by a source of physical energy while perception is the organisation, interpretation, analysis, and integration of stimuli carried out by the sense organs and brain.

The process by which we recognise, interpret or give meaning to the information provided by sense organs is called perception.

The processes involved in transforming sensation to perception is called 'Transduction'.

In this process the stimulus energy (e.g., light, sound or fragrance) is converted into neural energy.

Perception is a constructive process as we go beyond the stimulus and try to find meaning in it. While interpreting stimuli or events, individuals often construct them in their own ways based on their previous experiences, their needs and emotions. Perception is thus not merely an interpretation of objects or events of the external or internal world as they exist; instead it is also a construction of those objects and events from one's own point of view.



What Makes Us Perceive Our World In A Meaningful Form?

The process of organising visual field into meaningful wholes is known as **form perception**. Several psychologists have tried to answer this question, but the most widely accepted answer has been given by a group of researchers called Gestalt psychologists.

6.2.1 Laws of Perceptual Organization

Some of the most basic perceptual processes can be described by a series of principles that focus on the ways we organize bits and pieces of information into meaningful wholes.

Known as **Gestalt laws of Organization**, these principles were put forth in the early 1900s by a group of German psychologists who studied patterns, or gestalts. Prominent among them are Köhler, Koffka, and Wertheimer. Gestalt means a regular figure or a form. According to Gestalt psychologists, we perceive different stimuli not as discrete elements, but as an organised "whole" that carries a definite form.

The Gestalt psychologists also indicate that the cerebral processes are always oriented

towards the perception of a **good figure or pragnanz**. That is the reason why we perceive everything in an organised form.

The most primitive organisation which takes place in the form of **figure-ground segregations** can be seen in the given pictures.

Apart from Figure and Ground a number of other principles are found to be valid for visual (as well as auditory) stimuli as can be seen in the figure below, namely: closure, proximity, similarity, continuity and symmetry.



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6.2.2 Principles of Perceptual Organisation

Proximity: Objects that are close together in space or time are perceived as belonging together or as a group.

Similarity: Objects that are similar to one another and have similar characteristics are perceived as a group. In the given figure the little circles and squares are placed close together yet we tend to perceive squares and circles independently.

Continuity: This principle states that we tend to perceive objects as belonging together if they appear to form a continuous pattern. For instance, we are more likely to view the lines crossing over.

Symmetry: This principle suggests that symmetrical areas tend to be seen as figures against asymmetrical backgrounds.

Closure: We tend to fill the gaps and perceive the objects as whole rather than their separate parts. The small angles are seen as a triangle due to our tendency to fill the gaps in the object provided.



INTEXT QUESTIONS 6.3

Match the correct statements:

- | | |
|--|--------------|
| 1. We perceive objects as whole rather than their parts. | A. Proximity |
| 2. We are more likely to view the lines crossing over instead of independent subsets. | B. Closure |
| 3. Objects similar to one another and have similar characteristics are perceived as a group. | C. Symmetry |

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- 4. Objects that are close together in space are perceived as belonging together or as a group. D. Continuity
- 5. Symmetrical areas tend to be seen as figures against asymmetrical backgrounds. E. Similarity

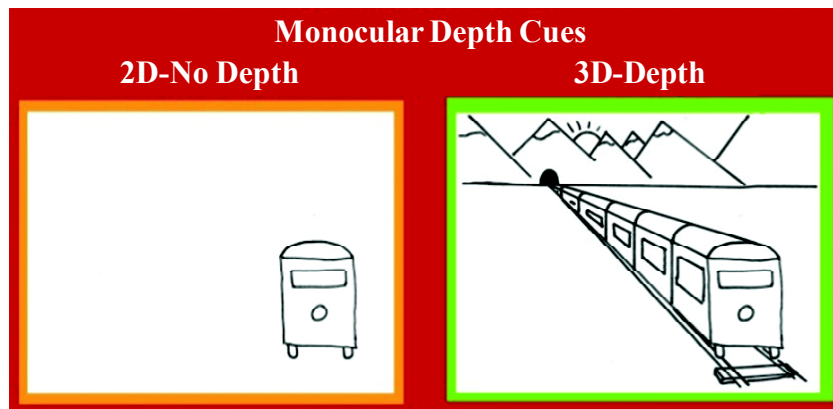
6.2.3 Depth Perception

The visual field or surface where things exist is called space. The space in which we live is organised in three dimensions. We perceive not only the spatial attributes (e.g., size, shape, direction) of various objects, but also the distance between the objects found in this space. While the images of objects projected on to our retina are flat and two dimensional (left, right, up, down), we still perceive three dimensions in the space. Why does it happen so?

The process of viewing the world in three dimensions is called **distance or depth perception**. Depth perception is important in our daily life. In perceiving depth, we depend on two main sources of information, called cues. One is called **binocular cues** because they require both eyes. Another is called **monocular cues**, because they allow us to perceive depth with just one eye.

Monocular Cues (Psychological Cues)

Monocular cues of depth perception are effective when the objects are viewed with only one eye. These cues are often used by artists to induce depth in two dimensional paintings. Hence, they are also known as pictorial cues.



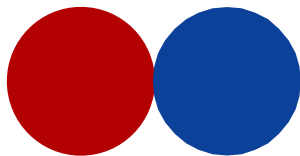
Relative Size: The size of retinal image allows us to judge distance based on our past and present experience with similar objects. As the objects get away, the retinal image

becomes smaller and smaller. We tend to perceive an object farther away when it appears small, and closer when it appears bigger.

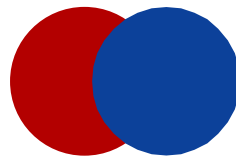


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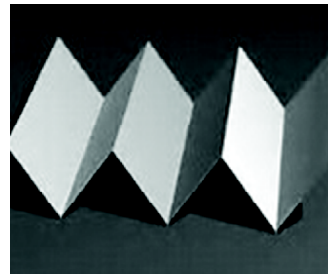
Interposition Or Overlapping: These cues occur when some portion of the object is covered by another object. The overlapped object is considered farther away, while the object that covers it appears closer.



Two objects side by side have no depth



Two objects that overlap add depth even though the objects represented here are in fact two-dimensional



Linear Perspective: This reflects a phenomenon by which distant objects appear to be closer together than the nearer objects. For example, parallel lines, such as rail tracks, appear to converge with increasing distance with a vanishing point at the horizon. The more the lines converge, the farther away they appear.



Aerial Perspective: The air contains microscopic particles of dust and moisture that make distant objects look hazy or blurry. This effect is called aerial perspective. For example, distant mountains appear blue due to the scattering of blue light in the

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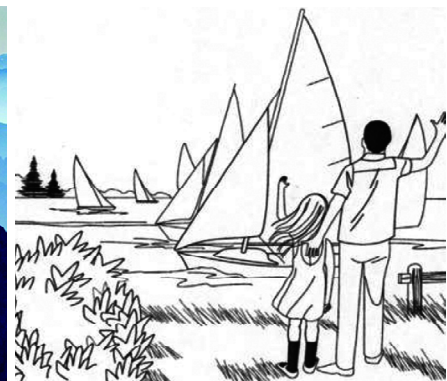
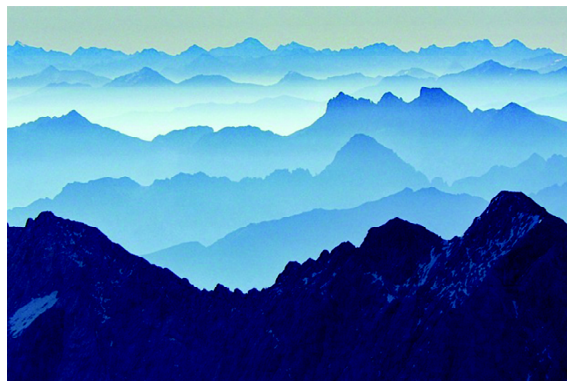
atmosphere, whereas the same mountains are perceived to be closer when the atmosphere is clear.



Light and Shade: In the light some parts of the object get highlighted, whereas some parts become darker. Highlights and shadows provide us with information about an object’s distance and depth.

Relative Height: Larger objects are perceived as being closer to the viewer and smaller objects as being farther away. When we expect two objects to be the same size and they are not, the larger of the two will appear closer and the smaller will appear farther away.

Texture Gradient: It represents a phenomenon by which the visual field having more density of elements is seen farther away.



Motion Parallax: It is a kinetic monocular cue, and hence not considered as a pictorial cue. It occurs when objects at different distances move at a different relative speed. The distant objects appear to move slowly than the objects nearby. The rate of an object’s movement provides a cue to its distance. For example-while traveling in a

bus, objects that are closer move “against” the direction of the bus, whereas objects that are further away move in the same direction as the bus.



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Binocular Cues (Physiological Cues)

Some important cues to depth perception in three dimensional spaces are provided by both the eyes. Three of these are:

Retinal Or Binocular Disparity: Retinal disparity occurs because the two eyes have different locations in our head. They are separated from each other horizontally by a distance of about 6.5 centimetres. Because of this distance, the image formed on the retina of each eye of the same object is slightly different. This difference between the two images is called retinal disparity. The brain interprets a large retinal disparity to mean a close object and a small retinal disparity to mean a distant object, as the disparity is less for distant objects and more for the near objects.

Convergence: When we see a nearby object our eyes converge inward in order to bring the image on the fovea of each eye. A group of muscles send messages to the brain regarding the degree to which eyes are turning inward, and these messages are interpreted as cues to the perception of depth. The degree of convergence decreases as the object moves further away from the observer. You can experience convergence by holding a finger in front of your nose and slowly bringing it closer. The more your eyes turn inward or converge, the nearer the object appears in space.

Accommodation: Accommodation refers to a process by which we focus the image on the retina with the help of ciliary muscle. These muscles change the thickness of the lens of the eye. If the object gets away (more than 2 meters), the muscle is relaxed but as the object moves nearer, the muscle contracts and the thickness of the lens increases. The degree of contraction of the muscle is sent to the brain, which provides the cue for distance.

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INTEXT QUESTIONS 6.4

Answer true or false:-

1. Depth perception is the ability to see the world in three dimensions.
2. There are two types of cues for depth perception: overt and covert.
3. Other names for the two types of cues are physiological and psychological cues.
4. We perceive the world in three dimensions even though the sensation is in two dimensions.



ACTIVITY

Draw a scenery to show at least three cues of depth perception.

6.3 PERCEPTUAL CONSTANCY

What happens as you say bye to a friend and the person begins to walk away from you. As you watch the person, the image on your retina becomes smaller and smaller. Do you wonder why the individual is shrinking? No never. Despite the change in the size of the retinal image, perceptual constancy allows you to think that your friend is moving farther away from you. Perceptual constancy is a phenomenon in which physical objects are perceived as unvarying and consistent despite changes in their appearance or in the physical environment. Perceptual constancy leads us to view objects as having an unvarying size, shape, color, and brightness, even if the image on our retina varies. For example, despite the varying images on the retina as aircraft approaches, flies overhead, and disappears, we do not perceive the airplane as changing in shape.

Perception of the objects as relatively stable in spite of changes in the stimulation of sensory receptors is called perceptual constancy.

1. Size Constancy

The size of an image on our retina changes with the change in the distance of the object from the eye. The further away it is, the smaller the image is. On the other hand, our experience shows that within limits the object appears to be about the same size irrespective of its distance. For example, when you approach your

friend from a distance, your perception of the friend's size does not change much despite the fact that the retinal image (image on retina) becomes larger. This tendency for the perceived size of objects to remain relatively unchanged with changes in their distance from the observer and the size of the retinal image is called size constancy.



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2. Shape Constancy

In our perceptions the shapes of familiar objects remain unchanged despite changes in the pattern of retinal image resulting from differences in their orientation. For example, a dinner plate looks the same shape whether the image that it casts on the retina is a circle, or an ellipse, or roughly a short line (if the plate is viewed from edge). It is also called form constancy.



3. Brightness Constancy

Visual objects not only appear constant in their shape and size, they also appear constant in their degree of whiteness, greyness, or blackness even though the amount of physical energy reflected from them changes considerably. In other words, our experience of brightness does not change in spite of the changes in the amount of reflected light reaching our eyes. The tendency to maintain apparent brightness constant under different amount of illumination is called brightness constancy. For example, surface of a paper which appears white in the sunlight, is still perceived as white in the room light. Similarly, coal that looks black in the sun also looks black in room light.

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INTEXT QUESTIONS 6.5

Answer with one- two words:-

1. Why does our experience of brightness not change despite changes in the amount of reflected light reaching our eyes?
2. The image of a coin looks different from every angle, yet we perceive it as flat and round. Why does it happen? Give reasons.
3. A red apple looks the same bright red even if it is in a dark room; what is the psychological phenomenon behind it?

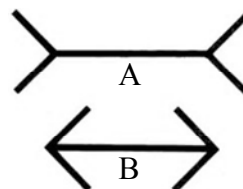
6.4 ILLUSIONS

Sometime we are unable to interpret the sensory information correctly. This results in a mismatch between the physical stimulus and its perception. **These misperceptions resulting from misinterpretation of information received by our sensory organs are generally known as illusions.** Illusions can be experienced by the stimulation of any of our senses. Psychologists have studied visual illusions more commonly than other sense modalities. Some perceptual illusions are *universal* and found in all individuals. For example, the rail tracks appear to be converging to all of us. These illusions are called universal illusions or permanent illusions as they do not change with experience or practice.

Some other illusions seem to vary from individual to individual; these are called *personal illusions*.

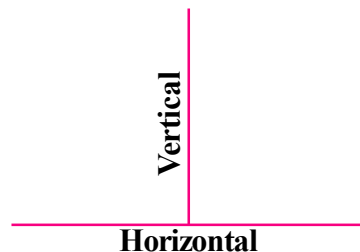
1. The Muller-Lyer Illusion

Line A is perceived as shorter than line B, although both the lines are equal. This illusion is experienced even by children and some studies suggest that even animals experience this.

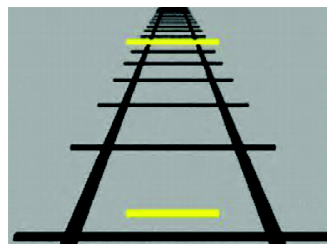


2. Illusion Of Vertical and Horizontal Lines

Although both the lines are equal, we perceive the vertical line as longer than the horizontal line.

**3. Ponzo Illusion**

The Ponzo illusion is a geometrical-optical illusion that was first demonstrated by the Italian psychologist Mario Ponzo in 1911. He suggested that the human mind judges an object's size based on its background. He showed this by drawing two identical lines across a pair of converging lines, similar to railway tracks. The upper line looks longer because we interpret the converging sides according to linear perspective as parallel lines receding into the distance. In this context, we interpret the upper line as though it were farther away, so we see it as longer – a farther object would have to be longer than a nearer one for both to produce retinal images of the same size.

**4. The Zöllner Illusion**

The Zöllner Illusion was created by Johann Karl Friedrich Zöllner (1834 - 1882), a German astrophysicist with a keen interest in optical illusions. Zöllner was inspired by a cloth pattern that he observed in his father's factory, and first published the illusion in the journal *Annalen der Physik* 1860. The Zöllner Illusion is one among a number of illusions where a central aspect of a simple line image – e.g. the length, straightness, or parallelism of lines – appears distorted in virtue of other aspects of the image – e.g. other background/foreground lines, or other intersecting shapes. These are sometimes called 'geometrical-optical illusions'



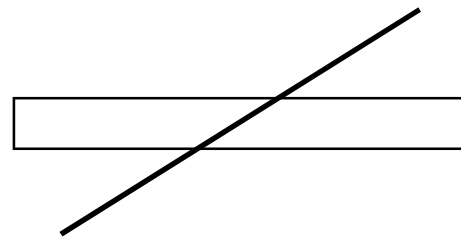
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5. The Poggendorff Illusion

It is named after Johann Poggendorff (1796-1877), a German physicist who first described it in 1860. Poggendorff noted that the diagonal lines in the pattern of fabric appeared to be misaligned.



6. Apparent Movement Illusion

This illusion is experienced when some motionless pictures are projected one after another at an appropriate rate. This illusion is referred to as “phi-phenomenon”. When we see moving pictures in a cinema show, we are influenced by this kind of illusion. The succession of flickering electrical lights also generates this illusion. For the experience of this illusion, Max Wertheimer had reported the presence of appropriate level of brightness, size, spatial gap, and temporal contiguity of different lights.



INTEXT QUESTIONS 6.6

Fill in the gaps:

1. Some perceptual illusions are _____ and found in all individuals. For example, the rail tracks appear to be converging to all of us.
2. Some other illusions seem to vary from individual to individual; these are called _____ *illusions*.

3. When we see moving pictures in a cinema show, we are influenced by this kind of illusion. This is called the ___ - ____.



ACTIVITY

Draw two parallel lines of exactly the same length. Put an arrowhead on one and a feather head on the other. Show to people around you and find out which line appears bigger/ longer.

Is There Perception Without Sensation? Extrasensory Perception

Extra Sensory Perception (ESP) refers to such abilities of people which do not include the usual sensory organs, but an abstract sixth sense. Such abilities include knowing something ordinary people cannot know, communicating with people who are not in the immediate surroundings, knowing about events happening in distant places or about the future events that are going to take place. There are three types of ESPs. They are telepathy (connecting to people which are not around at that point of time), clairvoyance (being aware of such things which most of the others are not), and precognition (awareness of future events). For example, have you heard of Baba Vanga, a mystic who was famous for predicting the future events, or do you know about Lorraine Warren, the famous demonologist, was a gifted clairvoyant too. Like them, many people have such abilities to see, predict or feel things without any direct input from the usual sensory organs. Psychologists are particularly sceptical of reports of extrasensory perception. However, due to the difficulty of observing this procedure objectively, researchers feel that this concept cannot be studied using the traditional scientific methods and that the experimental findings in this area are unreliable and inaccurate. Most psychologists reject the existence of ESP. Thus, this topic usually gets slipped into the area of pseudo-psychology and still remains on the periphery of the mainstream of Psychology.



Notes

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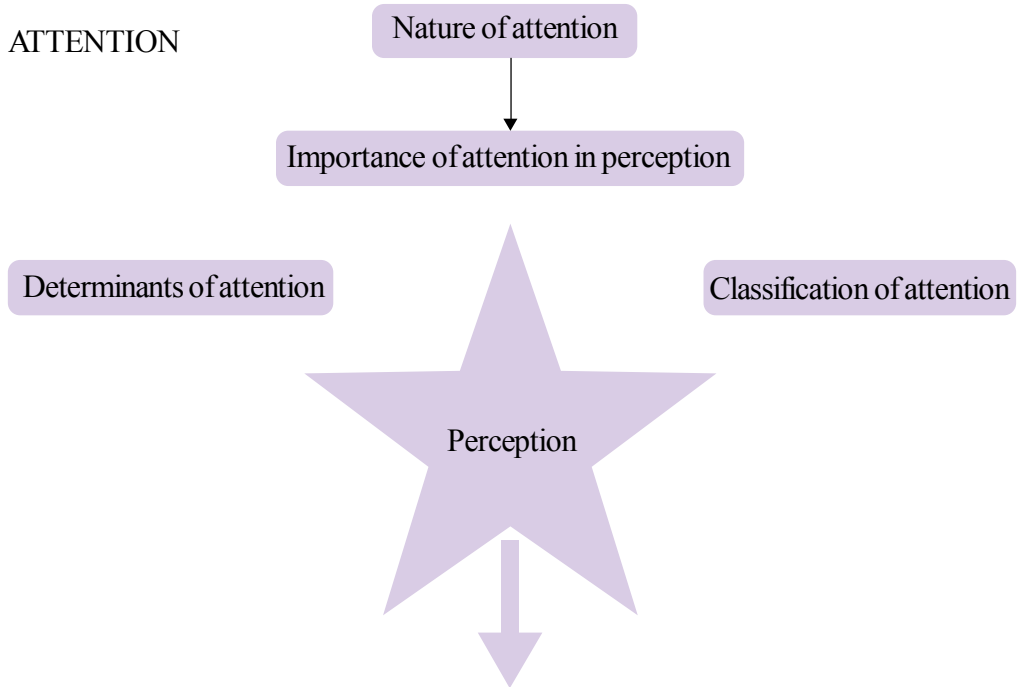


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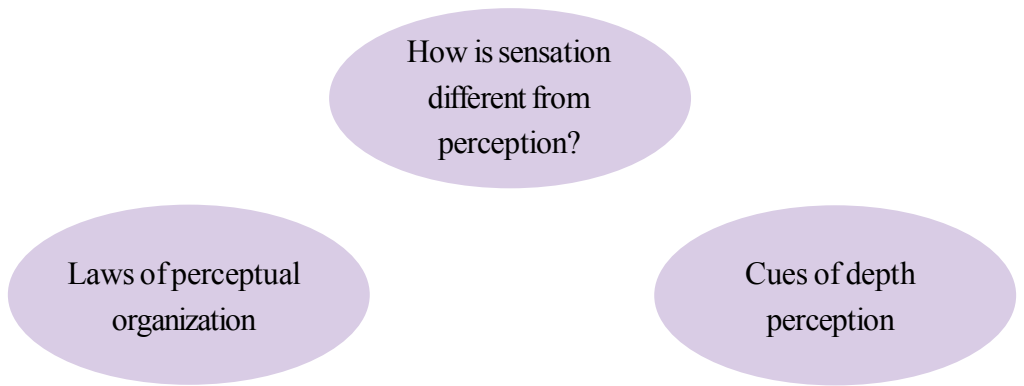


WHAT YOU HAVE LEARNT

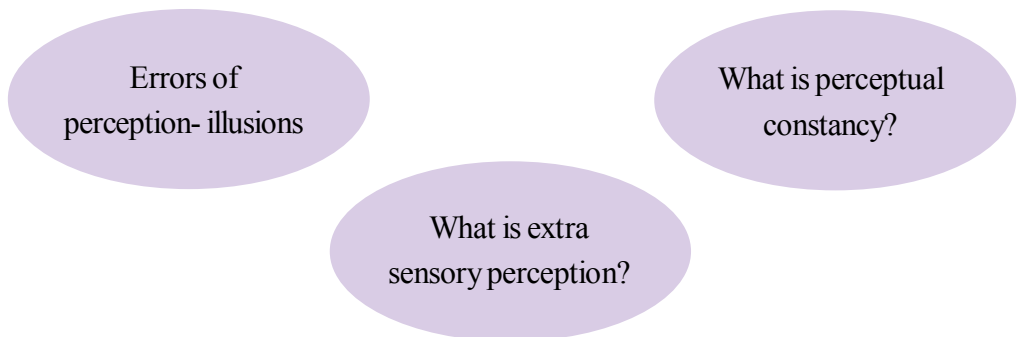
ATTENTION



SENSATION AND PERCEPTION



ERRORS IN PERCEPTION





TERMINAL QUESTIONS

1. Distinguish between selective and sustained attention.
2. Enumerate the laws of perceptual organization.
3. The retinal image of the world is only two dimensional- yet why do we perceive the world in three dimensions? Explain.
4. What is perceptual constancy? Explain with your own examples.
5. Describe any three illusions.
6. Differentiate between sensation and perception.
7. What are the different internal and external factors affecting selective attention
8. What were the contributions of the Gestalt psychologists?
9. Explain ESP. Why many psychologists reject the existence of ESP?
10. While perceiving depth what are the two main sources of information we depend upon?



Notes



ANSWERS TO INTEXT QUESTIONS

5.1

1. Attention
2. Alerting function
3. Fringe and focus
4. Sustained and selective
5. Cocktail party effect

5.2

1. Physical
2. Need, interest and emotional state.
3. Movement

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4. Change

5.3

1. B

2. D

3. E

4. A

5. C

5.4

1. True

2. False

3. True

4. True

5.5

1. Brightness constancy

2. Shape constancy

3. Brightness constancy

5.6

1. Universal

2. Personal

3. Phi Phenomena



Notes

LEARNING

It is expected that by now all of you can define the term Psychology and the related concepts like Attention and Perception. Your understanding about the various concepts is possible because you have been learning about all these in your previous lessons. Is it possible for a four year old child to read and write in the same manner as you do? Probably not, because the young child has not started reading and writing. However, the same child is able to communicate his/her needs to the parents and get his/her favourite toy. This is possible because by four years the child has learnt how to get what he/she wants. Learning is an indispensable part of every beings life. Not only humans but animals also surprise us the way they learn and acquire skills.

It is our past knowledge only that makes us adapt to the surrounding environment. It is learning that helps us carry forward our traditions and customs. You are able to comprehend what is written because it is the result of your learning over the years. Whatever we do comes out of our learning. However, all the more important is how we learn? This lesson focuses on developing an understanding about learning and the process of learning as well as various other aspects that are related to learning.



LEARNING OUTCOMES

After studying this lesson, learner :

- explains the nature of learning;
- elaborates the different types of learning;
- describes the ways in which learning gets transferred; and
- applies various principles of learning on one's own.

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7.1 NATURE OF LEARNING

Learning is “a process that leads to change, which occurs as a result of experience and increases the potential for improved performance and future learning” (Ambrose et al, 2010, p.3). Let us understand with the help of some examples.

- A child cleans the room after playing and the mother hugs him/her
- You do well in your assignment and this results in appreciation
- You went to the market and ate something that resulted in severe abdominal pain.
- You bring a basket of fruits from the market and realize that all the fruits at the bottom of the basket are rotten.

What according to you is the probability that these behaviours will be repeated in future?

While if we consider the first two situations then chances are that the behaviours will be repeated, whereas, the other two events indicate that we will avoid repeating behaviours where we feel being hurt or cheated.

You can have a lot of other examples from your daily life where you experience such things and you will realise that the behaviours which bring us pleasure are usually repeated and behaviours which bring us pain in any manner are avoided.

Think about a mistake that you made in the past and do not repeat the same in the future.

We acquire most of our behaviours through the process of learning. The desirable behaviours with effective outcomes are repeated and the undesirable behaviours with ineffective outcomes are avoided. (By desirable behaviour we mean anything that would bring in positive results).

So, learning is a change in behaviour based on positive and negative outcomes.

“Learning is any relatively permanent change in behaviour that results from practice.”
Weiss (1990)

The above discussion focuses on the fact that experience is the key feature of learning. In order to learn something, practice and experience are important. This is the process that we have been following for learning. Whether it is reading, writing, talking in public, making food or dancing among other things.



ACTIVITY

When you go to attend your Personal Contact Programme classes observe the possible reaction of the tutor when learners raise questions in the class:

The possible reactions can be:-

Your tutor:-

- listens patiently and answers the questions
- gets irritated and refuses to answer
- encourages learners to raise more questions
- scolds the learner for raising the question and disturbing the class
- appreciate the learner and asks him to wait till the topic is finished
- gets annoyed to the extent that ask the learner to leave the class

Make a note of the impact of different reactions of tutor on learner's behaviour of raising questions in future.

It is important for you to know that any change in behaviour that occurs in the absence of practice or experience does not qualify as learning. There are some behaviours that are exhibited not as a result of experience and practice but they occur because of development and maturation. For example, how an infant learns to sit or crawl. These developmental changes are a result of healthy development of the nervous system, spinal cord and brain.

Apart from maturational changes, there are instinctive behaviours in animals that just happen as a result of species-specific behaviour, for example, spiders making a web. Such behaviours do not require experience and practice.

Hence, by now it is clear to you that the change in behaviour that occurs as a result of development, maturation and instincts cannot be called learnt behaviour.

Now let us try to understand learning from a different perspective.

Can you recall any situation from your life where you realized that it would be difficult for you to adjust to the surrounding environment without learning a few skills?

According to B.F. Skinner learning is defined as a process of progressive behaviour adaptation".

Many of us today have started relying on the use of information and communication technology (ICT) for a lot of things. Your self-learning material is available online, you

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can watch your lectures on SWAYAM (MOOCs) or SWAYAM PRABHA channel. Moreover, you do not have to stand in long queues to deposit your fees. This is possible because all of us have learnt to work with the computer system and make use of online available resources. We can have many more examples from our daily life that makes it clear that in order to adapt to the environment we are progressively changing our behaviours, whether it is a child who first learns to speak and then show marked changes in the ability to communicate, a person who has to learn to work on the computers because it is his/her job requirement or our ability to deal with the social world around us through social networking sites, learning to adapt with a peer group, current fashion trends, adapting to technology and many more.

Hence, learning also helps us in acquiring new knowledge and adapting to the environment.



INTEXT QUESTIONS 7.1

1. Define the concept of learning.
2. Differentiate between learning and maturation.
3. What's the difference between instinctive behaviour and learning?

7.2 DIFFERENT TYPES OF LEARNING

Do you remember that in the beginning of the lesson, it was mentioned that not only humans but animals also surprise us with the way they learn and acquire behaviours. Like many of us, psychologists, in the early part of the 19th century were also intrigued by the way animals learn. There were many experiments that were conducted to understand the phenomenon of learning by experimenting on animals. Although the experiments were conducted on animals however these experiments have major implications even today in Behavioural Psychology with human subjects. In this section we will talk about the early learning experiments by Pavlov and Skinner, as well as, we will also talk about observation learning, verbal learning and skill learning.

7.2.1 Classical conditioning or Learning through Association:

Ivan Petrovich Pavlov(1890-1936) was a Russian physiologist who was studying the digestive system of dogs. He observed that his dog, which was salivating for food, also started salivating whenever he saw the laboratory assistant bringing food for him.

This made Pavlov think that the dog had made an association between the presence of a lab assistant and food.

After this casual observation, Pavlov conducted a series of experiments to study more about the dog's tendency to make associations between unrelated circumstances and their tendency to respond. But before we move on to understanding the classical conditioning phenomenon let us understand the meaning of the following terms with reference to Pavlov's casual observation:



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1. **Unconditioned stimulus (UCS):** it is anything in the environment that has the capacity to elicit a natural/automatic response: food presented to the dog
2. **Unconditioned response (UR):** it is a natural response: salivating to food
3. **Conditioned stimulus (CS):** It is anything that always happens with unconditioned stimulus and acquires the properties to elicit a response: in the above discussion the presence of lab assistant becomes an indication of food for the dog
4. **Conditioned response (CR):**-It is an automatic response that is established by training to an ordinary neutral stimulus: with reference to the above discussion salivating whenever the dog sees or hears the lab assistant coming to the lab.

Classical conditioning: Now when you are familiar with the above discussion let us understand the classical conditioning procedure in three phases.

Phase I

Before conditioning: In his experiments, Pavlov initially presented meat powder (the unconditioned stimulus) to his dogs which elicited saliva (the unconditioned response) which is a natural response.

Phase II

During conditioning: After a few trials just before presenting the food, he started ringing a bell (neutral stimulus) and then presented food. Pavlov noticed that initially the dog was unaffected by the bell and was giving a natural salivating response to food (the unconditioned response).

Phase III

After conditioning: After a number of such trials, the continuous pairing of bell and food made the dog to respond to bell i.e. the dog now started salivating to bell (conditioned response). This means that the bell now has become a conditioned stimulus

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which is capable of eliciting the salivary response in the dog.



Unconditioned Response (Salivation)



Unconditioned Stimulus (Food)



No Response



Neutral Stimulus (Bell Ringing)



Unconditioned Response (Salivation)



Neutral Stimulus (Bell Ringing)



Unconditioned Stimulus (Food)



Conditioned Response (Salivation)



Conditioned Stimulus (Bell Ringing)

Figure 7.1

The classical conditioning procedure can be explained as follows:

Table 7.1

UCS (food)	<input type="checkbox"/>	UCR (saliva)
NS (Bell) + UCS (food)	<input type="checkbox"/>	UCR (saliva)
After repeated pairing of CS (Bell) + UCS (food)		
CS (conditioned stimulus)	<input type="checkbox"/>	CR (conditioned response)

**ACTIVITY**

You are sitting quietly in the room and suddenly someone bangs the door and you feel startled.

You are sitting quiet in the room and someone who is wearing a very strong perfume bangs the door and you feel startled. The same set of events keeps happening every day. After sometime whenever you find the same strong fragrance of the perfume you will be startled before the person bangs the door.

Try and find out UCS, UCR, CS and CR in the above two examples

B. Principles in Classical Conditioning**Generalization**

A child who fears a white dog would also be scared when sees a white furry toy. This is called generalization. This means that the child is generalizing all the white looking furry things to be a scary dog. In a classical conditioning experiment, during the course of conditioning the dog which is trained to give a conditioned response to the bell also learns to give the same conditioned response to the buzzer because of similarity in tone or pitch. However, generalization can be overcome through training to discriminate between similar things. This is called **discrimination**. In the above example, the dog can be trained to differentiate between a bell and buzzer by accompanying food only with a bell and not with a buzzer.

Extinction

In classical conditioning, Pavlov observed that the dog stopped responding to the bell when the experimenter was ringing the bell but not giving food. Initially, the dog was responding to the bell anticipating that the bell is a signal for food, but after a number of trials, the bell was not paired with food, so the dog stops responding. This is called



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extinction of behaviour. This means that initially learnt behaviour is forgotten if the conditioned stimulus occurs in the absence of the unconditioned stimulus.

Spontaneous recovery

Do you think that once extinction occurs it can never be recovered? **No**, it is not so. In the above-given example of the dog if the same procedure of classical conditioning is repeated again (see table 7.1) then once again conditioning can be acquired.

C. Factors determining classical conditioning

Classical conditioning can occur under two conditions: **forward conditioning procedures** as well as **backward conditioning procedures**.

Forward conditioning:-this means that the conditioned stimulus occurs prior to the unconditioned stimulus. The forward conditioning can take place in three ways:

1. Simultaneous conditioning: this means that the conditioned stimulus and unconditioned stimulus (food and bell) occur (are given) at the same time.
2. Trace conditioning: this occurs when the conditioned stimulus is presented first and is stopped before the presentation of the unconditioned stimulus i.e. a trace (not the actual CS) of the CS is left before the onset of the US.
3. Delayed conditioning: it occurs when the CS is presented and is not removed until the US appears.

Backward conditioning:-What will happen if you are eating your favourite meal and then a bell is rung and you have to stop eating. This is called backward conditioning and occurs when the US is presented first and the CS appears afterwards.

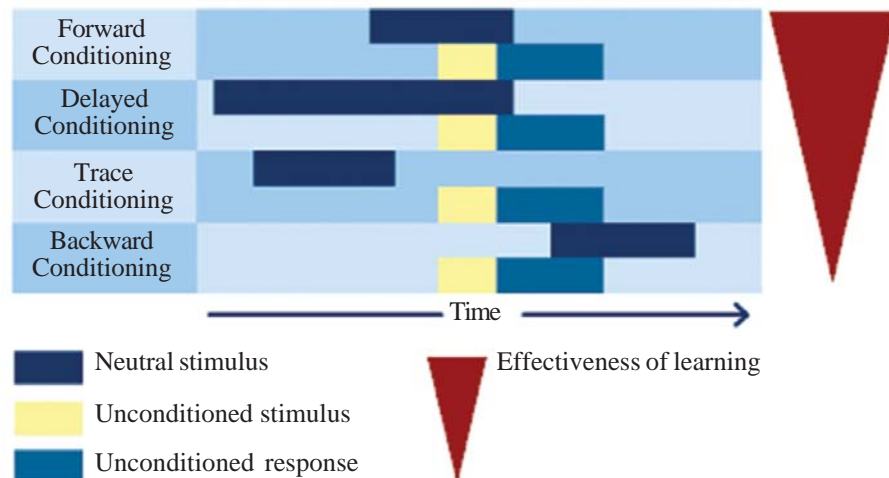


Figure 7.2 Respondent Conditioning

**ACTIVITY**

You can do one experiment to understand classical conditioning. Try giving candies to any small child in your family/locality every time you meet him/her. You will notice that the child will run towards you whenever he/she sees you, expecting that you will give candies.

7.2.2 Operant conditioning

B.F. Skinner (1938) developed the theory of operant conditioning. It is also known as instrumental conditioning. Operant conditioning principles are based on the assumption that the probability of doing something depends upon the consequence that follow the behaviour.

Think for a moment if you have doubt during your Personal Contact Programme (PCP) and you raise a question to clear your doubt but someone laughs at you what will happen?

Skinner made a chamber in which a hungry rat was placed and there was a lever attached in the chamber which upon pressing could release food for the rat. This chamber was popularly known as the Skinner box.

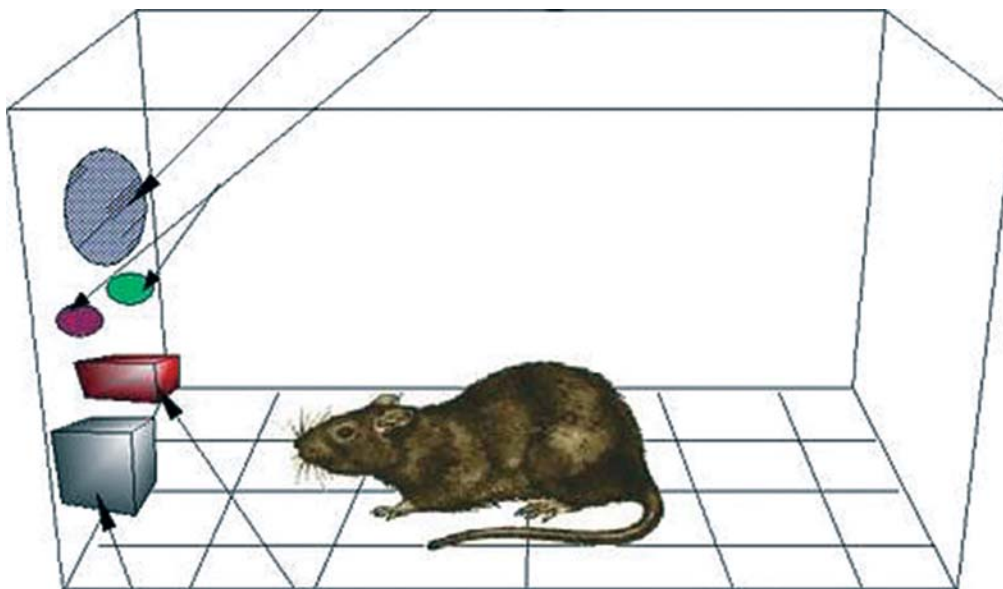


Figure 7.3

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Initially, when the rat was placed inside the box it wandered here and there in search of food. When the rat was walking around the box it accidentally pressed the lever and got the food pellet. In the beginning, the rat could not realize how the food was released but after a few such trials, the rat learnt that pressing the lever would release the food pellet. This means that pressing the lever (**i.e. the behaviour**) was positively reinforced by releasing the food (positive consequences of behaviour).

In our real life too, we tend to repeat behaviours that bring us positive results and try to avoid behaviours that are not pleasant.

A. Basic processes in operant conditioning

Reinforcement:-Anything that strengthens a response or makes the behaviour more likely to occur.

There are different types of reinforcements that are given to strengthen the desirable behaviours and weaken the undesirable ones.

Positive reinforcement: Positive reinforcement increases the likelihood that the behaviour will be repeated in future.

For example, a child helps the mother in serving the food (behaviour) and in response to this the mother pats the child's back (positive reinforcement). The consequences i.e. (the pat) will increase the likelihood that the child will help the mother again in the future.

Negative reinforcement: Negative reinforcement also increases in strengthening a response or behavior by stopping, removing, or avoiding a negative outcome or aversive stimulus.

For example, you have an upcoming exam and instead of studying you are watching T.V., Your mother starts scolding you (negative reinforcement). In response to this, you switch off the T.V. and start studying (this is your behaviour). When you do this your mother also stops scolding (negative reinforcement is removed). This means that the negative reinforcement or aversive stimulus (mother's anger in this case) was removed after appropriate behavior (switching off T.V. and studying). The desired behaviour of you studying increases, to avoid scolding, which was the negative outcome.



ACTIVITY

Talk to parents having kids in the age range of 3-5 years and make a list of behaviours that parents modify with the help of reinforcements.

Other than positive and negative reinforcements, **punishment** in some circumstances can also help to modify the behaviours.

Punishment can have a positive as well as a negative response. Let us understand the following explanation:-

Positive (Present negative reinforcer):- This means that the undesirable behaviour leads to undesirable consequences.

For example, when a child plays for a long time and does not do homework the mother scolds the child.

Negative (Remove positive reinforcer):- In negative punishment, an undesirable behaviour leads to removal of rewards.

For example, a child who plays for a long time outside and does not complete homework on time is deprived of his/her favourite food.

B. Schedules of reinforcement:

During his experiments, Skinner also introduced the schedules of reinforcement. These are precise rules that are used to present reinforcers following a specified operant behaviour. The reinforcement schedules are introduced to strengthen and maintain the learnt behaviour.

Different schedules are:

1. **Continuous reinforcements:** The rat gets food every time it presses the lever. This means that continuous pressing of lever results in continuous reinforcement (food)

Other than the continuous schedules there are intermittent schedules that are based on the assumption that the reinforcement will be given **for only some** but **not for all the responses**.
2. **Intermittent schedules** can be understood in terms of **interval schedules and ratio schedules**



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A. Interval schedules means the time after which the rat would get the food.

For example, the rat gets food after pressing the lever for 10 minutes (i.e. based on the time interval).

B. Ratio schedules on the other hand are the number of lever pressing responses to get the food.

For example, the rat will get food only after pressing the lever 10 times (i.e., based on number of trials).

The further classification of intermittent schedules can be done in terms of fixed schedule conditions and variable schedules conditions. Let us understand with the help of following examples:-

i. Fixed interval schedules: The rat gets the food only after a fixed interval.

For example, no matter how many times the lever is pressed, the rat would get the food only after a fixed interval i.e. sometimes after 15 minutes, other times after 1 hour or so on.

ii. Fixed ratio schedules: This means that the rat would get the food only after a fixed number of lever pressing is done.

For example, the food pellet is released only after pressing the lever for five times.

iii. Variable interval schedules: This means that it is not sure how much time interval will it take to get the food pellet. Sometimes the rat would get the food after 15 minutes, other times after 10 minutes or so on.

iv. Variable ratio schedules: This means that it cannot be anticipated that after how many trials the rat would get the food. Sometimes after pressing 5 trials, and on some occasions after making 2 trials of lever pressing etc.

In real life too, for behaviour modification, the continuous reinforcement schedules are effective for establishing and strengthening a behaviour whereas the intermittent schedules are used for maintaining the established behaviour.

For example, if a child has acquired a habit of spitting on others, in order to make the child behave well i.e. to establish a response the parents need to give **continuous reinforcement** every time the child is exhibiting desirable behaviour.

To understand the **intermittent schedule**, consider that you are working in a company

and you get a salary after 30 days. This means that it is a fixed interval schedule. However, there might be a possibility that on some days you will work and on other days you would not put in much effort because you know that in any case salary is coming after 30 days' time. However, if performance-based perks are introduced other than the salary then you would be more motivated to work because it cannot be predicted when you will be rewarded other than your salary (variable schedules).

It is an obvious fact that **if a behaviour is never reinforced it would get extinct** whether it is a behaviour of asking questions in class or it is working in the company. The schedules of reinforcement are required to be introduced carefully to strengthen and maintain the desirable behaviours.

Observation learning or Social learning

Albert Bandura (1961) conducted experiments to show that children learn through imitating the behaviour of others. In his experiments, little children were exposed to aggressive and non-aggressive models. The children were made to sit individually in one corner of the room with the adult model and there were attractive toys in the room. The adult model sat near the other corner of the room where he /she played with the Bobo Doll. From his experiments, Bandura found that those children who saw an adult behaving aggressively with the Bobo Doll also behaved aggressively with the toys in another situation as compared to those children who saw a non-aggressive model not exhibiting as much aggression as their counterparts. Different researches have shown that violent television shows, movies, video games and music increases the likelihood of aggressive behaviour among those who are exposed to such shows. In Bandura's experiment, he also concluded that if the aggressive model was rewarded for the aggression then the children were more likely to imitate the aggression. This can be true for those who watch models on the T.V. being rewarded or appreciated for acting aggressively and as a result, such behaviour is imitated by the children who watch such shows.

Observational learning is influenced by the socio-cultural environment of the individual. Children imitate the behaviour of adults. The one whose behaviour is being imitated becomes the model.

For example, if a parent tells a child not to shout and while telling this the parent is shouting then the child will not follow what is being said but will learn what the child sees, in this case the child will learn to shout because he sees his/her model shouting (in this case the parent shouting).



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NOTE: In order to inculcate good habits in children the parents must exhibit those habits themselves in front of their children.

Think about the last time you were copying your model while behaving. Your model can be anyone who you think is influential, be it your parents, siblings, public figure, etc.

7.2.3 Cognitive Learning

Until now we learnt how the behaviour is learnt as a result of rewards and punishments or is influenced by the environment. The cognitive learning does not support the notion that behaviour is determined by whatever is presented to the organism. It believes that behaviour is very much influenced by the workings of the mind. There are two types of cognitive learning discussed here.

1. Insight learning
2. Latent learning

A. Insight learning experiment:

Wolfgang Kohler (1920) did a series of experiments with a chimpanzee named, Sultan to know how learning takes place as a result of insight. He placed the hungry Sultan in a cage with two hollow bamboo sticks. There was a bunch of bananas that were placed outside the cage that could not be reached without the help of the two sticks together. Initially hungry, the animal tried to catch the bananas with his hands but he could not, so he started playing with the sticks inside the cage. He could not realize in the beginning that two sticks can be joined together to reach the bananas. He tried to get the bananas using one stick at a time but he failed and became frustrated after trying for an hour. The animal gave up working to fetch the bananas and sat on one corner of the cage. After some time while playing with the two sticks he accidentally joined them together and got the insight that this long stick could help him in fetching the banana. He tried and got the bananas. Kohler insight learning experiments emphasize cognition and insight in bringing about a solution rather than the role of associations and consequences in learning.

A lot of times we work hard to solve our problems. However, failure leads to frustration. Sometimes we get an insight to the solution because even if we stop working our mind keeps working towards solving the problem.

Think of the last time it happened with you when you were stuck somewhere and after a rest period got an 'Aha' feeling of solving a particular problem.

B. Latent learning experiments

Tolman and Honzik, (1930) through their experiments demonstrated that learning can occur even in the absence of rewards. However, it will be exhibited only after appropriate reinforcement is given. To explain this they did maze learning experiments with rats.

There were three groups of rats who were required to run through a maze from the starting point to reach the goal in order to receive the food. The first group of rats received the food every time they ran the maze

The second group of rats did not receive the food for the first 10 trials even after they reached the goal point. However, from the 11th trial onwards they received the food every time they reached the maze.

The rats in the third group never received the food even after reaching the goal point. It was concluded that the second group of rats took less time to reach the goal after the 11th trial onwards because now they expected the reward would come. Though they were not reinforced in the beginning, that does not mean that they were not learning to walk through the maze.

It happens to us all the time. Our parents constantly teach us what to do and what not to do. We don't seem to notice it, but when the time comes, we act accordingly.

Suppose you every day go on the bus to your place of work and learn the route from home to work. However, you do not exhibit this knowledge until it is necessary for you to drive on the same route.

7.2.4 Verbal learning

You are able to read and understand the material which is in front of you. Aren't you? You listen to the news and understand what is happening around the world. You are able to express your feelings through the words you speak or write. This is what verbal learning is. Verbal learning is the skill of reading, writing, and understanding the written or spoken material. Through continuous practice and exposure to the verbal material we are able to develop this skill.. This is an amazing skill that as humans we have and this skill separates us from other animals.



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Psychologists conduct different types of experiments to understand verbal learning.

1. Paired associate learning: Pairing two words like milk and cat. The next time when the word milk is presented the respondent says cat.
2. Serial learning: In serial learning a list of words is given and the learner is asked to recall the list in serial order.
3. Free recall method: In free recall a list of words is presented and the learner has to recall the list without considering the serial order.

Non-verbal learning: Learning is not only limited to reading and writing. We also learn to behave if we start understanding facial expressions.

For example, if the child finds that the mother always frowns when the child misbehaves then the child will learn that misbehaviors results in the mother frowning (expression of anger) and he/she learns to behave well to avoid mothers anger.



INTEXT QUESTIONS 7.2

Match the following

- | | |
|---------------------------|------------------|
| 1. Operant conditioning | a. Insight |
| 2. Classical conditioning | b. Imitation |
| 3. Observation Learning | c. Reinforcement |
| 4. Verbal learning | d. Association |
| 5. Cognitive learning | e. Free recall |

7.3 TRANSFER OF TRAINING

Transfer of training refers to the ability to carry forward the experiences of one learning situation to another. Have you seen people in various cookery shows? They actually have not made all the dishes that they are required to make while in the show. However, the basic sense of cooking and their experience with cooking facilitates making new innovative dishes. This is known as transfer of training.

Though the prior knowledge and experience facilitate the new situation, however, on the other hand, there are times when we are not able to learn something because we get confused with what we have learnt in the past.

The transfer of learning/training can happen in three ways:

Positive transfer of training: This happens when the old learning facilitates the new learning situation. For example, you keep a dictionary while reading and this helps you to communicate more effectively in future.

Negative transfer of training: This happens when the concepts of the previous learning make it difficult to acquire new concepts because one gets confused.

For example, if a child learns the concept of 'After' and then learns the concept of 'Before' then the first learning might interfere with the second learning.

Think of an example when you found it difficult to learn a new concept because your previous experience was hampering new learning.

Neutral transfer of training: There are different learning situations that are not related to each other at all and hence do not either facilitate or hamper new learning situations. This is called a neutral transfer of training.

For example, how you cook is not related to how you drive a vehicle.



INTEXT QUESTIONS 7.3

1. Learning the course in 'History' is not related to learning to 'drive'. This is a perfect example of.....
2. If the previous learning aids in new learning it is called as.....
3. Someone needs to learn two foreign languages but is unable to learn the second one because the previously learnt language hampers in acquiring vocabulary of another language then it is called as

7.4 APPLICATION OF PRINCIPLES OF LEARNING

Since the beginning of this lesson we have been learning about LEARNING. Do you think that the various principles that we have discussed in the previous sections can facilitate us in day to day life? Psychologists around the world use various principles of learning in behaviour modifications. The various ways in which the principles of learning can be used in our lives are as follows:-

Reinforcements: Both positive and negative reinforcements can be used to modify the behaviours of children to make them learn a range of appropriate behaviours.



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For example if someone has a fear of public speaking then continuous positive reinforcement can be used to encourage whenever the child tries to speak in front of others. Practice, experience and encouragement can help overcome the fear. Such an exercise equally works with people in different age brackets and with different learning abilities.

Extinction: The process of extinction works to eliminate undesirable behaviour.

Do you remember when we were learning about extinction, we learnt that if the behaviour is not reinforced it gets extinct?

Suppose for example a child has acquired a habit of lying on the floor and crying whenever the demand is not fulfilled. Giving in to the demands of the children means to reinforce the behaviour of lying down on the floor. If the parents do not reinforce this behaviour and do not give importance to the behaviour then after some days the behavior would get extinct.

Premack principle: This can also facilitate more desirable behaviour among individuals. For example, in order to play with friends the child first needs to clean the room.

Observation learning: This is process of learning by observing the behaviours of others. The desired behaviour is observed, memorised, and then imitated. Observational learning, also known as shaping and modelling, is most common in children as they imitate the behaviours of adults.

Cognitive Learning: Do you ever realize what happens when you work on the problem on your own and try to reflect on your experiences to come to the solutions then learning is the most effective.

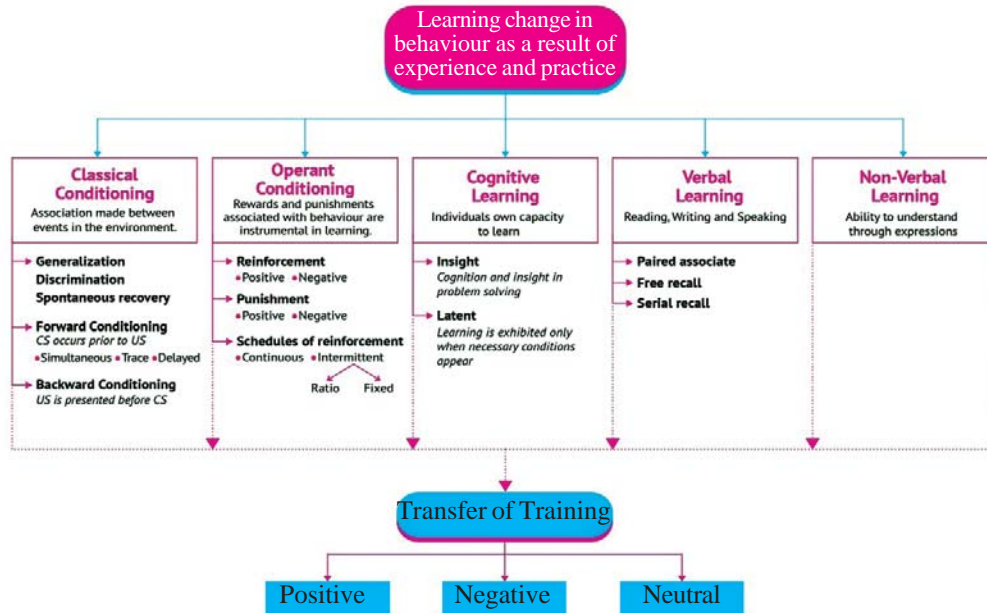
For example, reflect on your experiences and try to understand how you learn, by listening to someone, by watching a video, by doing things on your own etc.

Learning and motivation: It is really important to understand that if you are motivated to learn something you will learn it fast.

For example, someone whose job requirement is to travel a lot so instead of relying on the public transportation one wants to drive on their own. Such a person will learn driving quickly as compared to the others who does not have a specific motivation to drive.



WHAT YOU HAVE LEARNT



Notes



TERMINAL QUESTIONS

1. How does observational learning affect behavior?
2. Discuss with examples how positive and negative reinforcement can be used with little children to make them learn appropriate ways of behaving.
3. Discuss in detail the cognitive learning theory and how it is different from classical conditioning and operant conditioning?
4. What are the different schedules of reinforcement? Discuss their role in establishing a behavior.
5. Discuss any three ways in which different principles of learning can be applied in day-to-day life.
6. What are the three types of transfer of training? Give examples of each type.
7. Define and give examples of verbal and non-verbal learning in Psychology?
8. What is the basic principle of operant conditioning as demonstrated by B.F. Skinner?

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9. What is the three-phase process of classical conditioning as described by Pavlov's experiments on dogs?
10. What is the role of learning in adapting to the environment and acquiring new knowledge?

**ANSWERS TO INTEXT QUESTIONS****7.1**

1. Learning is defined as the process of obtaining information or ability by studying, practising, experiencing something.
2. Learning is defined as the process of acquiring knowledge, skills, and behaviours, whereas, maturation refers to both the mental and physical development of a person.
3. Instinctive behaviour refers to species-specific behaviour and is inherent. Learning occurs as a result of experience and practice.

7.2

1. c
2. d
3. b
4. e
5. a

7.3

1. Neutral transfer
2. Positive transfer
3. Negative transfer



Notes

HUMAN MEMORY

As a student does it ever intrigue you that what mental processes are essential for good academic performance?

How do you remember the birthday of your close friend?

Has it ever happened with you that you failed to recognize a known person?

Think about the above questions and many more daily based experiences of human life. These situations demand coordination among various mental processes such as perception, learning and memory. For example, a good score in exam is the result of learning the study material well and retrieving the learned information during exam without failure or forgetting. So let us try to understand what these mental processes really are.

As you have already studied, learning refers to a relatively permanent change in behavior due to training or experience. Learning plays a central role in every sphere of life either social or personal. But learning is not the only mental processes essential in maintaining and performing daily life tasks, memory also plays an integral function. Memory is a central cognitive process which plays vital role in human life. Memory helps us to retain the learned information, experiences of past, present which contributes in performing future plans and actions. Memory facilitates the process of learning. We have to be dependent on memory to recall the facts, events and experiences. For example, if an individual knows how to drive a car but does not drive on an everyday basis. Yet when an occasion comes when s/he needs to drive her/his loved one to hospital s/he will immediately recall the learned rules and perform the skill to fulfil the need of that particular moment. This represents the importance of memory. This chapter aims to provide understanding about the process of memory and technique to enhance one's memory.

Basic Psychological Processes



Notes



LEARNING OUTCOMES

After studying this lesson, learner :

- discusses the nature of memory;
- explains the underlying processes of memory;
- illustrates the nature and causes of forgetting;
- states the application of mnemonics in enhancing memory; and
- employs different techniques to augment one's memory.

8.1 NATURE OF MEMORY

The word “Memory” originates from the Latin term ‘*memoria*’ and ‘*memor*’, meaning “mindful” and “remembering” respectively. The term memory can be better understood as the process of maintaining information over time. It can also be understood as the means by which we draw on our past experiences in order to use this information in the present.

Memory involves processing of vast amount of information in different forms, such as echoic, iconic and meaning. Memory serves several functions. First, memory provides continuity for consciousness. Second, it helps in effectively dealing with situations at hand by utilizing essential skills. Third, it helps in enriching our social and emotional experiences by effective planning and performance. How this exactly happens will be clear by understanding the processes or stages of memory.

8.2 MEMORY PROCESSES

Memory processes can be understood in three stages. They can be easily memorised as 3R's of memory (register, retain, retrieve):

- **Encoding (or registration)**

Encoding is the process of converting the sensory information coming from the environment that can be registered in the memory system. There are three steps involved in the encoding process: receiving, processing, and combining information. For example, you listen to a song in a party, and you liked this song so you try to understand its lyrics. When you convert this auditory signal

into echoic unit so that it can be stored into the memory system, it is called the process of encoding.

- **Storage (retention)**

Storage is the process of converting the incoming information into permanent records so that it can be accessed later when needed. To take the example forward, once you understand the lyrics you try to store it in memory either through maintenance rehearsal (by mere repetition of the song) or through elaborative rehearsal (when you comprehend the meaning and associate it with your own feelings). This is called the process of storage.

- **Retrieval (recall, or recognition)**

Retrieval is the process of locating and leveling the stored information from the storehouse to the consciousness at the time of need. Now imagine that you are enjoying some leisure time and feel like singing a song so you would perhaps recall the song you encoded and stored. Once retrieved you would play it and probably sing along it. This represents the process of retrieval of memory.



Fig8.1: Stages of Memory

Interruption at any stage will affect forthcoming stages of memory and may also result in forgetting of stored information.



INTEXT QUESTIONS 8.1

Notes: Write your answer in the space given below and compare your answer with those given at the end of this unit.

1. An individual's record of past events and experiences is:
 - (a) Learning
 - (b) Perception
 - (c) Memory
 - (d) Sensation



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Basic Psychological Processes



2. Which one of the following is not included in the stages of memory?
 - (a) Encoding
 - (b) Rehearsal
 - (c) Storage
 - (d) Retrieval
3. Recall and _____ are the two types of retrieval.

8.3 MODELS OF MEMORY

There are different models of memory which helps in understanding the underlying process of memory.

8.3.1 Atkinson and Shiffrin model:

This model is also known as information processing model as well as modal model. Atkinson and Shiffrin noticed that human memory and computer systems process information in similar fashion where information passes through the three stages of memory: encoding, storage and retrieval. This model proposes three systems of memory and therefore is also sometimes called stage. These systems are Sensory Memory, the Short-term Memory and the Long-term Memory. Each of these systems have different features and perform different functions in relation to memory.



Fig 8.2: Human memory system and its three components.

Sensory Memory: Information from the environment first enters the sensory memory through the senses. There are various incoming sensations at a given point in time therefore sensory memory has a large capacity. However, it stays for a very short duration, i.e., less than a second. For example, at present, you can hear the sound of traffic at distance, or air coming from the fan or the lecture of the teacher or the sound of the pages turning. All this information is entering your sensory memory but it is further processed into short term memory only if you pay attention to it.

Short-term Memory: Information that is attended by the sensory system enters the short-term memory (STM). Short-term memory holds limited information for a brief

period of time which is more than sensory memory but less than long-term memory, i.e., less than 30 seconds. If the information is not rehearsed at this stage, it faces difficulty in proceeding the information to the next stage of memory. There are two types of Rehearsal: maintenance and elaborative rehearsal. Maintenance rehearsal is also referred as rote learning wherein constant repetition of information helps in retaining the information in consciousness for some time. Whereas the elaborative rehearsal is more detailed in nature. In elaborative rehearsal the information is retained through forming connections of new information with previously learned material.

Long-term Memory: Information enters the final stage of memory which is long-term memory through elaborative rehearsal. It has a vast capacity for an unlimited period of time as it is a permanent storehouse of all information. Once the information enters the long-term memory store it is never forgotten because it is encoded semantically or based on the meaning of the information.

8.4 TYPES OF MEMORY

Memory can be classified based on different criteria such as nature of material, span of time, amount of information etc. The classification given below is widely accepted amongst the scientific community and is easy to grasp. Based on this classification, memory can be divided into two types i.e., implicit and explicit memory.

- **Implicit memory:** It is also referred as unconscious memory or automatic memory. Implicit memory is the type of memory wherein the task is performed without putting conscious efforts in processing or recalling of previous experiences or information. For example, walking is the function of implicit memory because the process of walking happens automatically or without mental efforts.
 - ❖ **Procedural memory:** Is a subtype of implicit memory. It is required for those tasks where motor skills are required. For example- while riding a cycle, cyclist does not need to recall the steps of riding each time.
- **Explicit memory:** It refers as declarative memory which requires conscious efforts in recalling the previous experiences and information. Declarative memory involves both episodic and semantic memory.
 - ❖ **Episodic memory:** It is a type of memory which stores the information related with events and connections between those events. It refers to personal experiences. Example: I have a Psychology class tomorrow at 9:30 A.M.; My birthday comes on 20th December every year.



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- Semantic memory: In contrast to episodic memory, semantic memory includes the organized knowledge which is general in nature. Example: Indira Gandhi was the first women prime minister of India, or Hg is the symbol of Mercury.



INTEXT QUESTIONS 8.2

Notes: write your answer in the space given below and compare it with the answers given at the end of the unit.

1. Information processing model was proposed by _____ and _____.
2. Sensory memory has _____ duration and _____ capacity.
3. Elaborative rehearsal is used to transfer the information from sensory memory to short term memory. (True/False)
4. Procedural memory is a subtype of implicit memory. (True/False)

8.5 FORGETTING

Have you experienced the blankness during exam for which you were well prepared or have you had that moment when you forgot the things your mother asked you to get from the grocery shop? Hermann Ebbinghaus was the first psychologist who systematically studied the nature of forgetting. He utilised nonsense syllables or Consonant Vowel Consonant (CVC) trigrams in his experiment, where he attempted to measure the nature of forgetting in terms of number of trials a participant took to relearn the same list at varying time intervals. Based on this experiment, Ebbinghaus proposed the model of forgetting which states that the rate of forgetting is maximum in the first nine hours, particularly during the first hour. After that the rate slows down and not much is forgotten even after many days. It can be well understood by observing Ebbinghaus's Forgetting Curve in figure 8.3.



Fig 8.3: Ebbinghaus Forgetting Curve

8.5.1 Causes of Forgetting

Though forgetting is an everyday human experience but it is difficult to state what causes forgetting. There are several theories that state the cause of forgetting in their own unique style.

- **Trace decay:** One of the oldest theories of forgetting is trace theory or also known as disuse theory. This theory states that memory leads to relatively permanent physical change in our central nervous system. These changes in brain are referred to as memory traces. Memory traces stay in brain if constantly used but they tend to disappear or fade away if not used for a long period of time. Fading away of these memory traces causes forgetting of learned material or information. Although this sounds simple but this theory has been criticized on several grounds. Based on this theory it can be safely assumed that if we memorize a list of words before going to sleep we will forget it after waking up but in reality, the opposite holds true.
- **Interference theory:** It states that forgetting occurs due to the interference between learned or memorized information. This theory assumes that learning or memorizing occurs due to formation of association between old and new information. Forgetting according to this, occurs when either the new information interferes with the recollection of old information or when old information



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interferes with the learning of new information. However, interference plays a critical role at the time of retrieval when these various sets of associations compete with each other for retrieval. Two of the most referred types of interferences are:

- **Proactive interference:** (Forward moving) means when the old information interferes with the successful recollection of new information. For example: Imagine that your old car number was 2333 and your new (present) car number is 4535, when asked by the traffic officer you say the old car number. This immediate recollection of old information and blocking of new information by old information is called proactive interference.
- **Retroactive Interference:** (Backward moving) means when the old information is difficult to recall because it is blocked by the new information. For example: Imagine you have changed your mobile number. After sometime when asked about the old number you were using, you are unable to recall it. This is an example of retroactive interference.

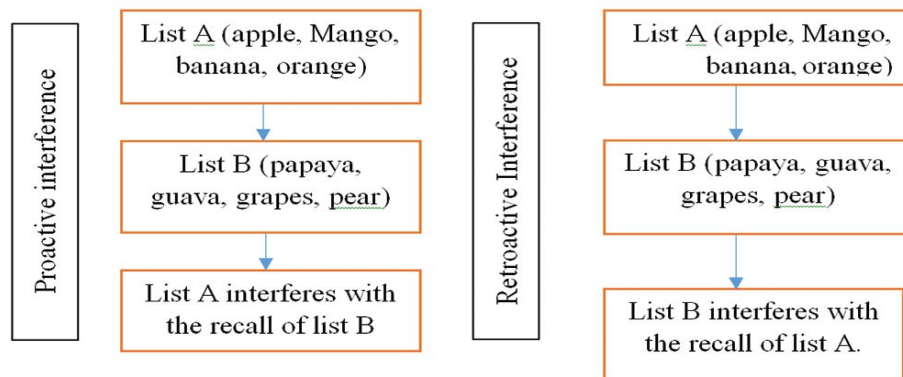


Fig 8.4: Diagrammatic representation of retroactive and proactive interference

8.6 TECHNIQUES OF ENHANCING MEMORY

Humans are heavily dependent on their memory for their day-to-day tasks. Therefore, it has been an agenda for psychologists to figure out strategies to enhance memory. Some of the famous strategies are:

- **The Keyword Method:** In the keyword method, we try to learn or memorize the new information by forming connections with old information. Suppose you are learning a new or foreign language. To be able to learn the new language faster and better you use similar sounding words of your mother tongue or old already learned language. This similar sounding world helps you in retaining the new language better. This technique is better than rote learning. For example, VIBGYOR is abbreviation of 7 colors of the spectrum i.e., violet, indigo, blue, green, yellow, orange and Red.



Notes

- **The Method of Loci:** In order to use the method of loci, items you want to remember are placed as objects arranged in a physical space in the form of visual images. This method is particularly helpful in remembering items in a serial order. It requires that you first visualize objects/places that you know well in a specific sequence, imagine the objects you want to remember and associate them one by one to the physical locations. For example, suppose you want to remember bread, eggs, tomatoes, and soap on your way to the market, you may visualize a loaf of bread and eggs placed in your kitchen, tomatoes kept on a table and soap in the bathroom. When you enter the market all you need to do is to take a mental walk along the route from your kitchen to the bathroom recalling all the items of your shopping list in a sequence.
- **Mnemonics using organization:** Organization refers to imposing certain order on the material you want to remember. Mnemonics of this kind are helpful because of the framework you create while organization makes the retrieval task fairly easy.
- **Chunking:** Under this, several smaller units are combined to form large chunks. For creating chunks, it is important to discover some organization principles, which can link smaller units. Therefore, apart from being a control mechanism to increase the capacity of short-term memory, chunking can be used to improve memory as well. For example, the large number 1947195019841962 can be better learned in four different chunks 1947- year of independence of India, 1950 year of implementation of the Indian constitution, 1984- assassination of Smt. Indira Gandhi, 1962- year of Indo-China war.
- **Minimize Interference:** Interference, as we have read, is a major cause of forgetting and therefore you should try to avoid it as much as possible. You know that maximum interference is caused when very similar materials are learned in a sequence. Arrange your study schedule in such a way that you do not learn similar subjects one after the other. Instead, pick up some other subject unrelated to the previous one. If that is not possible, distribute your learning/practice. This means giving yourself intermittent rest periods while studying to minimize interference.
- **Give Yourself Enough Retrieval Cues:** While you learn something, think of retrieval cues inherent in your study material. Identify them and link parts of the study material to these cues. Cues will be easier to remember compared to the entire content and the links you have created between cues and the content will facilitate the retrieval process.

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- **PQRST:** Thomas and Robinson have developed another strategy to help students in remembering more which they called the methods of PQRST. This acronym stands for Preview, Question, Read, Self-recitation, and Test. Preview refers to giving a cursory look at the chapter and familiarizing oneself with its contents. Question means raising questions and seeking answers from the lesson. Now start reading and look for answers of questions you had raised. After reading try to rewrite what you have read and at the end test how much you have been able to understand.

There is no one method that can solve all problems related to retention and bring about an overnight memory improvement. In order to improve your memory, you need to attend to a wide variety of factors which affect your memory such as your health status, your interest and motivation, your familiarity with the subject matter and so on. In addition, you must learn to use strategies for memory improvement depending upon the nature of memory tasks.



INTEXT QUESTIONS 8.3

Note: write your answer in the space given below and compare it with the answers given in the end of the unit.

1. Hermann Ebbinghaus utilised the concept of nonsense syllables or _____ trigrams in his experiment on forgetting.
2. When the old information is difficult to recall because it is blocked by the new information, it is called _____ interference.
3. The acronym PQRST stands for Preview, Question, _____, Self-recitation, and _____.



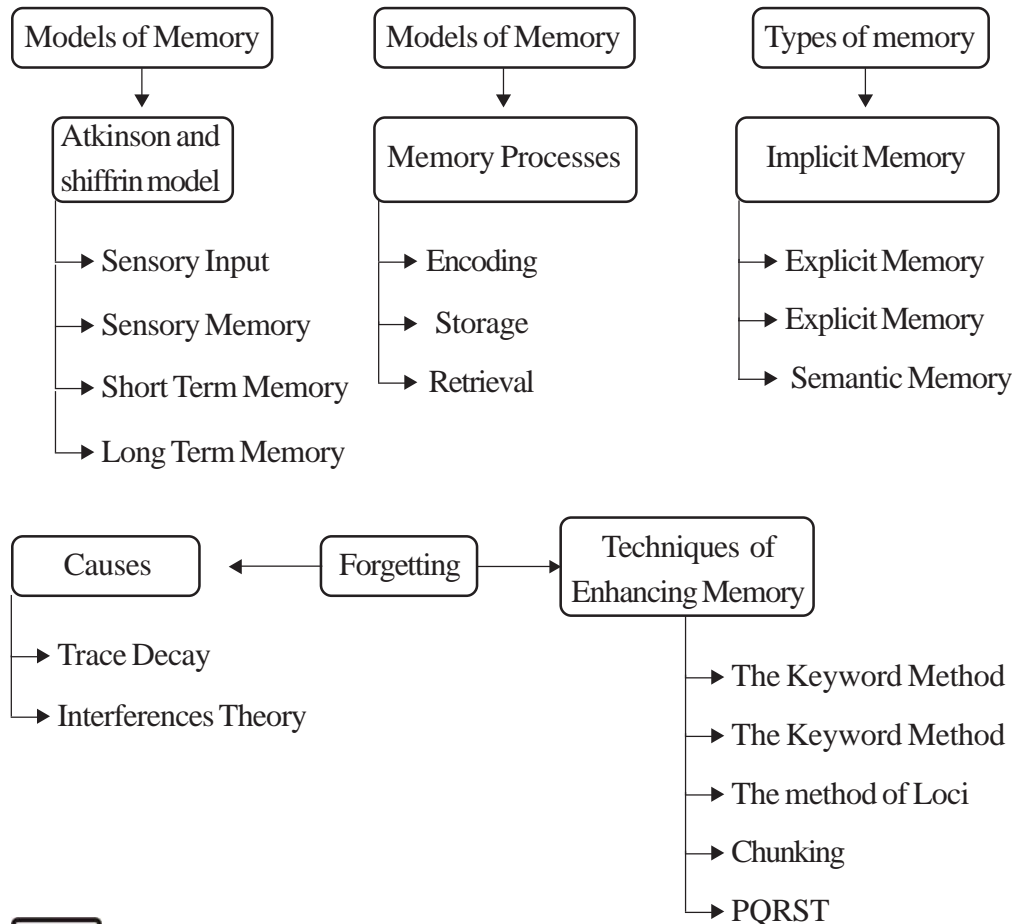
ACTIVITY

- 8.1. Prepare a list of tasks you have carried out throughout the day and then try to classify the type of memory it is, e.g., driving is procedural memory whereas wishing a friend on his/her birthday is an example of episodic memory.
- 8.2. Conduct an experiment with your friend wherein give him/her a list of words to remember and which technique of remembering has s/he used.

8.3. Try to remember the list of the grocery items using the method of loci and find its effectiveness.



WHAT YOU HAVE LEARNT



Notes



TERMINAL QUESTIONS

1. Define the nature and processes of memory.
2. Elaborate on Atkinson and Shiffrin’s model of information processing.
3. Describe forgetting and its causes.
4. Discuss the various techniques of enhancing memory.
5. What is the role of learning and memory in daily life tasks and why are they essential mental processes for good academic performance?

Basic Psychological Processes**Notes**

6. What are three stages of memory processes and how do they work?
7. What are the two types of memory and their subtypes, as classified based on different criteria? What is the difference between implicit and explicit memory and their subtypes?
8. What are the two main theories of forgetting according to Ebbinghaus model of forgetting? How do they explain the cause of forgetting?
9. Draw and explain Ebbinghaus Forgetting Curve.
10. What are the functions of memory and how does it contribute to our conscious experiences and daily life activities?

**ANSWERS TO INTEXT QUESTIONS****8.1**

1. (c) Memory
2. (b) Rehearsal
3. Recognition

8.2

1. Atkinson and Shiffrin
2. Shorter and Large
3. False
4. True

8.3

1. CVC
2. Retroactive
3. Read and Test



Notes

MOTIVATION

Every morning at 5 am, Asif's alarm rings loud. In the next half an hour, Asif is in the cricket academy next to his house, warming up for the next two and half hours of exercise and practicing in the cricket nets. Irrespective of the season of the year, Asif is in the academy every morning without fail. Someday, he hopes to play cricket like his role model, Sachin Tendulkar. Why does Asif wake up every morning for practice while most of us would be snoozing our alarms away? The simple answer is motivation. In other words, Asif is driven towards a goal, which in this case, is to become a cricketer. Motivation is the driving force behind our day to day behaviour. In the next few pages, you may be surprised to find out that even mundane activities like eating and drinking also involve motivation. In this chapter, we will understand the concept and cycle of motivation, various types of motives, intrinsic and extrinsic motivation. We will also touch upon a popular theory of motivation given by Maslow and the relationship between aspiration, achievement and human efforts.



LEARNING OUTCOMES

After studying this lesson, learner :

- defines the concept of motivation;
- outlines the different types of motives;
- discriminates between intrinsic and extrinsic motivation;
- states Maslow's theory of needs; and
- explains the relationship between aspiration, achievement and human efforts.

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9.1 CONCEPT OF MOTIVATION

Motivation can be described as the process by which activities are started, directed and continued, and thus meeting our physical or psychological needs. The word itself is derived from the Latin word ‘*movere*’ which means ‘to move’. So one can say motivation is the energy that ‘moves’ people to carry out things that they wish to do. It can be understood as an ignition that propels goal directed behaviour. Like other aspects of human behaviour, motivation does not occur in isolation. It is derived from our genetic framework and evolves with the nurturance acquired from the environment (parents, family, school, media etc) and the culture in which one is brought up.

9.1.1 Motivation Cycle

Motivation can be understood in terms of a cyclical process (Fig.9.1) towards attainment of a desired goal or outcome. The source of all motivation can be traced to ‘needs’ which refers to a lack or a deprivation. It may be biological (e.g. hunger) or psychological (e.g. affection) in nature. Since needs act as the motivating forces, they are also known as **motives**. Needs produce ‘drive’ which refers to a state of tension where the need is intensified. This triggers the ‘arousal’ of actions that direct behaviour along the path of fulfilling the need. In the motivational cycle, this phase is represented by ‘goal-directed behaviour’. In the course of actions, if there is an ‘achievement’ by means of satisfaction of the need, there is a ‘reduction of arousal’ and balance is restored in the behavioural activities. That is until a need arises again and the pattern repeats.

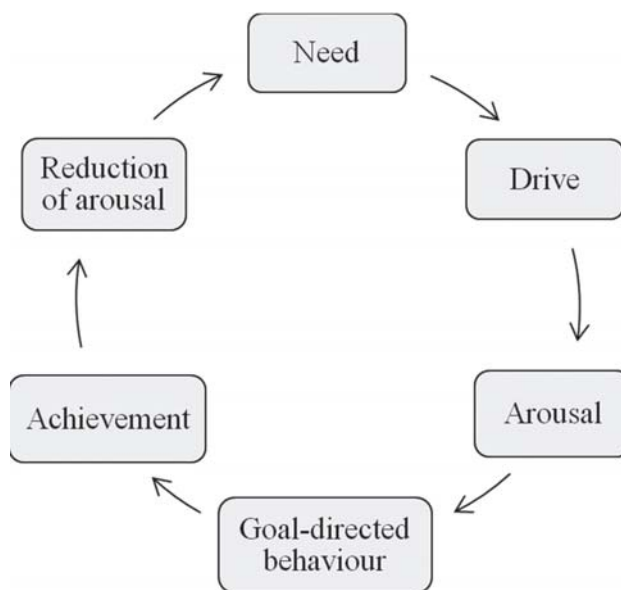


Fig 9.1 Motivation Cycle

Let us understand it with the help of an example. A universal biological need that all of us have experienced is hunger. The unpleasant noises coming from a hungry stomach fuel the hunger drive in our body. When hungry, we seek for ways to satisfy it. This may involve cooking, purchasing food or going to a hotel etc. Once food is consumed and the stomach feels full, the hunger drive disappears.

9.2 TYPES OF MOTIVES

The key element of motives is that one cannot perceive them directly. They are inferred or predicted from the behaviour undertaken by the people. For example, a child who is regular for every task and does them sincerely is inferred as hardworking and goal directed; a child who goes out of the way to help others can be inferred as having high social needs. Human behaviour, at any point of time, is driven by many needs or motives. Psychologists broadly classify motives into two categories-

- i. Primary or Biological motives
- ii. Secondary or Psychosocial motives

Primary motives are rooted and driven by physiological functions occurring within the body and hence are also known as biological or physiological motives. On the other hand, secondary motives are placed in the external environment like social, cultural settings and are also known as psychosocial motives. While both biological and psychosocial motives work in interdependent manner, yet for conceptual clarity, they are explained here separately.

- i. **Biological Motives:** As mentioned above, biological motives are triggered internally.. They are based on the basic premise that physiological processes like neural activities, hormonal secretion are the basic drives that affects an individual's behaviour. Theories on biological motives were the earliest attempt on explaining motivation and viewed human behaviour as primarily instinctual i.e., driven by instincts. Instincts refer to innate urges or tendencies that lead to predetermined and hence predictable patterns of behaviour in a species. Instincts can then be viewed as internal guiding forces that direct behaviour towards satisfying needs arising from within the body. The basic needs covered under biological motives are hunger, thirst and sex which play an important role in survival and sustenance of an individual.

Hunger-All living beings experience hunger and are driven to satisfy it by having food. Research studies indicate that there are many events within the body and the external environment that initiate or curb hunger. We usually experience hunger when there are



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stomach contractions but studies have proved that living beings experience hunger even when the stomach is removed from them. Researchers have found that amount or level of dissolved nutrients in the blood is one of the determinants of hunger. Nerve impulses sent through liver also acts as cues for hunger. The metabolic functions are taken care by liver and any change in the rate of metabolism also determines hunger motivation. Within the brain, hypothalamus has been associated with hunger motivation. Lateral hypothalamus is considered as the excitatory area which results in eating, whereas ventro-medial hypothalamus inhibits the hunger drive. Apart from these internal factors, external factors like food presentation, aroma and cues to past experience may also result in the desire to eat.

Thirst-Water deprivation leads to dryness of mouth, throat and can even lead to dehydration. Dryness of the mouth occurs when the cells of the body are low on water content and there is reduction in blood volume. Reduced blood volume also results in lower blood pressure. The exact process underlying thirst motivation is still under research. It is essentially understood that nerve cells known as osmo receptors are present in the anterior hypothalamus. They generate nerve impulse in case of cell dehydration. This nerve excitation acts as a signal to drink water. This process is known as cellular dehydration thirst. No clear cut answer is available for why an individual stops drinking water. Some researchers propose that the mechanism responsible for initiation of thirst motivation is also responsible for drinking any further.

Sex-Sexual motivation is a complex phenomenon which is driven by biological processes as well as psychosocial environment (specially in humans). The sex hormones determine the structure of the body and functioning of the hypothalamus (part of the brain), that further regulates the release of the hormone. Unlike other biological motives, it is not necessary for survival; reaching equilibrium is not the goal for this motive. Research suggests that sexual motivation is driven by the level of sex hormones present in the blood. The release of sex hormones is controlled by gonads, ovaries in females and testes in males, which develop in human beings over a period of time. Other endocrine glands like adrenal gland and pituitary gland have been found to play a role in sexual motivation. In human beings, beyond these physiological aspects, the expression and stimulation is environment and culture driven.

- ii. **Psychosocial Motives:** While biological motives are driven mainly by physiological needs within an individual, psychosocial motives arise from an individual's interaction with his/her environment. They relate with psychological aspects of behaviour like achievement, attachment and need for power which cannot be solely determined by individual physiology/biology. Rather they are

learned and develop during the process of socialization by an individual. The socializing agents may range from parents, peers, family, school, media and the socio-cultural system at large. Hence we call them psychosocial motives.

Achievement Motivation-Be it academics, sports, drama, fine arts or any other field, people differ in their needs to move high up the ladder. Some people work very hard, are competitive and leave no stone unturned to reach the acme. They do so as they have high need for achievement. Need for achievement is also denoted as **n-Ach**. This need directs people towards higher goals, influences their perception and behaviour to achieve the target. This need is influenced by the environment because the stimulation received by the individual further guides his/her perception, learning and the need to acquire goals. Various researchers have found that persons with high achievement motivation can be distinguished from those who are low in this motive. For instance, they prefer tasks which are moderately difficult such that it is challenging enough while not risking failure. Also, people with high need for achievement purposefully look for feedback as it helps them to realistically determine the gap between their effort and their target. For example, a corporate employee high on achievement motivation would enjoy working with a firm that provides regular performance evaluation with feedback. Similarly, a student with high on achievement would perform better with feedback from regular internal assessment by the teacher.

Affiliation Motivation-Affiliation motivation is also denoted as **n-Aff**. Humans and animals alike have a tendency to be with others and to belong. It is observed that most people enjoy the presence of others; it would be rare to find people who want to be alone all the time. We wish to share our joy, sorrows, achievements and grief with other known people in our social environment. Furthermore, the tendency to be with like-minded people is the basis of group formation. At times, we affiliate with others to overcome some fear or to acquire a goal, etc. As with other needs, need for affiliation also differs from person to person. Those who are high on this need make an extra effort to be friendly and maintain relationships. Again, it is also learned from the environment through socialization. For example, a person with high affiliation motivation would seek to repair broken relationships between friends.

Power Motivation-As with other motives, need for power denoted as **n-Pow** also differs among people. Some people are high on it while others could be moderate or low in controlling others. People who are high on this need intentionally or unintentionally influence the emotions, behaviours and acts of people in their surroundings. By doing so, they consider themselves at a higher platform over others and expect others to believe so.



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Power expression is generally known to reflect in four ways-

- a. People indulge in action with others to have an impact on them (e.g. indulging in an argument etc.)
- b. People try to do things with themselves to feel a sense of power (e.g. body building, mastering control on their urges by fasting etc.)
- c. Others may read stories, watch videos of powerful people and start attaching themselves with them to feel a sense of power.
- d. People do things as part of groups or organizations to develop an impact on others (e.g. class monitors, union leaders, political leaders etc.). The need for power is influenced by the kind of experience an individual has along with socialization and socio-cultural norms.

For example a student with high power motivation will strive for leadership positions like becoming a class monitor or house representative.



INTEXT QUESTIONS 9.1

Choose the correct option

1. The process which directs and sustains behaviour to reach a goal is known as

(a) Motivation	(b) Incentive
(c) Drive	(d) Desire
2. Hunger does not involve this physiological factor

(a) Corpus collosum	(b) Stomach
(c) Pancreas	(d) Hypothalamus
3. Biological motives are not driven by-

(a) Hormones	(b) Faith
(c) Hypothalamus	(d) Neurotransmitters
4. Psychosocial motives are mainly explained through-

(a) Physiology	(b) Culture of individual
(c) Hormones	(d) Intersection of individual with environment

9.3 INTRINSIC AND EXTRINSIC MOTIVATION

The desire to achieve, attach or do something i.e., motives may be driven internally or externally. Depending on whether the source of motivation is coming from within the individual or due to external factors, motivation can be classified into intrinsic and extrinsic motivation.

Intrinsic Motivation-When an individual is motivated for a task because he/she finds it personally rewarding, and not because it leads to external incentives, it is a case of intrinsic motivation. Intrinsically motivated individuals require no external pull or push to do something or to act in a particular manner. E.g. cleaning your room because you like being an organized person; reading a book because you love the storyline; engaging in activities like cooking, gardening, sewing as they are your hobbies and so on. Animal behaviours (especially biological needs) are mostly intrinsic in nature.

Extrinsic Motivation- Humans being social creatures are many-a-times pushed or pulled by external sources to move in a particular direction to achieve a desired goal. When external factors like desire for rewards or fear of punishment drives behaviour, it is a case of extrinsic motivation. E.g. cleaning your room because relatives are coming for a visit; reading your textbook to avoid being scolded by your parents; an office employee working extra hours for bonus etc. In these examples, external factors (visit by relatives, fear of being scolded by parents, bonus) are driving behaviour and not the pleasure of the task itself.



ACTIVITY

Pick any two professions of your choice (e.g. teacher and nurse). Identify ten people each in that profession and find out from them what motivated their choice of that particular profession. From their responses, classify them into two groups on the basis of whether their career choices were driven by intrinsic or extrinsic motivation.

(You can perform the same activity with college going students to identify the type of motivation behind their choice of education stream e.g. arts, science and commerce).

9.4 MASLOW'S THEORY OF NEEDS

Numerous theories have tried to explain motivational behaviour. Among them, the popular theory is the one proposed by Abraham H. Maslow (1968, 1970). His theory is also known as Maslow's theory of need hierarchy. His pyramid model identifies and conceptualizes human needs in five levels of hierarchy. Beginning at the bottom, the



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need intensifies as one moves up the pyramid. The basic premise of his theory is that one is motivated to attain higher level needs only once needs at the lower level are satisfied. However, absolute fulfilment of a need is not a pre-requisite to move to a higher level. A person can be at multiple levels of needs at the same time. For example, a child can experience physiological needs, safety needs, belongingness needs and cognitive needs as well based on availability of the resources for need fulfilment.

At the bottom lies the **'physiological needs'** which comprise of food, water, sleep, sex, shelter, clothing, clean air etc. Maslow considered them as most important because they are essential for human survival and optimal functioning. In the light of these basic needs, the higher level needs stand secondary. After this comes **'safety needs'** (both physical and psychological). They pertain to security, protection, need for law and order, freedom from fear etc. Next come the **'belonging and love needs'** which involves seeking for a sense of belongingness and affiliation. It can be found in interpersonal relationships like friendships, family and social circles and by sharing of mutual trust, acceptance and intimacy. After the satisfaction of previous needs, comes the **'esteem needs'**. It can be understood as a desire to be in good reputation, prestige, dignity, and feeling of accomplishment. Finally, a person reaches the highest level of need known as **'self-actualization'** which corresponds to achieving one's full potential. A person is considered as self-actualized if he/she has developed awareness, is socially responsible, has creativity and is receptive towards novelty challenge and growth. According to the theory, only few people are able to reach the highest level, whereas most people remain at the lower levels of need satisfaction. Though it is considered as the most popular explanation of motivation, yet one of the major criticisms regards to the hierarchical structure of needs.

Later, three more levels were incorporated in the hierarchy of needs- cognitive needs, aesthetic needs, and transcendence. The level of **cognitive needs** was added after the esteem needs, and refer to the need of attaining knowledge, to widen their intellect, and to explore their surroundings for developing better understanding. Higher to this level, **aesthetic needs** were placed. A person's need for recognizing and appreciating love and beauty and for having balance and harmony in his/her life, comprise the aesthetic needs. **Transcendence** was placed on the top of self-actualization needs, thus acquiring the highest position. It can be understood as search for spiritual knowledge beyond self. Transcendence also involves facilitating others to reach their maximum potential.

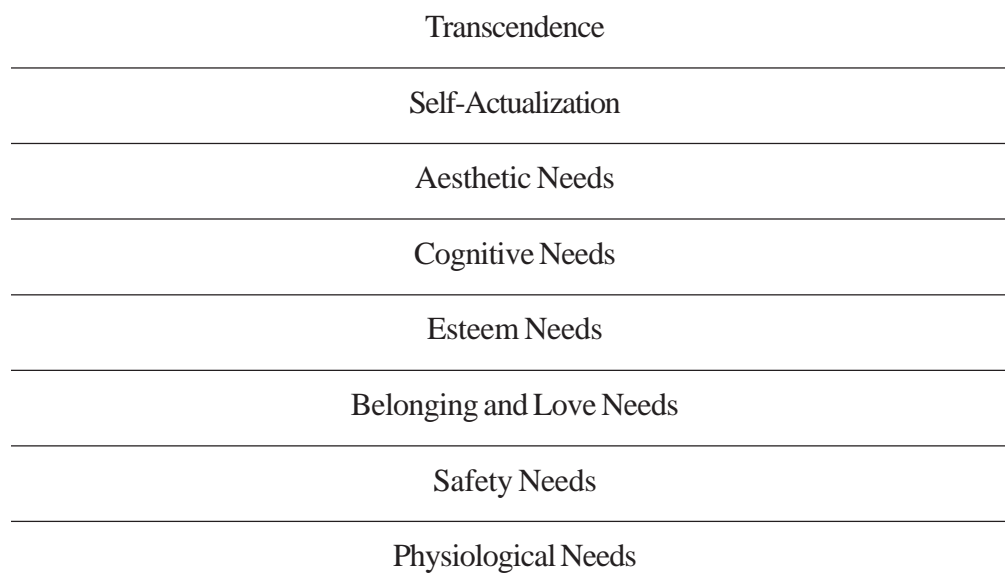


Fig. 9.2 Hierarchy of Needs

Though Maslow called it 'hierarchy' of needs, one does not essentially moves upward in these levels. There are times when people fall down to the most basic needs even after being at higher levels. For e.g. after a natural calamity, like tsunami, or losing a job, people at higher levels come back to fulfilling their basic needs. Maslow also talked about peak experiences where a person temporarily experiences growth and self actualization at various points in life.

**INTEXT QUESTIONS 9.2**

- Shubham is given a chocolate after he clears every exam. This is an example of
 - Intrinsic reward
 - Drive behaviour
 - Need satisfaction
 - Extrinsic motivation
- Match the following

(a) Creativity	(i) Physiological need
(b) Peaceful living	(ii) Self-actualization
(c) Social prestige	(iii) Belonging need
(d) Footwear	(iv) Safety need
(e) Trade unions	(v) Esteem need

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9.5 RELATIONSHIP BETWEEN ASPIRATION, ACHIEVEMENT AND HUMAN EFFORT

Aspirations refer to goals that stem from the desire for more than what is in the present. It finds relation to achievement because aspirations drive people to want to achieve more or have more than they possess. They may be positive (like aspiring for success) or negative (like wanting to avoid failure), intrinsic or extrinsic, realistic or unrealistic. However, having high aspirations and being highly motivated alone does not guarantee attainment of goals. A third factor called human effort is an essential contributor to reaching our aspirations. Human effort or behaviour may be guided by physiological functioning as well as influenced by socio-cultural environment. Further, individual differences will cause variations in the levels of aspiration, the motivation to achieve and ultimately the amount and nature of effort they put towards different tasks.

Let us close this chapter by going back to the example of Asif in the beginning of this chapter. Asif has set his aspirations high to become a cricketer like Tendulkar when he grows up. He is highly motivated towards his dream and has enrolled himself to a cricket academy near his house. However, his success will be greatly dependent on the consistency of his training and his maintenance of personal discipline to keep his body fit, which make up his efforts. In this way, aspirations, achievement and effort must go hand in hand in driving our motivation and behaviour towards attaining our goals.



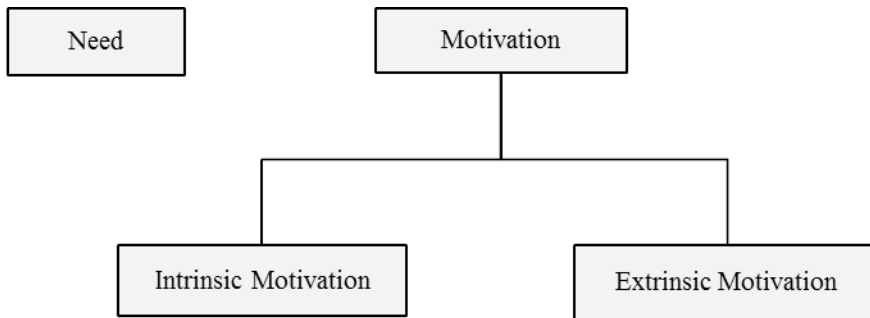
Assessment of Motivation

Thematic Apperception Test (TAT) is a psychological tool that is widely used for assessment of motivation in individuals. The test involves a series of ambiguous pictures to which the participants are asked to make up a story on each picture. The basic assumption behind the test is that the participant projects his/her own needs in the process of creating the story. The responses are then scored in accordance with scoring manuals to provide individual scores in the area of achievement, affiliation and power needs. TAT has been used extensively in employment sector for selection of candidates especially in fields that involve high degree of psychological stress and require excellent people skills like law enforcement, leadership in military, ministry of education etc.

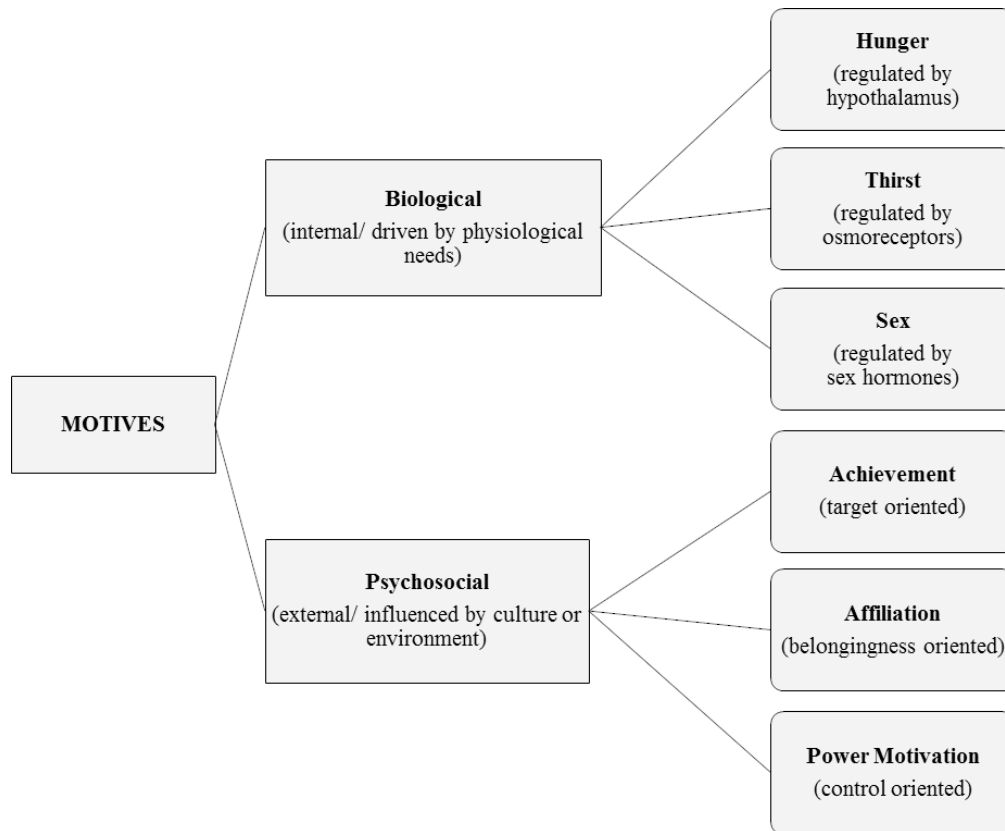


WHAT YOU HAVE LEARNT

Kinds of Motivation



Types of Motives



TERMINAL QUESTIONS

1. Describe the concept of motivation.
2. Explain the cycle of motivation.



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3. Discuss the biological needs of human behaviour.
4. What are psychosocial motives? Discuss briefly.
5. Distinguish between intrinsic and extrinsic motivation.
6. Explain Maslow's need hierarchy.
7. What is TAT? How it is used in psychological assessment?
8. Illustrate the relationship between aspiration, achievement and human efforts.
9. Does essentially everyone moves upward in the Maslow's hierarchy of needs?
10. What will happen if our primary and secondary needs will not be fulfilled ?

**ANSWERS TO INTEXT QUESTIONS****9.1**

1. (a)
2. (a)
3. (b)
4. (d)

9.2

1. (d)
2. (a) (ii)
(b) (iv)
(c) (v)
(d) (i)
(e) (iii)



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EMOTION

One afternoon Reema was sitting with her best friend. While they were in the middle of a conversation, Reema's brother came and informed them that their board results are out. The moment they got the news their heart beat increased and they went running to check their marks. Reema was very happy as she scored 98% however, she could feel that her friend looked upset about getting only 75% marks. When she saw her friend's reaction, she kept her excitement aside and started consoling her friend. On one side she was very happy while on the other hand she felt sad for her friend. She expressed her excitement and celebrated her achievement with her family only after her friend left. She felt very content as her family showered her with compliments for her achievement and for making them proud.

The above example gives us an idea about how a person can experience happiness and sadness simultaneously at the same time. It also tells us about different emotions an individual can experience in a short span of time and how it is important to regulate our emotions according to the situation.

Humans are emotional beings. We experience a plethora of emotions including happiness, love, sadness, sorrow, pride, excitement and many more in our daily lives. It is a medium through which we express and interact with others. We feel happy when our teachers praise us for our hard work and we feel sad when our parents scold us for wrong things that we do, or have done. In this lesson we will study what emotion is, the theories of emotions, how emotions are expressed and how they direct our behavior.

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LEARNING OUTCOMES

After studying this lesson, learner :

- explains the nature of emotion;
- describes the theories of emotion;
- explains the physiology of emotional experience;
- describes various expressions of emotions;
- understands types of emotions; and
- identifies different ways of managing emotions.

10.1 NATURE OF EMOTION

The term 'emotion' is derived from the Latin word 'emovere' which means to stir up, agitate, excite or move. Emotions are generally referred to as subjective feeling and affective reactions in response to a situation we perceive to be personally significant. .

Every emotion has three basic components:

1. **Physiological:** Each emotion is accompanied by some physiological activation in the brain, the nervous system and hormones, so when you are emotionally aroused your body is aroused too. For example your heartbeat, palpitation and sweating increases when you are very angry.
2. **Cognitive:** It involves thought, belief and expectations with which we evaluate and interpret the situation. For example, when you are happy you decide with whom you should share the news and with whom you should not.
3. **Behavioral:** Emotions are also expressed in behavior in terms of facial expression, posture, gesture and vocal response. For example, if you are scared you either fight or run away from the situation.

**ACTIVITY**

Try to remember a recent event when you felt anxious. Note down changes that you observe within yourselves

Physiological

Cognitive

Behavioral

10.2 THEORIES OF EMOTION

In Psychology, various attempts have been made to study emotion. Over time, several theories of emotions have been proposed to explain and formulate some general principles to guide us in understanding more about emotions. Theories have also been developed to explain the mechanism of emotion. We will be studying three major theories of emotion in this section

1. The James-Lange theory of emotion
2. The Cannon-Bard Theory of emotion
3. The Schachter and Singer theory of emotion

The James-Lange theory of emotion suggests that emotional experience arise from our perception of physiological changes. For example, when one sees a snake, his/her heart races and muscles get tense, and thus he/she feels scared.

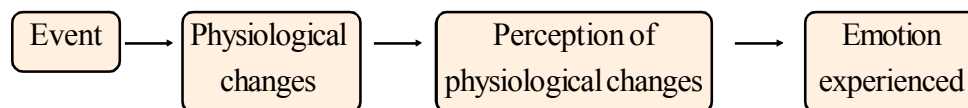


Fig 10.1: The James-Lange theory of Emotion

The Cannon-Bard theory of emotion says that the physiological arousal and emotional experience occur simultaneously, yet they are independent of each other. For instance, on seeing a snake, one feels scared (an emotional response). At the same time his/her heart beat increases (a physiological reaction). Cannon-Bard suggests that both these emotional and physiological reactions will co-occur, even though they would be separate and independent.

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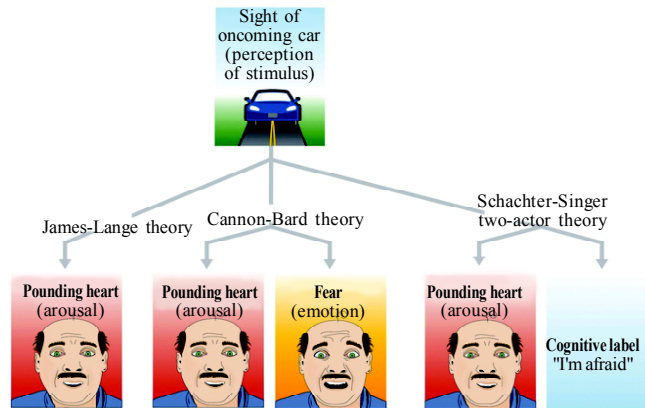


Fig. 10.2: The Cannon-Bard Theory of Emotion

The Schachter-Singer theory of emotion maintains that emotions compose of two factors: physiological and cognitive. In other words, it suggests that the emotion we feel is due to the cognitive interpretation of aroused bodily state. Using the same example, on seeing a snake, one’s heart races (a physiological reaction). There is also an apprehension that the snake might bite (cognitive interpretation). Both these reactions contribute to the emotion of fear.

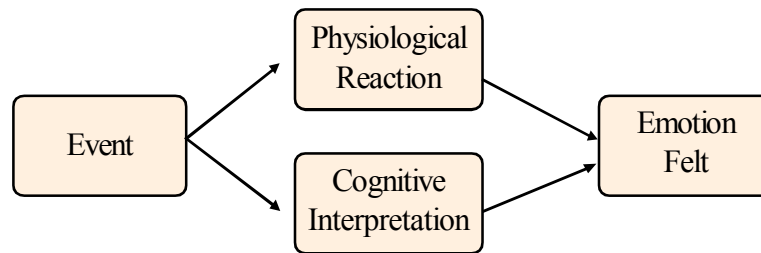


Fig. 10.3: The Schachter-Singer Theory of Emotion



INTEXT QUESTIONS 10.1

Fill in the blanks

1. _____ is a part of the brain involved in controlling of physiological expressions of emotions such as fear, anger and pleasure.
2. The involuntary body functions such as heartbeat, breathing, blood flow and digestion are regulated by _____
3. The Schachter-Singer theory of emotion suggests that emotions compose of _____ and cognitive factors.
4. _____ is one of the most important non verbal body cues.
5. The component of emotion is expressed in the form of facial expression & gestures.

10.3 PHYSIOLOGICAL BASIS FOR EMOTION

Seema wants to score well in her board exams. She has prepared herself well and feels confident. As she enters the viva room and the external examiner asks her questions, she becomes extremely nervous. Her heart palpitation increases, breathing increases, her feet become cold and she is not able to respond appropriately.

Can you remember any such similar situation that happened to you? Why did this happen? Have you noticed when we are excited, terrified or angry; emotions also cause strong physiological response? The physiological activity is regulated largely by automatic nervous system.

1. **The Autonomic Nervous System:** it is the part of the peripheral nervous system that is in charge for regulating a variety of involuntary body functions such as heartbeat, breathing, blood flow and digestion. It consists of many nerves leading from the brain and spinal cord to muscles of various organs. The automatic nervous system can be divided into two parts.
 - i. **The Sympathetic Nervous System:** The sympathetic nervous system regulates flight-or-fight response and prepares our body for emergency actions. It is active during aroused state and prepares the body for extensive action by speeding up the heart rate, raising blood pressure, dilating eye pupils and raising blood sugar levels.
 - ii. **The Parasympathetic Nervous System:** It tends to be active when our body is in a calm and relaxed state and helps the body to store energy for future use. It helps in maintaining normal body functions, build up and conserve our physical resources by slowing down heart rate, decreasing blood pressure, constricting eye pupils and maintaining blood sugar levels. For example, if we see a snake, our response is to flee. For this the sympathetic system will quickly activate our body to take action. Once the threat has passed, the parasympathetic system will then start to diminish these responses, slowly returning our body to its normal or resting state.
2. **Adrenal glands:** These glands are located on the top of kidneys and secrete epinephrine (adrenalin) and norepinephrine (noradrenaline) hormones. It is activated when the nerve impulse in the sympathetic system activate the inner part of the adrenal gland, trigger the secretion of adrenaline and noradrenaline into the blood stream. When the brain senses danger, the instant fight-or-flight response stimulates the hypothalamus to send signals through sympathetic nervous

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system to release greater amount of adrenaline. Functions of adrenaline include mobilizing blood sugar into blood, increasing the heartbeat, blood pressure and slowing down of digestive process. These glands play a significant role in preparing the organism for emergency reactions, when we are charged with emotions.

3. **Hypothalamus:** It is a core part of the brain mainly involved in regulation of physiological expressions of emotions such as fear, anger and pleasure. It sends impulse to muscles and glands. The automatic nervous system in conjugation with hypothalamus, regulate breathing, pulse rate, blood pressure and arousal in response to emotional cues. A person may become incapable of experiencing any emotion if their hypothalamus is injured.



INTEXT QUESTIONS 10.2

State which of the following statements are ‘true’ or ‘false’.

1. The parasympathetic nervous system regulates our body for emergency actions.
2. Verbal and non verbal communications are interdependent on each other.
3. The James-Lange theory of emotion suggests that emotional experience arise from physiological changes.
4. “T” message technique is for expressing intensely positive emotions.
5. Anxiety can sometimes help us to take certain action to avoid dangerous situation.

10.4 EXPRESSING EMOTIONS

Emotion is a sensory experience through which we influence others with our feelings. It has a great impact on others if expressed in a way that can be perceived well by others. We also perceive the emotional responses of other people and respond in appropriate way.

We communicate our feelings and decipher the feelings of others constantly. Emotions are expressed in a number of different ways involving both verbal and non-verbal channels.

- i. **Verbal communication:** It comprises of spoken words as well as features of speech such as tone, pitch and loudness of the voice. Laughter denotes joy, screams denote fear or excitement, groans indicate pain or unhappiness, and high-pitched, sharp voice denotes anger. Sharing our feelings is sometimes risky as it can make us vulnerable to the judgment of others.

- ii. **Non-verbal communication:** Facial expression is one of the most important nonverbal body cues. Some emotions are too complex to be represented only on our faces. Thus, facial expression along with gestures (body language), posture, and personal space, touch, etc. gives us the cues to what other might do next.

According to Paul Ekman (1969) verbal and non-verbal messages are interdependent with each other. Communication becomes more effective when both verbal and non-verbal communication skills are used well. For example, a joke becomes funnier when told with gestures than just telling the joke. Nonverbal communication can directly or indirectly affect our verbal discourse in the following ways: Non-verbal communication can be used to emphasize our words and repeat what we say. It can substitute the words, regulate speech, contradict what we say and compliment the verbal content of our message. Non-verbal signals are helpful in clarifying the words we use and disclose the true meaning of our feelings.

It is easier to hide our feelings by not verbally speaking to other but paralanguage speaks out our innermost feelings. We generally share our intimate feelings with our close friends

Culture and Emotional Expression: Does culture determine the type of emotions we experience? How does culture shape our personality? Charles Darwin (1872) in his book “The Expression of the Emotions in Man and Animals” said that emotional expression in humans is both innate and universal across cultures. Eckman (1970), a famous psychologist has also documented that the basic emotions conveyed by facial expression are similar across cultures. He identified six basic emotions that are universally experienced and recognized in all human cultures. These are happiness, sadness, fear, surprise, disgust, and anger. Other emotions are experienced as a result of combination of these basic emotions.

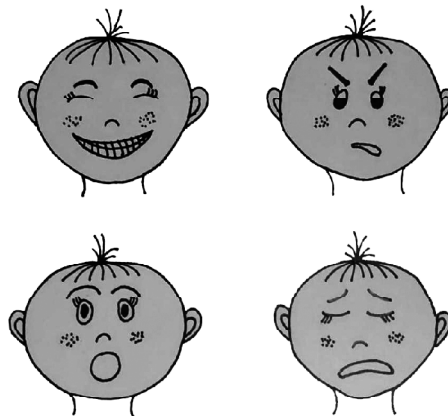


Figure 10.4: Facial Expressions of Emotions



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Culture has a major influence on how we express and interpret our emotions. Some cultures promote free expression of emotions, whereas others emphasize on revealing less emotions in public. Silence has been found to convey different meanings. In India, deep emotions are sometimes expressed by staying silent. However, in Western countries it may mean embarrassment. For instance, the thumbs-up sign is represented as 'A-Okay' or nice job in United States but assumes a derogatory and offensive interpretation in some Latin American cultures.

10.5 MAJOR EMOTIONS

We experience several emotions in our day to day life. Some emotions are associated with positive feelings while others with negative feelings. However, both are equally important and play a significant role in the understanding of our and others' experiences.

The following major emotions will be studied in detail.

Sadness: A negative emotion that is often seen as the opposite to happiness. Sadness is a feeling of disappointment and grief induced as a result of non-accomplishment of goal or losing something important, such as a material possession, (e.g. losing your favorite shirt, money), pleasure (e.g. not being able to watch movie due to exam), or a meaningful relationship (e.g. going through a break up) or social status (e.g. cease to be admired). It is experienced by all of us from time to time. Sadness can be expressed by crying, quietness, lethargy, dampened mood and withdrawal from others. In some cases, people can experience prolonged and severe periods of sadness; if not managed properly it might later turn into depression.

Anxiety: A feeling characterized by tension, constant reoccurring of intrusive thoughts or concerns and physical changes like increase in blood pressure. It serves as an emotional alarm signal, warning us of threat or danger. When the threats are real, moderate level of anxiety can encourage us to take certain actions to avoid the trouble. For example, fear of examination motivates us to read and prepare ourselves well for exam. However, high level of anxiety can distort our perception and thinking, thus impairing our performance.

Yerkes-Dodson's law suggests a relationship between arousal and performance and states that in a moderately difficult task, performance increases with physiological arousal, but only up to a certain point. When the arousal becomes too high, performance decreases. The phenomenon is often demonstrated graphically as a bell shaped curve as shown in the figure below.

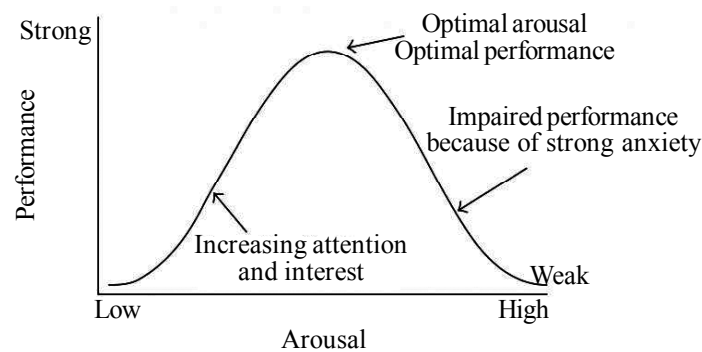


Figure 10.5: Yerkes-Dodson's Law representing relationship between anxiety and performance

Anger: Feelings of displeasure or resentment over mistreatment. It is a powerful emotion characterized by feeling of hostility, agitation and frustration towards other. It can trigger fight or flight response. Anger is often displayed through facial expression, body language, tone of voice, physiological responses and aggressive behavior. If anger is not controlled, it can become unhealthy, harmful to others as it might easily turn into aggression or violence. Anger is often linked to heart disease and high blood pressure. Anger is often thought of as a negative emotion; however, it can sometimes be a good thing. It can be constructive in helping clarify our needs in a relationship, and it can also motivate us to take action and find solutions to things that are bothering us.

Jealousy: it involves fear of losing something (relationship, promotion, friend etc.) to someone else. It generally happens when a person perceives a threat to a valued relationship from someone else. The threat may be real or imaginary. It is an anticipatory emotion that seeks to prevent loss and help take precautionary measures. It is not restricted to only romantic relationship; it can happen among co employees in an organization, among friends, and among siblings competing for parental affection and attention. It may lead to emotional disturbances such as disappointment, anger, depression etc. Jealousy isn't necessarily a bad thing. We can't run away from this emotion as it is also a significant part of our human nature. It's natural to feel jealous on some occasions. It serves as a signal, or wake-up call that a valued relationship is in threat and that certain steps need to be taken to maintain an important relationship and regain the affection and preserve social bonds.

Happiness/Pleasure: it is a psychological state characterized by an increased positive affect, satisfaction and decreased level of negative affect. It is often considered as a reaction to the satisfaction of need or attainment of a goal. Happiness is subjective in nature and varies from one person to another. It is a positive emotion that is induced through experiences, memory or a current state of an optimistic event. When an



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individual is happy, he/she tends to have a positive perception of events in life and makes him/her look forward to life. Individual happiness will be reflected in one's behavior. For example, we smile, laugh and there is a clear expression of satisfaction on our face when we are happy. Studies have also shown that people engage more in act of kindness when they are happy. A person in positive emotional state has better cognitive ability, engages in a different kind of behavior with more creativity and productivity.

While expressing happy emotions is generally not a problem for most children, expressing sadness, anger, disappointment and rejection may be an issue. Aggressive display of anger often leads to more violence and creates unsafe situations. Learning to express our emotions in an assertive and respectful manner can help us to be safe and firm at the same time.

Emotions are neither “good” nor “bad”. Instead we should think of them as a source of assistance as they help us make sense of things. Emotions are not only a way for our mind to clue us into what's happening; they also convey information to the people around us. For example, if we are sad, we seek for comfort. If we communicate our guilt, we seek for forgiveness.



ACTIVITY

1. List down five things that make you happy.
2. Try to remember a situation when you felt anxious over a presentation and write down your feelings



INTEXT QUESTIONS 10.3

Multiple Choice Questions

- i. Which of the following is not Eckman's basic emotion

(a) Happiness	(b) Love
(c) Surprise	(d) Sadness
- ii. What are the main component (s) of emotion:

(a) physiological	(b) cognitive
(c) behavioral	(d) all of the above

- iii. Happiness is a psychological state characterized by,
- (a) an increased positive affect (b) a decrease in negative affect
- (c) life satisfaction (d) All of the above
- iv. Jealousy is an emotion, predominated by:
- (a) love (b) happiness
- (c) fear of loss (d) disgust
- v. The statement “Emotion we feel is due to the cognitive interpretation of aroused bodily state” was given by
- (a) James-Lange (b) Cannon-Bard
- (c) Schachter and Singer (d) Eckman

10.6 MANAGING EMOTIONS

Emotions exist on a continuum. It is not an all or none phenomenon. Different extents of emotions are experienced by us. You can experience intense excitement or slight joy, severe grief or slight sadness. However, we always try to maintain a balance of all the emotions that we experience and go on with our lives.

Our life is not free from stress and conflicting situations. It is full of problems and challenges. A demanding stressful circumstance can bring forth a lot of unpleasant emotions such as sadness, fear, anxiety, guilt etc. If not dealt properly or prevailed for long time, it may likely negatively affect the physical as well as psychological health of an individual.

We can't really control our emotions but we can control our reactions to those feelings. By enhancing our awareness and self-control, we can learn to manage our emotional reactions effectively.

When you experience intense emotions such as anger, anxiety or disgust, you must recognize your feelings, what bodily changes you are experiencing and express it in appropriate way. Expressing our feelings openly and constructively will help us to clear the misunderstanding and facilitate communication. Many a times, we are not really clear of what we are feeling unless we express it and hear how other people respond.

All our emotions have a purpose. They help us adapt to the different circumstances



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and are important for our survival and wellbeing. Thus, we must use different techniques in managing our emotions. Emotional management techniques generally focus on lessening of unpleasant emotions and enhancing positive emotions. There are various ways of enhancing positive emotions. Gordon and Sand (1984) gave “I” message technique for expressing intensely negative emotions. This technique encourages an individual to speak what he/she honestly feels in polite manner so that others listen and cooperate. “I” message is helpful in expressing our feeling about someone whose behavior has hurt you or became a problem. It consists of four components.

- **The First** component involves telling the objectionable behavior that hurt you in specific way but in nonjudgmental manner.
- **Second**, politely point out to the person in what ways his/her behavior has affected you.
- **Third**, indicate the person how you feel about his or her behavior in terms of emotions you felt. Express your feelings but don’t project your feelings to others. For example, you should say “I feel hurt” instead of “you hurt me”
- **Fourth**, tell the person what you want him or her to do to correct the situation.

Enhancing self-awareness, appraising the situation objectively, and self-monitoring techniques can also be used to regulate our emotions. Our ability to express feelings and emotions in appropriate ways can have a huge effect on our physical health, psychological health and wellbeing. Effective emotional management is the key to effective social functioning. An individual who understands and deals effectively with emotions is referred to as “emotionally competent”. This means he can express his feelings appropriately in different contexts and has better ability to adapt to the situation. He can identify his own feelings and feelings of others, and can modify his emotion to deal better with certain situations (for example an emotionally competent person will know that his friend is not in good mood so he/she will avoid giving him bad news on such days). Individuals with high emotional competence are more likely to be empathetic as they have the ability to put themselves into the shoes of others and understand how others might be feeling. Because of this understanding they are more likely to help others and to find a way to deal with negative circumstances. Children with emotional competence are likely to do well in school and engage in positive relationships with peers and other people.

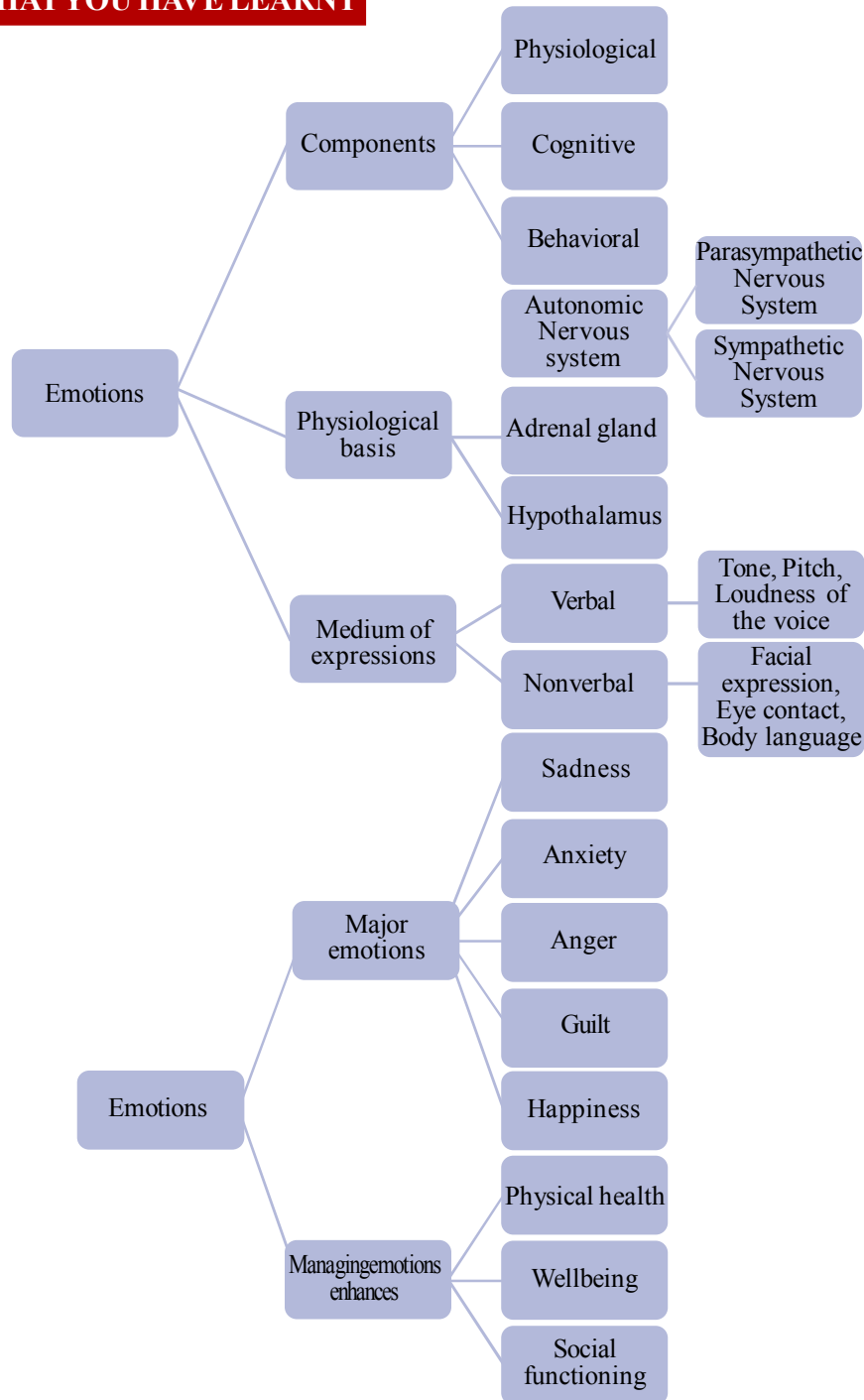
While it may be beneficial to try to look at positive side of things, it’s important also to acknowledge and listen to our emotions when they are not so pleasant. In fact, paying attention and processing your emotions as they come and go may help you better

understand yourself, and those around you and help you to regulate one's own emotions and to be empathic towards others' emotions.

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WHAT YOU HAVE LEARNT



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Imagine a situation in which you were very angry and spoke something bad to your friend and later you felt guilty for what you said. How will you resolve the issue with your friend?

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TERMINAL QUESTIONS

1. Why do we have emotions? What role do they serve?
2. What are your primary emotions? What emotions do you think you express most freely and frequently?
3. Explore the effects of anxiety on your life.
4. When you feel jealous, how do you usually express and behave?
5. Explain the different theories of emotions with diagram.
6. Analyze the Autonomic Nervous System and what role does it play?
7. What are the different ways by which we can manage our emotions?
8. How does culture influence our expressions and emotions?
9. Explain Yerkes-Dodson’s Law and analyze the relationship between anxiety and performance.
10. Why expressing our emotions and feelings are important?



ANSWERS TO INTEXT QUESTIONS

10.1

1. Hypothalamus
2. Autonomic Nervous System
3. Physiological factor
4. Facial expression
5. Behavioural

10.2

- (1) False (2) True (2) True (2) False (2) True

10.3

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



Notes

THINKING AND PROBLEM SOLVING

Imagine the last thing you do when you are about to sleep, it is remembering what have you done today and planning what to do tomorrow. Similarly, the first thing you do when you wake up is thinking what all you would be doing today. Both these situations portray how there is not even a single minute when you are actually not thinking. When you go out for shopping, doing laundry, making breakfast, presenting your work to your boss, taking medicines and the list goes on. Even while sleeping our mind is restless and we keep on thinking until we go in rem sleep.

Hence, it becomes very important to understand varied concepts under thinking and cognition.



LEARNING OUTCOMES

After studying this lesson, learner :

- understands the nature of thinking;
- identifies the processes underlying thinking;
- elaborates upon the process of creative thinking;
- analyses the relationship between language and thought; and
- Applies reasoning, problem solving and decision making skills on one self.

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11.1 NATURE OF THINKING

Our life revolves around understanding things, people and situations. Most of our waking time goes into thinking, reasoning, deciding, solving problems etc. Hence, it becomes very important to recognize what goes around during these processes.

Cognition is the general term used to connote all the higher order mental processes. It is the umbrella term, which includes different mental activities associated with thinking, decision-making, language, memory and other higher order mental processes.

Most of humans waking hours, even sleeping and dreaming involves thinking. It is nearly impossible not to think. While reading this portion on thinking, your thoughts and cognitive processes are at work. Even when you stop reading it, your thinking would shift to something else perhaps to what you would be doing next or tomorrow but it never stops.

Human Thinking involves processing, organizing and managing information. It involves all those processes which fall between reception of a stimuli to production of a response. Hence it requires cognitive rearrangement or manipulation of information from the surroundings or environment along with the information stored in memory including symbols, concepts and images. A symbol or an image represents any event or situation in the environment.

Consider a simple activity of buying a watch. You collect information about various brands, their prices and quality (stimuli) and you end up buying any one (response).

Thus starting from collecting, comparing and organizing all the information until you reach a final decision is called thinking.

- Some thinking is highly private and may use symbols having personal meaning. Such thinking is called as Autistic Thinking. Example, day dreaming.
- There are certain other types of thinking which are only aimed at solving problems or creating anything novel or new, this comes under Directed thinking. Example, finding way to reach a particular place.

The symbols that we use in thinking are often in the form of concepts, images, words or propositions. Hence the major elements of thinking are- concepts, imagery and proposition. Let's start by understanding each one by one.

11.1.1 Concepts

Concepts are important language symbols used in thinking. A concept is the symbolic construction that represents some common and general features of different objects and events.

E.g.: Concept of age, color, love, mother etc.

Most of the nouns in our vocabulary are names of concepts. The main aim of concept formation is classification of objects into categories. These are mental categories for varied experiences, ideas, events, situations and objects.

The feature or features we select define the concept and form the basis for making classifications. When a classification has been made, we tend to behave towards it and think about members of class in similar ways. Concepts make sense of the world around us.

E.g.: Knowledge that apple is a fruit and table is not, comes from different categorization in form of concept.

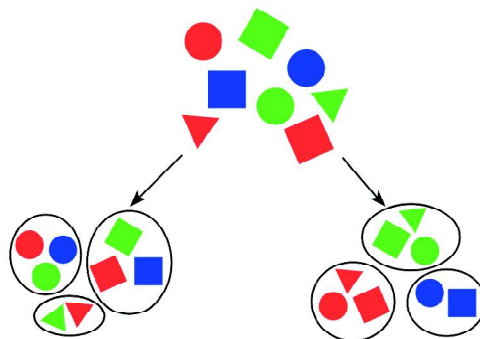


Figure 11.1: Concept Formation

Categorization in the concept formulation

There are different categorizations of concept. The major one is - Logical/ Artificial Concept- This is the one that can be easily defined by set of rules or properties. E.g., a square is a square when it has 4 equal sides and 4 equal angles (90 degree angle).

Natural concepts- These are not based on clear-cut precise set of attributes. Their boundaries are not clear or readily specified set of defining features. Yet natural concepts more accurately reflect the aspects of natural world. Natural concepts are often based on Prototype. Prototypes emerge from our experience with the external world and new items that might potentially fit within their category are then compared with them,



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the more attributes new items share with an existing prototype, the more likely they are to be included within the concept. E.g., when we think of fruit we think of apples never tomatoes where as both are fruits.

Generally, concepts are represented in terms of their features or attributes but natural concepts in part could also be represented in form of visual imagery (Mental representations of objects or events)



ACTIVITY

Think of two natural concepts from your life and come up with their prototypes.

11.1.2 Images

Thinking often involves manipulation of visual images. Research clearly shows that mental manipulations performed on images of objects are nearly similar to those that would be performed on the actual objects.

Example, when asked to form an image of a play school, we will think of different areas of the school with all the toys books, play equipment in playground, the paintings on the wall etc.

Images are therefore representations of information from the environment or our experiences of the environment that someone can use at a later point of time. Generally, these are stored in our memory.

Concepts are also closely related to Schemas, cognitive frameworks that represent our knowledge and assumptions about the world. Generally, schemas are more complex and include many different distinct concepts. E.g., Schema of God (it includes spirituality, religiosity, concept of idol worship etc.)

Therefore, concepts may be represented in the mind in several ways and make sense of the complex external world around us.

11.1.3 Propositions

Propositions are statements that either state one concept or relationship between concepts. Thinking involves relating one concept to another or one feature of a concept to the entire concept. As human beings we possess highly developed language skills, these cognitive actions take the form of propositions- sentences that relate one concept to another. E.g., "Sita has black hair". Over here, there is description of relationship

between a concept and its properties.

Cluster of propositions are represented as Mental Modals (knowledge structure that guide our interactions with objects and events in the world around us).

11.1.4 Role of Culture in Thinking

Psychology sees mind and culture as inseparable. They are mutually constitutive. People are not only shaped by their culture but their culture is also shaped by them, so the influence is two way. Individuals thinking can impact and formulate different cultural norms and these norms in turn can influence the thinking pattern and behavior of an individual. The way we reason, what all we reason, memorize and how much importance we give to different choices while decision-making; all are influenced by our cultural practices and norms. For E.g., in a cultural setting where females are suppressed and live in a patriarchal setting, a choice between family and career might lead to family conflicts.

Thinking involves varied processes for goal attainment. The most important ones are- Problem Solving, Reasoning and Decision Making.



INTEXT QUESTIONS 11.1

Fill in the Blanks:

1. _____ thinking is highly private and may use symbols having personal meaning.
2. Sentences that relate one concept to another are called _____.
3. _____ concept does not have specified set of defining features.

11.2 PROBLEM SOLVING

Problem solving is goal directed behavior. It is motivated by the need of a person to reduce the discrepancy between one state of affairs and another.

In simpler terms problem solving could be seen as efforts to develop or choose among various responses in order to attain desired goals. Problem solving process moves through various stages to attain the desired goals:

- **Framing and understanding of problem-** Recognizing that a particular problem exists and then figuring out what issues need to be solved.

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- **Generation of hypothesis or possible solutions-** Hypothesis is tentative answer to a problem. This process needs higher order thinking, collecting information, matching existing information and then coming out with the potential solutions.
- **Testing the hypothesis-** Now comes, the evaluation of each alternative or possible solution. The cost associated with each solution is graded and then the best possible one is used.
- **Evaluation of results and revision of earlier steps wherever needed-** Once the solution is applied, it becomes important to evaluate the results and if the desired results are not achieved then revision to the earlier steps is to be done.

11.2.1 Methods of Problem Solving

Simplest problem solving approach is **Trial and Error** (Here, different responses are tried till one works).

Second involves the use of **Algorithms** (these are precise sequences of procedures that automatically generate solution if followed in a particular manner).

Third, one is **Heuristics** (these are general rule of thumb, which are based on prior experiences and are mental shortcuts, which may or may not lead to the desired solution).

Next one is **Analogy** (the application of techniques that worked in similar situations in the past- Many a times, we use similar ways to tackle situations which we have somewhat resolved in past. E.g., like if we are hungry and it is late at night, we know that at highway there are chances to get food).

Last is **Means-end Analysis** (problem or goal here is broken into sub goals and path is laid to solve the problem in a stepwise manner. The problem solver perceives the end first and then looks for the diverse strategies, which could lead towards that end. Hence, it is a form of backward thinking, which starts from the goal then leads to the strategy to reach that goal in the present situation).



ACTIVITY

Identify any recent problem in your life and try to solve it using Algorithm, Analogy or Heuristic.

11.2.2 Barriers to Problem Solving

Mental set- When you solve a problem in a one particular way, it becomes a set. These are already tried mental operations or steps. This could lead to success in some situation but could also create a kind of mental rigidity that acts as a hindrance to think in new ways, rules and strategies for problem solving.

Functional fixedness- It means seeing the functions of a particular object or thing only as it has been used before. Here fixation occurs as we are fixed on a thing's usual function. It is our strong tendency to think of using objects only in ways they have been used before.

Mental Set

Draw 4 straight lines so that they pass through all nine dots without lifting your pencil from the page. Here mental set becomes a hindrance.

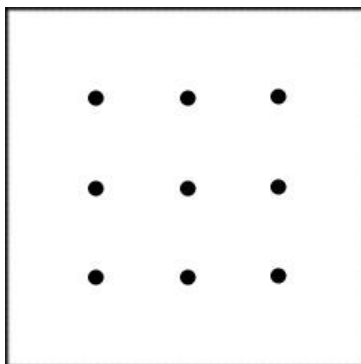
**Overcoming Functional Fixedness -
Using hanger for a different purpose**

Figure 11.2: Examples of Barriers in Problem Solving

11.2.3 Overcoming hindrances in problem solving

Mental set and functional fixedness decrease the capacity to solve problems in diverse manner. It is important that creativity be enhanced at each stage of life to deal with these barriers. **Brainstorming** (person look for many ways to deal with a situation and find large number of solutions to it) could be helpful to overcome functional fixedness. Breaking down problems into parts rather than perceiving them as whole, could be another useful way. **Cultural training** and **early parental practices** are the best way, through which an individual can minimize barriers in problem solving.



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11.3 REASONING

Whenever we see a particular behavior, we try to judge about the causes behind that behavior. Like a woman crying in metro, you could attribute she had a fight with her husband or is unwell or something bad has happened in her life. All these are part of reasoning. Reasoning is the cognitive activity in which we transform information in order to reach specific conclusions.

There is a process of reasoning which make a distinction between formal reasoning and everyday reasoning.

Formal reasoning involves specific method; it is used in formal setting or straightforward problems or situations.

Everyday reasoning is involved in our daily lives. This is more complex and less defined and involves different possible reasons in varied quality and effectiveness. Our everyday reasoning involves higher use of mood and beliefs. Hence, sometimes it reduces our ability to reason.

11.3.1 Types of Reasoning

Deductive- It begins with an assumption. Here, we start with general assumption that we know or believe and move down to drawing specific conclusions. It is reasoning from general to specific. E.g: You know that women generally cry, when they have a fight with their husbands hence, you assume that this woman is also crying because of this reason whereas this may be or may be not true.

Inductive- This kind of reasoning is based on specific facts and observation. Here, we draw general conclusion based on particular observation. E.g.: Concluding that all females cry after fight from seeing just one or two incidences. Here we compare and predict.

Hence, reasoning could be seen as a process of gathering and analyzing information to arrive at conclusions. Here, judgment is made by evaluating events and coming out with appropriate decision.



INTEXT QUESTIONS 11.2

1. Match the following
 - i. Algorithm
 - a. based on specific facts and observation

- | | |
|--------------------------|---|
| ii. Heuristic | b. solving a problem in one particular way |
| iii. Inductive Reasoning | c. general rule of thumb |
| iv. Mental Set | d. precise sequences of procedure that automatically generate solution if followed in a particular manner |

11.4 DECISION MAKING

It is the process of choosing among various alternatives any one, while rejecting some options. In simpler terms, it is a kind of problem solving in which we are presented with several alternatives, from which we choose the best one.

It is a process of choosing among various courses of action or alternatives and a rational decision is made after taking into consideration- Both the Utility and the **Subjective Probability**

- The utility or value of the outcomes that each alternative might yield.
- The probability that such results would actually occur.

People generally make decisions that will maximize their subjectively expected utility. In other words, given a choice among alternatives, we consider utility and subjective probability, multiply them together, and take the alternative with the highest product.

11.4.1 Stages of Decision Making

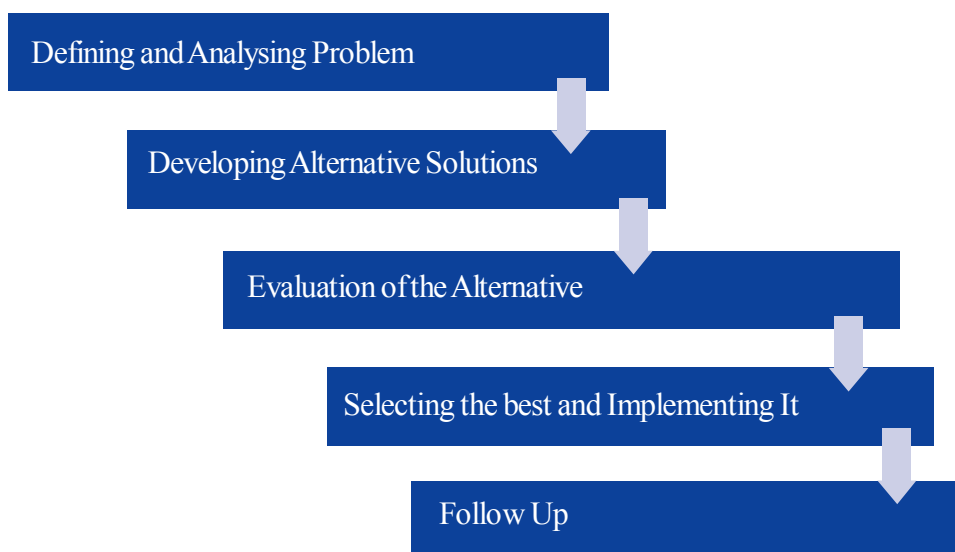


Figure 11.3: Process of Decision Making

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11.4.2 Barriers to Decision Making

There are various factors that influence the decision-making process making it less effective. These act as barriers to decision making. The common barriers are:

- **Lack of Information** - Wrong information or partial information always leads to bad decisions.
- **Lack of Context** - Not knowing the actual context of the problem leads to mismatch between the problem and the solution.
- **Lack of Feedback** - It is important to follow up the solutions applied and decisions made so that in future similar mistakes are not repeated.
- **Information Overload** - Too much information about a problem may also lead to hindrance in decision-making, as the time and effort are limited resources.
- **Cultural Barriers**- Cultural norms and practices could also act as a barrier in effective decision-making.
- **Overconfidence**- Confidence over one's decision is important but overconfidence without being calculative of the risk factor leads to a bad decision.
- **Confirmation Biases** - Here, a person looks for, explores, and interprets information, which confirms their beliefs and ideology. This leads to a hindrance in both divergent thinking and critical analysis of a problem and eventually leads to an incorrect decision.
- **Escalation of Commitment**- Tendency to become increasingly committed to wrong decisions even as losses associated with them increase.



ACTIVITY

Remember any conflicting situation where you had to choose between options- Now follow the stages of decision-making and think how you came up with the best option.

11.4.3 Heuristics

Heuristics as discussed earlier are the mental rules that permit us to make decisions and judgments in a rapid and efficient manner. Heuristics make our decision making easier. These cognitive shortcuts reduce our efforts but may or may not necessarily

enhance the quality or accuracy of our decisions. Heuristics are extracted from our experience and acts as simple guidelines for making reasonably good choices quickly. The most frequently used heuristics are:

1. **Availability-** It is the tendency to make judgments about frequency or likelihood of event in terms of how readily examples of them can be brought to mind.

E.g., study conducted by **Kahneman (1974)** wherein the participants were given list of names and then asked whether the list contained more men or women names. Although the numbers of male and female names were nearly equal but 80%, participants reported that women names appeared more frequently. The reason was that the female names on the list were more famous ones, so their names were remembered easily.

2. **Representativeness-** This type of Heuristic suggests that more closely, an event or object resembles typical examples of some concept or situation; the more likely it is to belong to that concept, situation or category. Here, it is seen whether the current situation is a representation that has already been experienced.

E.g., if we meet someone new who always wears formals and you are asked to judge the person's occupation. You would first remember your past experiences and then assume that formals are generally worn by teachers so he must be a teacher but you eventually learn that he is a Chef. Therefore, the availability or the similarity among the situation leads to such a decision.

3. **Anchoring and Adjustment-** Here, we start with a certain subjective probability and raise or lower it depending on the circumstances. When we make these adjustments, the outcome depends upon the starting point. If we start with a high estimate, even if we adjust it downward our probability estimate will be higher than if we started with a low estimate. It is as 'if' the initial level provided an 'Anchor' that biased our estimate and therefore this biasing effect is called anchoring.

E.g. study by Kahneman, one group of people were asked to estimate $8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$ in 5 seconds. The other group in the same time has to estimate the product of $1 \times 2 \times 3 \times 4 \times 5 \times 6 \times 7 \times 8$. As they had different anchor, the first group gave higher product and the second one a much lower product whereas both product would be same, the anchoring biases is clearly visible.



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4. **Attribute Substitution-** Another name of this heuristic is Substitution Bias. Here, person solves a problem by placing incorrect substitution. They unconsciously substitute a hard problem for an easy one. Whatever is available to the mind is chosen rather than what is needed.

E.g., Optical Illusions are the best examples of such substitution. In day today life, we sometime perceive a three-dimensional figure as two-dimensional. Another example is unconsciously talking about something else, which is similar to what has been asked about.

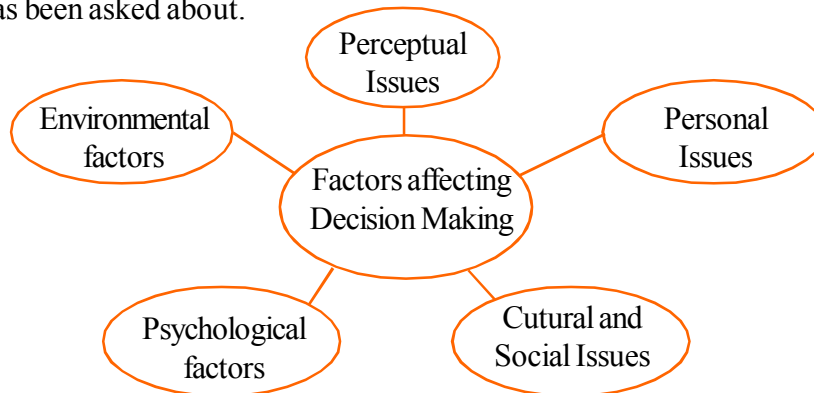


Figure 11.4: Factors affecting Decision Making



INTEXT QUESTIONS 11.3

State which of the following statements are 'true' and which are 'false'?

1. Representativeness and Availability are types of Heuristics.
2. Cultural and social issues do not affect the decision-making ability of a person.
3. Anchoring and Adjustment are one of the stages of decision-making.

11.5 CREATIVE THINKING

Creative thinking involves a considerable amount of unconscious rearrangement of symbols. It involves the production of new and original ideas, solutions or objects. It's different from other kind of thinking, ideas over here are new and original both. Generally, uniqueness of solutions, which have not been used earlier constitute the arena of creativeness.

The thinker here at first makes a little progress, but then perhaps triggered by a fortuitous set of circumstances, a new idea seems to "bubble up" into awareness, or consciousness, in a seemingly spontaneous manner. This sudden appearance of new ideas is called insight.

It is important to understand that the new and original idea should also be appropriate in a particular context. The workability and functionality decide the importance of the idea. Hence any thinking which is constructive, appropriate, reality-oriented, novel and desirable comes under the header of creativity.

J.P. Guilford was a pioneer in the field of creative thinking. He proposed two major types of thinking-

Convergent: Here mind converges to solve a problem, which has only one possible solution. The result of convergent thinking is usually a solution that has been previously arrived at by someone else. Like: $2-1=1$

Divergent: This is involve in open-ended questions, where there is no set answer to a particular problem. Such thinking where the pattern is not set and number of solutions could be attained, leads to generally creativity and novelty of ideas. Divergent thinking includes autistic and convergent thinking to gather information as building materials for the ultimate creative solution. At times, the person may drift into autistic thinking, or free association in which the symbols of thought have private meanings.

Divergent thinking abilities generally include - Fluency, Flexibility, Originality and Elaboration.

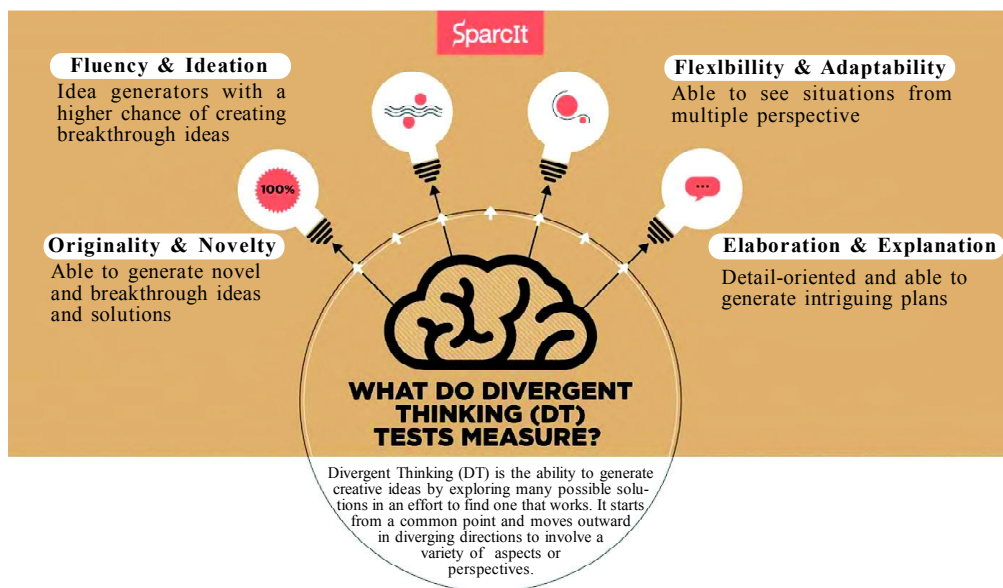


Figure 11.5: Aspects of divergent Thinking

Source: <https://medium.com/sparcit-blog/divergent-thinking>



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11.5.1 Process of Creative Thinking

There are different stages, which comes before creative thinking. It begins with

- **Preparation:** The thinker formulates the problem and collects the facts and materials considered necessary for the new solution.
- **Incubation:** During this period, some of the ideas that were interfering with the solution tend to fade. The unconscious thought processes involved in creative thinking are also at work during this period.
- **Illumination:** Here comes 'Aha' effect. In this, an idea for the solution suddenly wells up into consciousness. The person has feeling of excitement and satisfaction.
- **Evaluation:** The apparent solution is tested to see if it unsatisfactory, and if it is then the thinker is back at the beginning of the creative process. The solutions are tested and judged.
- **Revision :** Frequently, the insight turns out to be unsatisfactory and the thinker is back at the beginning of the creative process. In other cases, the insight is generally satisfactory but needs some modification or the solution of minor problems to be a "good" new idea.

It is important to understand that both heredity and environmental factors plays a role in development of creative thinking abilities. Practice, training and stimulated environment makes a person more imaginative, flexible and original in solving problems.

11.5.2 Barriers to Creative Thinking

Inhibiting factors which reduces our creative expression are -

- **Habitual** (in a habit of thinking in a particular way).
- **Perceptual** (perceiving a problem in a manner in which it is always done).
- **Motivational and Emotional** (Lack of motivation, fear of failure, fear of rejection, fear of judgment, fear of being different).
- **Cultural Barriers** (Adherence to traditional expectations, stereotypes, conformity bias, dependency on others, group pressure). It is important to remove the above-discussed barriers to become a creative thinker.

11.5.3 Characteristics of Creative Thinkers

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- **Preference to complex task** - Such people like higher degree of complexity and imbalance in their task.
- **Independence in judgments** - Self-dependency is important to them hence; they make judgments independently without being influenced by others.
- **Higher awareness and sensitivity** - Creative thinkers are vigilant about their surroundings and people. They always strive to know more.
- **Notices contradictions and incompleteness** - They analyze situations in both holistic manner and by breaking it into parts. That is why it becomes easy for them to pin point incompleteness.
- **Pondering over mysteries of situations and objects** - Finding new ways and trying to solve the mystery around is important to them.
- **Developing the art of asking questions**- Questioning others and oneself is the skill these people rely on.
- **Generating diverse ideas and solutions** - Divergent thinking is a forte for creative thinkers.
- **Brainstorming** - These people try to find as many as possible solutions to a problem.
- **Getting feedback on the solutions** - Once applied they follow up the consequences of the solution and take feedback so that better performance can be done in future.
- **Resistance to temptation of immediate reward and success coping with frustration and failure**- Creative thinkers are masters in delay of gratification, they wait for the right time and enjoys success then.
- **Visualizing causes and consequences and predicting things** - They not only understand the start and end to a problem and solution but try to know the mediating factors too.
- **Awareness of own defenses**- Self-Introspection is what they depend on. Knowing one's weaknesses and strengths leads them towards better solutions.



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- **Self-positivity and confidence** - Positive self-talk is an important characteristic of creative thinkers.
- **Self- assertiveness and dominance** - Being assertive about their decisions and judgments is visible in their personality.
- **Rejection of suppression** - Suppression of thought people and situation is not acceptable by creative thinkers.



ACTIVITY

Examine how many characteristics of a creative thinker, you possess.



INTEXT QUESTIONS 11.4

1. Barriers to creative thinking:
 - (a) Perceptual
 - (b) Cultural
 - (c) Habitual
 - (d) All of the Above
2. The first stage of creative thinking is:
 - (a) Incubation
 - (b) Preparation
 - (c) Revision
 - (d) None of the Above

11.6 LANGUAGE AND THOUGHT

Thinking is not only based on concepts and images; our words and language are also essential in our thinking process. Let us discuss language and its relationship with thought.

Development of Language

Language is one's ability to use diverse set of symbols and rules for combining them for communicating information.

Table 11.1: Conceptualization of language

Concept of language involves			
Sounds or written elements of language	Knowledge of rules for combining words	Storage of semantic /meanings of various words	Using speech in order to have intended impact on others

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Development of human language is complex, spontaneous and creative. Acquisition of language in children generally follow a predictable pattern, which moves from crying to cooing then babbling, Echolalia (strings of sounds combined into repetitive patterns), one word, Holophrases (one or more words which combined to form whole sentences or phrases), then telegraphic speech and then at last language with correct rules and impact.

STAGES OF FIRST LANGUAGE DEVELOPMENT

Age	Accomplishment	Examples
0-2 months	Crying (express hunger and discomfort)	
2-4 months	Cooing (express satisfaction of pleasure)	aaa,ooo
4-9 months	Babbling, gurgling, changing to echolalic babbling	gagaga, mamamama
9-18 months	One-word utterances; refer to people and objects in baby's life	juice; mama
18 months 2 ½ years	Two-word utterances; the beginning of syntax, expanding to three-word utterances; allows for more communicative functions (commenting, negating, requesting & questioning)	more juice juice fall down Daddy go?
2 ½ years 4 years	Telegraphic Stage (S.V.O): Expanded syntax and vocabulary; omit key grammatical markers and function words	I eated bread

Figure 11.6: Stages of Language Development

Source: <http://thelimitsofmylanguagemeansthelimitsofmyw.weebly.com/first-and-second-language-development.html>

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11.6.1 Language as determinant of thought

When we talk to people living in snow covered areas they have more than 6 types to connote to snow whereas we only have 2 or 3. Similarly, an Indian has various terms for kinship relationship in comparison to English speaking who connote these only with uncle or aunt.

Does it bring us to the conclusion that our thinking process depends on how we describe it in our language. Benjamin Lee Whorf was of the view that language determines the contents of thought. This view is known as Linguistic Relativity Hypothesis. In its stronger version, this hypothesis states that what and how individual think is only determined by the linguistic categories they use. This is known as Linguistic Determinism.

This view does have certain experimental evidences showing that some thoughts may be easier in one language compared to other but there are other evidences portraying same level or quality of thoughts in all languages.

11.6.2 Thought as determinant of language

Swiss psychologist, Jean Piaget believed that thought not only determines language but also precedes it. He strongly believed that children form an internal representation of the world through thinking. Whenever they encounter a particular situation of learning, thinking is involved irrespective of whether they have access to language or not. Language for him is only a vehicle of thinking. It can affect children's range of symbolic thinking but it is not necessary for the origin of thoughts. Piaget propagated that understanding of language symbols and rules itself require thinking and formulation of concept of words. Thus, thought is basic and necessary if language is to be understood and learned.

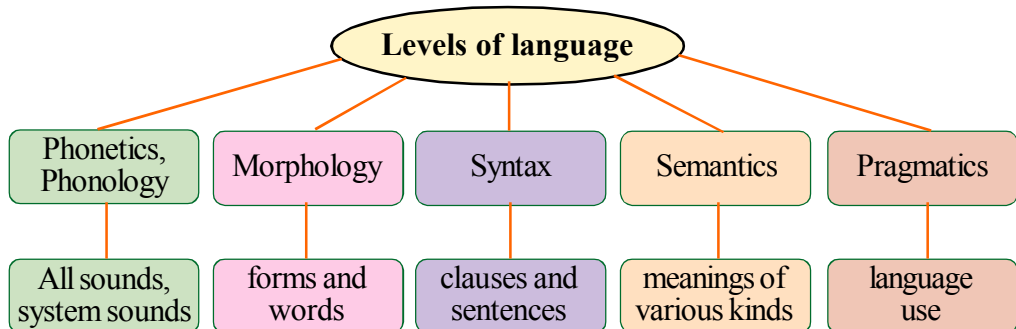


Figure 11.7: Levels of Language Development

Source: <https://www.hierarchystructure.com/emergence-hierarchical-structure-human-language/>

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The Russian Psychologist, **Lev Vyogotsky** argued that both language and thought develop separately until 2 years of age and later they merge. Before 2 years, thoughts are experienced more in actions. Around 2 years of age, child expresses thought verbally and their speech reflects rationality. Now, children manipulate thoughts using soundless speech. According to Vyogotsky, this is the time when development of language and thinking become interdependent. Thought works without language when we are involved in any visual or motor task. Even language can be used without thinking when there is only expression of feelings. When both work together, verbal thought and rational speech occurs.



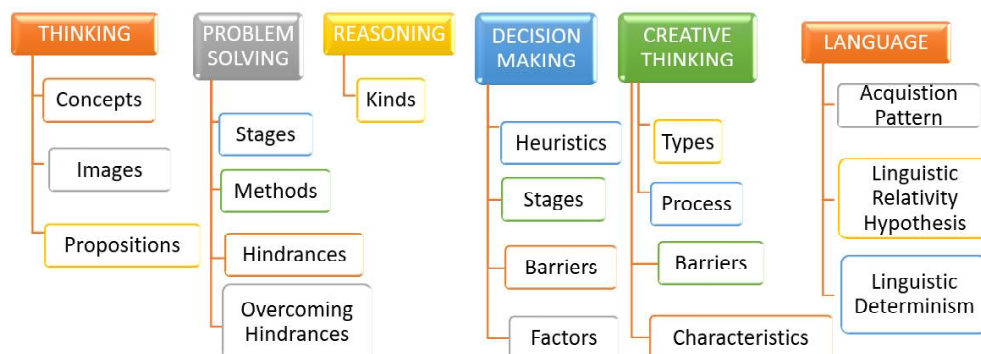
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Learning of language is a complex task, which involves both inherited characteristics and environmental stimulation. Different psychologists attach different reasons for learning of language.

Noam Chomsky, a known linguist proposed the idea of innate proposition of development of language. He conceptualized that children have a 'critical period' where learning must occur if it is to occur successfully. He believed that there is built in readiness to learn language in children. This explains why children sometimes acquire language even without direct teaching. Behaviorists on the other hand believed it to be developed by imitation and reinforcement. It could be concluded that language and thought are interdependent, depending on the situation and circumstances, one leads another.



WHAT YOU HAVE LEARNT



Basic Psychological
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**TERMINAL QUESTIONS**

1. Discuss the nature of Thinking.
2. What do you understand by concept? Discuss propositions.
3. Highlight different stages of problem solving. Discuss barriers in effective problem solving.
4. What are the different kinds of reasoning?
5. Discuss types of heuristics with examples.
6. What do you understand by creative thinking? Highlight different characteristics of creative thinker
7. Explain Linguistic Relativity Hypothesis.
8. Examine relation between language and thought.
9. Discuss the stages of development of language.
10. Describe process of creative thinking.

**ANSWERS TO INTEXT QUESTIONS****11.1**

1. Autistic
2. Propositions
3. Natural

11.2

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

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11.3

1. True
2. False
3. False

11.4

1. d
2. b



Notes

MODULE -3

Human Development

The module aims at building an understanding of human development across the lifespan and deals with key features and challenges across different stages of development. This will help the learners reflect on their own course of development and related experiences.

12. Life Span Perspective on Development
13. Infancy and Childhood
14. Adolescence and Young Adulthood
15. Adulthood and Old Age



LIFE SPAN PERSPECTIVE ON DEVELOPMENT



Notes

Anita is 35 years old. One day she was looking at her childhood photographs and alongside talking to her 60-year-old mother. Her mother told her how soon she started recognising her mother; started walking on her own; uttered her first words; started going to school; first few years of education. These issues of growth and development come into the lives of all. These were nostalgic for Anita. She told her mother about her growing up years; her friends; her career choices. She also spoke about how different her life is now from those days. Her day is now occupied raising her three-year-old daughter, an infant and taking care of aging members of her family. Her life concerns seem to be changing all through her life.

Anita further wondered how her newborn infant is growing and will soon change so much to become a child with a seemingly different set of abilities? It further intrigued her how children are different from adult and how they attain adult-like capacities in due course of time? These are questions that can be answered by understanding growth and development. It has been observed that children in a similar age group go through similar changes and this makes some predictable patterns in the growth and development. These patterns are affected by several factors both maturational and contextual. In addition to that, our human abilities and milestones in each of the age ranges keep evolving over our entire lifespan. In this lesson let us study what is meant by growth and development and what are the principles guiding them. Let us also study in detail about the factors that affect growth and development.

Human Development

**LEARNING OUTCOMES**

After studying this lesson, learner :

- explains the principles of development; and
- relates to the factors that influence development across different stages of life.



Notes

12.1 GROWTH AND DEVELOPMENT

We often use the words growth and development rather interchangeably. But do these two mean the same or are they different? Let us read about growth and development in the following sections.

12.1.1 What is Growth?

Growth refers to quantitative changes in the body. We can identify whether growth is taking place in a child or not by the increase in the child's height and weight. In addition to those indicators of growth also include changes in body structure and body proportions. Although changes in all domains of development take place but any changes in the physical development of the child becomes most apparent to the human eye. Growth continues to take place over time. Even when people stop to grow in height, the structure and proportion of the body keeps changing during entire life span.

One of the significant features of growth is that these changes are measurable. It is important to note that growth is not uniform across life periods and all parts of the body do not grow at the same rate. Rapid physical growth takes place in the first two years of life. The weight of newborn child can range from 2.4 kg to 3.2 kg. On an average, increment in weight is 2.0-2.5 kg per year. In fact, between birth and first birthday, well-nourished children can undergo a 50 percent increase in height. During the first and second year, the height of infants increases approximately by 40 percent and 60-75 percent respectively for boys and girls. Boys are ordinarily heavier and taller than girls during infancy as well as during toddlerhood. In middle childhood, one may experience periods of plateau growth where growth is stable. Later, during adolescence, again one experiences a period of growth spurt where growth in height and weight are rapid. Height and weight charts are available to assess health and physical development in children. These charts should be especially maintained for those who fall ill frequently. This helps to monitor their growth and provide timely inputs.

You must have observed that body proportions of children also undergo changes over a period of time. Head of a newborn looks bigger as compared to the rest of the body. The top of head appears to be large and the facial area remains small. Later owing to the changes in the body proportions, the head does not look that big. Throughout infancy and toddlerhood, the lower portion continues to remain underdeveloped and smaller. The size of head increases in size and accounts for one-fourth of a child's length by the age of 3 years. However, functional development of brain continues into adolescence. Likewise, at birth newborns arms appear to be longer in proportion to their legs.



Notes

12.1.2 What is Development?

Development refers to qualitative changes in the body as well as changes in behaviour and attitude. It is difficult to measure development as these changes are qualitative in nature. Physical growth is measurable quantitatively; however, certain changes such as cognitive and socio-emotional may not be easily measurable. These can only be measured qualitatively by the quality of changes that occur in different domains of development. Development is a rather broader term that entails overall changes in the body and mind. It is continuous process that continues throughout the entire life span of an individual. It is said to be more complex than growth. It is understood by the change in quality of relationships, emotions, reasoning and so forth.



INTEXT QUESTIONS 12.1

Put the following words into the most appropriate columns based on whether they are associated with growth or development-

- Quantitative
- Qualitative
- Growing tall
- Becoming heavier in weight
- Change in body proportions
- Maturity
- Management of emotions

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- Continues throughout lifespan
- Disappearance of baby teeth



Notes

Growth	Development

Match the following

- | | |
|-----------------------------|-------------------------|
| 1. Quantitative | a. Lifespan |
| 2. Qualitative | b. Growth |
| 3. Height and weight charts | c. Assessment of health |
| 4. Continuous development | d. Development |

12.2 PRINCIPLES OF DEVELOPMENT

In the previous section, you have already read about growth and development. In this section let us study what are the general principles that govern development.

12.2.1 Development is continuous

Development happens continuously and gradually over a period of time. From the moment of conception till death the individual is continuously changing. You must have observed that as children are born, they begin to slowly change in different dimensions of development. Development is not sudden; rather there are intermediate steps that lead one to fully attained capacities. In terms of language development, children begin by making cooing sounds and thereafter start to babble. Soon after, they start using one word to communicate what they want. By the beginning of the second year they start using two word combinations to state what they want to say. Their language development continues from here to making full sentences by the mid of second year. The complexity of language continues as children grow up until they attain complete mastery over human language. These changes that take place over time may not be noticeable on a day-to-day basis but they are taking place gradually and do not stop over time

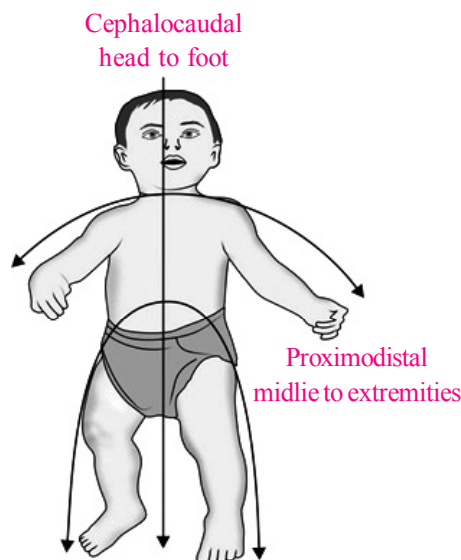
12.2.2 Development is sequential and follows a pattern

Development of all human beings follows a universal or similar pattern and direction. All children follow these developmental patterns. This sequential pattern can be seen in two directions

- i. Cephalo-caudal sequence: This means that development takes place from head to toe i.e. an individual child begins to grow from the head region to the toe. This is why their heads develop first, followed by trunk and legs.
- ii. Proximodistal sequence: This means that development proceeds from the central part of the body to peripheries or outer parts of the body. This can be observed in the fact that children first attain control over their arms and later on their hands. Likewise children's first teeth erupt towards the centre of their bodies and later the teeth towards the sides of the mouth appear.



Notes



There are predictable patterns in all domains of development. In the text above one may read about these patterns in development of language. In cognitive development too one may see that initially children's thinking is bound to concrete objects in their environment but later they can think in terms of abstract ideas as well.

12.2.3 Development proceeds from general to specific

In all phases of development, changes proceed from general to specific. To understand

Human Development



Notes

this better, consider this example. When a rattle is shown to a young child, the child first moves his/her entire arm in appreciation and excitement. The child moves the entire arm with little precision in order to catch hold of the rattle. This is a more general ability to move the entire arm. It is slowly that the child masters the specific ability to co-ordinate his/her eye-hand movements and grab the rattle with the fingers of his/her tiny hands. Thus, grabbing is more specific motor ability.

12.2.4 Development is predictable

One may predict the pattern and rates of development for periods of growth and development in children. It is easily predictable what milestones in different stages of development can be expected from children of different ages. Likewise, the steps in development may also be predicted. For instance, children in the age range of 9 months to 15 months may be expected to start walking on their own without any support from others. In addition to this, there is predictability in the pattern wherein children first gain control over their necks, start sitting with support, start crawling, stand with support and eventually walk without support. These patterns are also observable in other domains of development. For example, children understand and display basic emotions during the first two years of life and by the end of two and half year begins to understand self-conscious emotions as well. Their emotional competencies develop further over childhood and adolescence. Maturity to fully understand and manage emotions continues to develop until adulthood; ending with wisdom in old age. Thus, attainment of emotional understanding is also predictable, just like development in other domains.

12.2.5 Development occurs at different rates

It is notable to mention here that development occurs at different rates for different domains. For instance, physical development is rapid during the first few years of life until it slows down and again picks up pace during adolescence. Development during other domains may not follow the same trajectory. For instance, there is critical period for development of language. Children who are exposed to language inputs when they are under the age of six acquire language better than those who are not given enough opportunity to learn language at this age. There may be other times when development in other domains may happen rapidly. In addition to that, different parts of the body may not develop at the same time. For instance, children gain height to attain adult-like height by the end of adolescence and later do not gain height. However, they may continue to add weight and muscle mass.

12.2.6 There are individual differences in development

There are certain expected patterns of development for a particular age range, which are called milestones of development. These milestones are usually achieved by most of the children in a particular age range. For instance, if one expects children to start communicating their wants and needs by the age of 3, then one must expect that within a normal age range all children will be able to do this. But no two individuals are alike and each child is unique. One child may start walking early and the other may start walking later than most of her/his counterparts. Therefore, one must keep in mind that although sequence of development is uniform and predetermined but the rate of development may differ for different individuals. The level of competence attained by each individual may also differ. Some children excel in language development but lag in physical competencies. On the other hand there may be children who may not do very well in cognitive attainments but are physically very sturdy and athletic.

12.2.7 All aspects of development are interrelated

All domains of development are related to each of the other domains and a child develops as a unified whole. Each domain of development affects the other and is, in turn, affected by the other. Any lag in one domain is likely to affect other domains. For instance, if a child lags in communication and language development then the child may not understand how to maintain healthy social relationships with her/his peers. This may impact the interaction that the child will have with other children. They may not involve this child in their play. This will further impede the child's cognitive, emotional and physical abilities. This impact may vary sometimes serious and permanent and sometimes minor and temporary.

**INTEXT QUESTIONS 12.2**

State whether the following statements are true or false

- Domains of development are not related.
- Development follows a predictable pattern.
- All children are alike and by a certain age all must attain same abilities.
- Physical development during early years of life and puberty is rapid as compared to other stages of life.

Notes



Human Development

12.3 FACTORS AFFECTING GROWTH AND DEVELOPMENT



Notes

You have already studied about growth and development and what are the principles of development. Let us now study about the factors that affect growth and development. Read the case studies given below and answer the questions that follow

Case Study: Anu and Mani are friends. Anu understands that sometimes Mani gets angry on seemingly everyday issues but Mani does not herself recognize her emotional outburst; neither can she deliberately control her anger pangs.

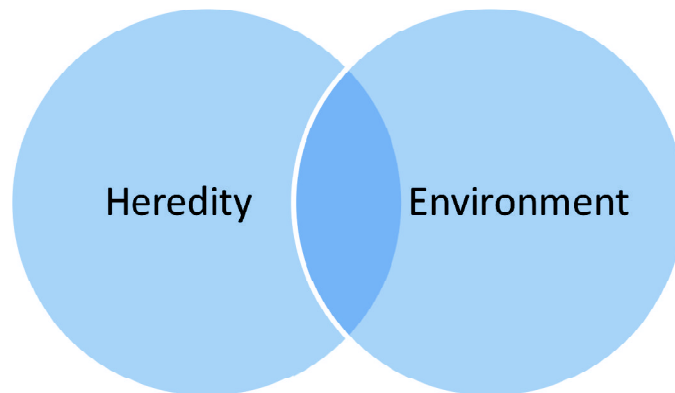
What can you say about the ability of the two friends in understanding emotions?

.....
.....
.....
.....
.....

What can be the probable causes of these differences in the two friends' competencies in management of emotions? Was Anu born with an inherent capability to understand and manage emotions well or did she pick this up from her environment?

.....
.....
.....
.....
.....

The case given above builds upon the fact that development is a product of both heredity as well as environmental factors. Some psychologists believe that heredity impacts our development more than the environmental factors and vice-a-versa. There is no clear cut answer to this nature versus nurture controversy. Our genetic make-up and the inputs we get from the environment, both impact us and make us what we are. Let us explore these factors in greater depth in the section that follows.



Notes

12.3.1 Influences of Heredity on Development of Individuals

Are you like your parents or grandparents in many ways? Do your facial features look like any of them? Have you inherited your parents' height, whether they are tall or short? Have you ever heard your parents telling you that they seem to be having similar medical problems such as asthma, heart ailments and so forth, as their parents had at their old ages? Is there continuity between generations from a similar family tree? How does this happen?

One may inherit characteristics from both their parents. This happens as the child receives genes (which are structural units of chromosomes) from both the parents at the time of conception. Scientists believe that nothing can be added or subtracted from this genetic endowment. This genetic inheritance affects all aspect of our growth and development. Genes are found to influence an individual's height, weight, colour and quality of our skin and hair, even the susceptibility to diseases and medical conditions that one may have at different ages especially during old age. This genetic endowment seems to be tied to maturation of the body and the brain which influences growth and development.

In addition to these aspects, the sex of the baby is also determined at the time of conception. Every individual receives 46 chromosomes-23 each from the father and the mother. The sex chromosomes passed on by the father determine the sex of the child. The sex of the child gives rise to many variations that are related to sex differences. In the earlier section of the lesson it was mentioned that boys are generally taller and heavier than girls. The age for beginning of pubertal changes is also slightly different for boys and girls. While girls begin to attain height and other puberty related changes earlier than boys; boys continue to gain height and muscle mass much later than girls. These differences may be attributed to inheritance of specie-specific patterns of growth and development.

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This is not to say that growth and development is driven only by hereditary make-up of individuals. In fact, genetic predispositions can be overridden by environmental influences. Let us read how environmental or contextual factors affect development.

12.3.2 Influences of Environmental factors on Development of Individuals

We all may have observed that a child's immediate environment of the family and home affects the child after she/he is born. But do you know that even before the child is born the child gets affected by the environment around her/him. This environment is however not external but the environment within her/his mother's womb. Let us read how the environment in which the child grows before birth affects her/his development.

- **Pre-natal Environment**

Many environmental factors such as nutrition taken by the mother, her general state of physical and mental health, her age, and exposure of the unborn baby to environmental pollution, x-rays and drugs taken by the mother during pregnancy affect the child.

If a pregnant mother keeps good health and eats nutritious and balanced food, this affects the child in the long run. Not just the baby born is healthy but also in later life, the child is likely to keep good health. On the other hand, if the mother is poorly fed, this may impact the unborn child negatively. The in-vitro growth will be restricted; the chances of the newborn child being underweight and with reduced motor and cognitive capacities become high. Mother needs to remain physically healthy and active during pregnancy. This protects the child's physical well-being in the womb. Apart from general physical state of the mother, the mother should remain happy. When pregnant mothers are upset and experience emotions like unhappiness, rage, fear and anxiety, this affects the mental states of the child as well. Such mothers are more likely to deliver premature, low birth weight, hyperactive or irritable babies.

- **Maternal health and age during pregnancy**

Besides nutrition and physical-mental states of the mother, if mother contracts any disease during pregnancy, that adversely affects the unborn child. Maternal age is also likely to impact the foetus. Reproductive organs of mothers who are less than seventeen years of age are not fully mature and the hormones required for reproduction are not at the optimum level. Likewise, after the age of 35, hormonal activity gradually decreases which may lead to complications in the

foetus. Women over 40 run the risk of delivering children with chromosomal abnormalities.

- **Potentially harmful environmental factors during pregnancy**

Environmental pollution such as absorption of lead from car exhausts, inhaling paint from flaking walls and factories affect prenatal development negatively. Continued exposure to these may lead to prematurity, low birth weight and brain damage in the foetus. These may also lead to physical defects in the unborn child. Along with these, pregnant mothers should also avoid unnecessary exposure to x-rays as these too may affect the physical and mental development of the foetus. In addition to these, there are some antibiotics, anticoagulants, narcotics, tranquilizers that may harm the unborn child. These drugs should not be taken without doctor's prescription. Along with these, drinking alcohol and smoking may lead to mental retardation, physical deformities, sleep disturbances and congenital heart diseases in children if consumed. These also increase the chances of lower birth weight in the newborn and premature birth. In fact caffeine and tannin consumed through tea and coffee if not taken in moderation may also lead to negative effects on the foetus.

There are some other contextual factors that affect the child after birth. These include socio-economic status of the child's family, their living conditions, family structure, child rearing practices and the society at large.

- **Socio-economic background**

Socio-economic background of a child's family impacts the child in both the short and the long run. Socio-economic background of the family is an indicator of different economic resources and the living standards of the family vis-à-vis the child. A child in a lower socio-economic status family as compared to those from middle or higher socio-economic families, is more likely to have poor nutrition, unhygienic living conditions, delayed medical treatment, compromised educational and overall stimulation at home. All these affect a child's growth in most of the domains of development. As already stated above, all domains of development are interrelated, so poor nutrition not just impacts the physical well-being but also impairs the cognitive, language and socio-emotional development negatively.

- **Family Structure**

Urbanization and migration have brought about changes in the structure of family.



Notes

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Notes

There is an increasing number of families in the contemporary times which are nuclear in nature. The kind of social environment provided to the children as they grew up in joint family set ups is absent in the nuclear family set ups. This social environment not only includes distribution of family resources among more members but also the set of traditions, values and culture. Furthermore, since more and more women are joining the workforce outside home, this has also changed the role of family members in the life of growing children.

- **Child-rearing practices**

You may have observed that different parents interact and deal with their children differently. Some parents are very authoritarian and make strict rules and regulations that the children must follow. On the other hand, some parents may be overly permissive, letting children do whatever they wish to do without any monitoring or control exercised by the parents. These are two different types of parenting styles. In this continuum there may also be parents who let the children make decisions for themselves but talk to their children about the pros and cons of every situation and help them arrive at their choices but after a dialogue with them. This gives their children a sense of autonomy and responsibility for what they choose to do. These parenting practices may have positive or negative impact on the child's development. Balanced attitude of the parents and other family members towards children creates an environment where children learn to become confident, have high self-esteem and find people around them trustworthy. This is not just important for social and emotional development but also for all the related domains of development. On the other hand, if children grow up in unfavorable environment, this is going to affect their personal and social adjustment negatively. They may show a lag in all other domains of development as well.

- **Siblings and Peer group members**

Apart from parents, children's growth and development also get strongly influenced by their siblings and peers. Siblings at home become playmates and interaction with them provides context to learn so many lessons. All these contribute in the cognitive, language, socio-emotional, moral and physical development. Children learn to distribute things among themselves; they learn to share and fight for things; they also learn to look after and support each other and so forth. Furthermore, at times siblings also develop rivalry with each other, this too affects children.

Beyond the confines of the home and one's immediate family, how well a child is accepted within the peer group deeply influences her/his development, especially self-concept. Children learn to behave appropriately with their peer group. Friends provide sources of emotional support for each other. In company of friends as well children learn to share, cooperate, become autonomous, practice skills of leadership and competition. Hence, the role of peer group as one of the factors that influence development cannot be undermined.

There are other contextual factors such as gender, media that too affect development in different domains.



Notes



INTEXT QUESTIONS 12.3

Multiple choice: Select the best answer for each question

1. The primary cause of developmental change is
 - a. Maturation
 - b. Learning
 - c. Experience
 - d. The product of both maturation and experience

2. Pre-natal development is not affected by
 - a. Mother's nutrition
 - b. Environmental pollution
 - c. Peer relations
 - d. Mother's emotional state



ACTIVITY

Talk to a grandparent and a parent each who grew up in joint/nuclear family set up about their experiences of growing up. In particular discuss their interaction with their parents and other members of the family. Ask them to reflect and share how their patterns of interaction influenced their ways of behaviour, personalities (including temperament) and sense of being (including aspirations, ways of dealing with stress etc).

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12.4 LIFESPAN DEVELOPMENT



Notes

You must have heard from people sharing about their concerns based on the stage of life they currently inhabit. This is indicative of the fact that human lifespan can be divided into stages. Human lifespan can be followed in a chronological format that begins from birth (or even conception) and is recognized till adulthood and old age.

Most Psychology and Child Development texts divide human lifespan into the following stages-

Table: Stages of Human Lifespan

Stages of Human Development	
Conception to birth	Prenatal
0-2 years	Infancy
2-3 years	Toddlerhood
3-6 years	Early Childhood
6-8 years	Middle Childhood
8-11 years	Late Childhood
11-18 years	Adolescence
18-40 years	Early Adulthood
40-65 years	Adulthood
65+ years	Old Age

As you can see in the table, from conception till birth, the foetus grows in the womb of the mother. This period is called the prenatal stage. After birth, from 0-2 years children are in the stage of infancy. From 2-3 years they are considered to be in toddlerhood. From 3-6 years of age children inhabit the stage of early childhood and from 6-8 and 8-11 years they are considered to be in middle and late childhood respectively. Adolescence begins by the age of 12 in most societies and continues till the age of 18 years. Early Adulthood emerges at the age of 18 years and continues until the age of 40. From 40 to 65 years of age people continue to be in adulthood; following which they enter the stage of old age. It is important to note that as modern life styles are

changing, people do not strictly fit into the age brackets mentioned above. These age ranges are rather fluid. One may see children entering into the stage of adolescence rather early and delay responsibilities of adulthood.

Until recently it was widely believed that development stops at adolescence, but now we know that even very old people continue to grow and develop. The lifespan development perspective proposes that people continue to change throughout life as well as stay the same, from conception to death. This means that there is an internal sense of continuity within each individual where their earlier life stages impact their later life stages. In consonance to that, they adapt to each new situation and concerns of the new stages that they inhabit. Baltes have identified the following key principles for understanding the lifespan approach. These are as under-

- i. **Development is lifelong:** As life keeps changing, one encounters new situations each day. This requires a person to adapt and change as per the demands of the new situations. For example, changing a new school, a new job and so forth. All such changes require a person to change. But there is continuity in the manner we change. Each period of lifespan is affected by what happened before and will affect what is to come.
- ii. **Development is multidirectional and involves both gain and loss:** Development proceeds in more than one direction. As people gain in one, they may lose in another. Children grow up in one direction i.e., they grow up in size and abilities. However, as adolescents typically gain in physical abilities, they lose their ability to learn language. Although vocabulary continues to increase throughout adulthood; other abilities such as ability to solve unfamiliar problems may diminish.
- iii. **Relative influences of biology and culture shift over the lifespan:** As we have already read in the text above, development is influenced by both biology and culture, the balance between them changes over time. Biological influences such as muscular growth, strength and coordination becomes weaker as the person gets old, but cultural supports such as education, relationships, technological support from the environment helps to compensate.
- iv. **Development is characterized by plasticity:** Throughout life, development shows modifiability. This is all about our ability to change. Many abilities such as memory, strength, endurance keeps changing over the lifespan and we also have the ability to recover physically and mentally from injuries and accidents.
- v. **Development is influenced by the historical and cultural context:** Each



Notes

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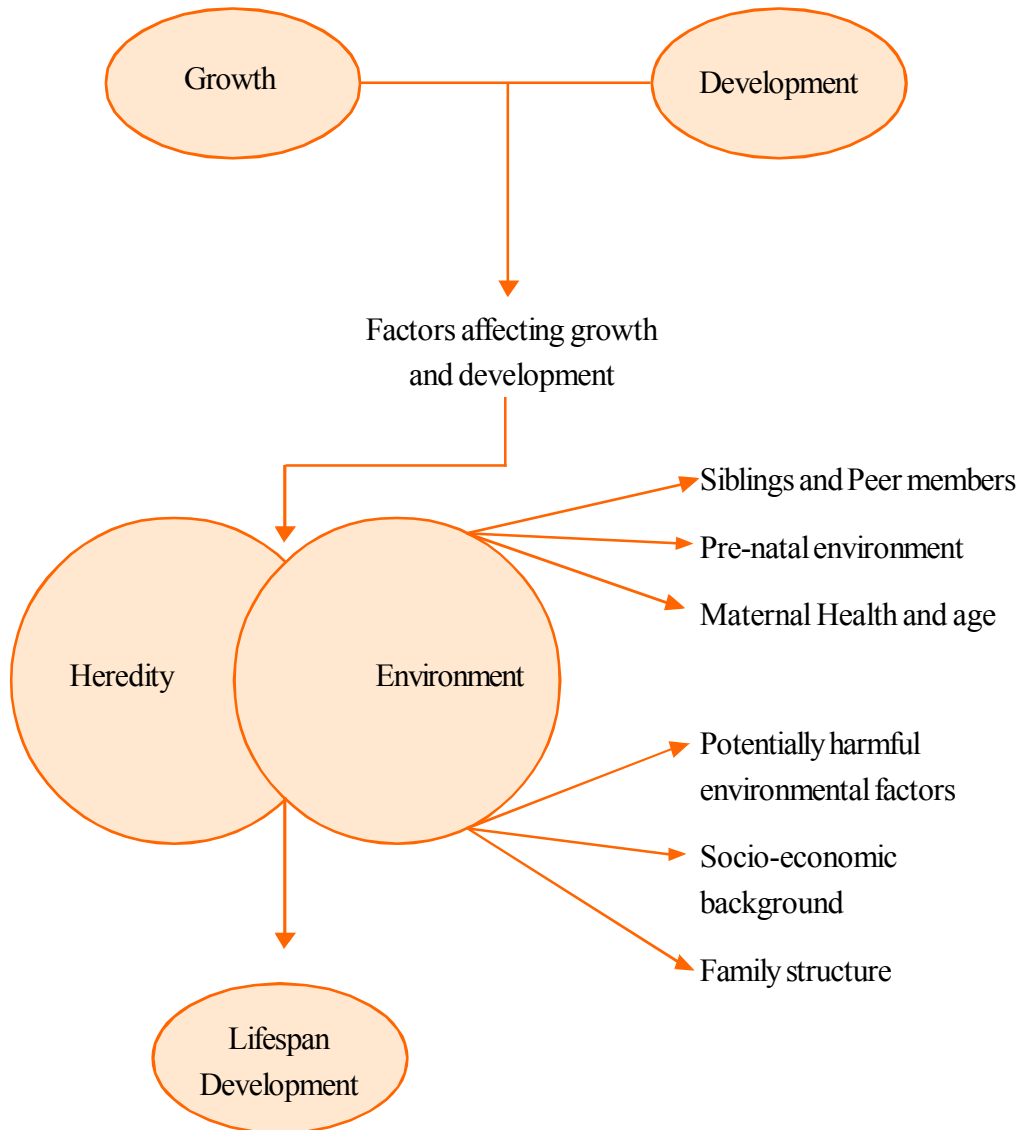


Notes

person develops within multiple contexts including circumstances or conditions defined in part by biology, in part by place and time. In addition, to that age graded (specific age group an individual is in such as toddlerhood, adolescence) and non-normative life influences such as those experiences that are unique to each human being also influence our development.



WHAT YOU HAVE LEARNT





TERMINAL QUESTIONS

1. State the differences between growth and development.
2. Elaborate different principles of development with examples from each of the domains.
3. Each child's development is different and this makes each child unique. Do you agree or disagree with this statement? Support your answer with suitable examples.
4. Make a web of factors that influence development. Discuss two hereditary and environmental factors each that affect development.
5. Explain lifespan development taking examples from your own life changes.
6. What are some of the changes that take place in child's physical development and growth, and how can they be measured?
7. What is the difference between growth and development, and how is development measured?
8. What are the general principles of development and how does the process of development occur in a sequential and patterned manner, following a cephalo-caudal and proximodistal sequence?
9. How does lag in one domain of development affect other domains and child's overall development?
10. What are the key principles of the lifespan development perspective proposed by Baltes?



Notes



ANSWERS TO INTEXT QUESTIONS

12.1

Growth and Development

Growth

Development

Quantitative

Qualitative

Human Development



Notes

Growing tall

Maturity

Change in body proportions

Continues throughout lifespan

Becoming heavier in weight

Management of emotions

Disappearance of baby teeth

Match the Following

Answers

1-b

2-d

3-c

4-a

12.2

Principles of Development

(a) False

(b) True

(c) False

(d) True

12.3

Multiple choice

1. d

2. c



Notes

INFANCY AND CHILDHOOD

Meena is now 7 years old. She often hears stories of her childhood from her parents and grandparents. She does not remember much from her infancy days on her own. But she seems to have picked up a sense of what all she could do from the photographs and narrative accounts shared by her parents with her. She tells that she started walking by her first birthday and recognized almost all her extended family members as well by that time. She also tells how happy she used to feel when her mother used to return from office and her father used to bring her balloons and chocolates every evening. She remembers her first days to her play-school as well.

Think of the time when you were a young child. You must have also heard about your growing up from your parents and others. Some of the significant events you must be remembering on your own as well. Are you able to recall what all you used to do during your childhood days? What abilities did you have as you grew up from infancy through childhood? What were your developmental milestones and concerns related to infancy and childhood? In most developmental psychology texts, childhood is divided into the following stages of development-

- Infancy: Birth to 2 years of age
- Early childhood: 3-5 years of age
- Middle and late childhood: 6-11 years of age.

In this chapter let us study about physical, cognitive and socio-emotional development during these stages of life.

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**LEARNING OUTCOMES**

After studying this lesson, learner :

- describe the stages of physical, cognitive and socio-emotional development during infancy to childhood; and
- reflect on the issues and problems encountered in infancy and childhood stage.



Notes

13.1 PHYSICAL DEVELOPMENT

Physical development includes changes in height, weight and body proportions. Physical development is understood better in terms of motor achievements of children. There are two types of motor skills-gross motor and fine motor skills. Gross motor skills require large muscle movements and fine motor skills involve small muscle movements. Let us study about these in detail in the following sections.

13.1.1 Physical Development during Infancy

An average newborn is 49-50 cm long and weighs 2.5 kg. Newborns in the first few days lose 5 to 7 percent of their body weight. This is because infants are learning to adjust to suckling, swallowing and digesting. There is rapid weight gain once they have mastered this. By the age of 4 months, infants have ordinarily doubled their birth weight and have nearly tripled it by their first birthday. In the second year of life, infants weigh approximately 10 kg; and have now reached about one fifth of their adult weight.

In terms of length, infants grow approximately 1 inch per month during the first year, reaching approximately one and a half times their birth length by their first birthday. By the age 2 years an average infant becomes 71.3cm tall, which is nearly one-half of adult height.

Early motor skills are based on infant reflexes i.e. they are often automatic responses to the environmental stimuli. For example, infants grasp anything that touches their palm (which is called grasping reflex) and turns head, opens mouth and begins to suck when their cheeks are stroked or side of mouth is touched (which is called rooting reflex). Some of these reflexes such as grasping reflex eventually become incorporated into more complex voluntary actions.

Newborns cannot control their body postures voluntarily. But within weeks they begin to hold their heads erect and soon they can lift their heads while prone. By age 2

months, infants start sitting while supported on lap. But until 6 or 7 months of age, they cannot sit independently.

Infant Development Milestone Chart

	6 To 12 MONTHS	12 To 24 MONTHS
MOTOR DEVELOPMENT	<ul style="list-style-type: none"> ● Holds head steady. ● Sits in lap without support; grasps book, puts in mouth drops, throws book. 	<ul style="list-style-type: none"> ● Holds and walks with books ● No longer puts books in mouth right away ● Turns board pages.
COMMUNICATION AND COGNITION	<ul style="list-style-type: none"> ● Smiles, babbles, coos likes, ● Likes pictures of baby faces. ● Begins to say 'ma,' 'ba', 'da', ● Responds to own name ● Parts picture to show interest. 	<ul style="list-style-type: none"> ● Says simple words, then 2 to 4-word phrases. ● Gives book to adult to read. ● Points at pictures. ● Turns book right-side up. ● Names pictures, follows simple stories.
ANTICIPATORY GUIDANCE	<ul style="list-style-type: none"> ● Talk back and forth with your bab; make eye contact, ● Cuddle, talk, sign, read, and play. ● Point at and name things; nose, ball, baby, dog. ● Follow baby's cues for 'more' or 'stop'. ● Play games such as 'peek-a-boo' or 'pat-a-cake.' 	<ul style="list-style-type: none"> ● Smile and answer when your child speaks or points. ● Let your child help turn the pages; keep naming things. ● Use books in family routines; naptime, playtime, bedtime; on the potty; in the car, bus. ● Use books to calm or distract your child while walking.



Notes

By about 8 months of age, infants usually learn to pull themselves up and hold onto a chair and many can stand alone by 10 to 12 months of age. Infants, who have just learnt to walk, go down steep slopes rather discriminately, often falling but soon they become experienced walkers.

By 13 to 18 months of age, they move all over the place. They can pull a toy attached to a string. They can also start climbing up a number of steps using their hands and legs. By 18 to 24 months, toddlers can walk quickly and run a short distance. By the age of 2 years, toddlers become more skilled in exploring their environment using their newly achieved motor abilities. They can balance themselves while picking up objects from the floor while standing. They can stand and kick a ball without falling.

Let us now read about fine motor skills during infancy. At birth, infants hardly have control over fine motor skills. Soon they begin to reach out and grasp objects in their environment. This is a significant achievement which infants keep refining during the first 2 years of life.

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Notes

13.1.2 Physical Development during Early Childhood

During early childhood both boys and girls slim down as the trunks of their bodies gain length. This is the time when children's movements in the environment becomes almost 'automatic' as they can move their legs and balance the entire bodies with more confidence and carry themselves more purposefully.

At 3 years of age, most children enjoy simple movements such as hopping, jumping and running. In fact they take pride in showing how fast they can run across a room and how high can they jump. By 4 years of age, they become more adventurous in their play activities. They are able to climb up and down the stairs with one foot on each step.

By early childhood, children have mastered the ability to pick up the tiniest objects between their thumb and forefingers. By 4 years of age, children's fine motor coordination becomes even more precise. By age 5, their arms, hand and fingers move together in tandem with each other.

13.1.3 Physical Development during Middle and Late Childhood

Physical growth and development slows down but is rather consistent during middle and late childhood. This is often considered a period of calm before the rapid growth spurt of adolescence. There is increase in height and weight. The increase in weight is mainly due to increase in the size of skeletal and muscular system as well as the size of body organs.

Changes in body proportions are among the most pronounced physical changes in middle and late childhood. During this period, head circumference, waist circumference and length of legs in children decrease in relation to body weight. Bones continue to harden in this period. "Baby fat" decreases while muscle tone improves further in middle and late childhood.

Running, skipping, climbing, swimming and bicycling are just a few of the many physical skills that children master at this age. These skills become a source of pleasure as children play games using these play capabilities. By middle and late childhood, children can use their hands as tools. They can use their hands to hammer, paste, tie the shoe laces, button clothes etc. By age 10 children become better at using their hands to write letters properly. By ages 10 to 12 years, children's hand movements become complex and intricate. Now they have fine motor skills enough to produce fine craft materials.



INTEXT QUESTIONS 13.1

Fill in the blanks-

1. Changes in height, weight and body proportions are termed as
2. Large and small muscle movements are required for motor andmotor skills respectively.
3. Middle and late childhood is the time when physical development slows down but is rather
4. Increase in body weight during middle and late childhood is mainly due to increase in size ofandsystem.



Notes

13.2 COGNITIVE DEVELOPMENT

Cognitive development refers to how children think. In this chapter we will lay emphasis on how children thinking changes from one developmental stage to the other.

Piaget proposed that just as our physical bodies have structures that help us adapt to the outside environment, similarly we have mental structures to adapt mentally to the information in the world around us. They build schemes that are the smallest units of thought to do this. Let us briefly study at the processes through which children construct knowledge about the world around them. Piaget believed that children use the following processes to actively construct their own cognitive worlds-

- i. **Adaptation:** This occurs when children adjust their current information about the world to new environmental demands. This involves two processes-
 - a. **Assimilation:** When children incorporate new information into their existing schemes, they are said to be assimilating information. For example, a child might call all running vehicles on road ‘car’ as s/he has an existing scheme for a ‘car’.
 - b. **Accommodation:** In this second process, the above mentioned child learns that motor cycle and trucks are not cars, and hence modify his schemes of what cars are, based on this new information. This is called accommodation which occurs when children adjust their schemes to fit new information and experiences.

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- ii. **Organization:** All children organize i.e. group and categorize information (and schemes) to make better sense of the world. This is called organization. For example, in the above stated example the child reorganized the information s/he had and made different categories of vehicles in her/his mind such as cars, motor cycle and trucks. The child was cognizant of the similarities and dissimilarities between these categories and based on these s/he modified and organized this into newer categories.
- iii. **Equilibration:** This is a mechanism which explains how children shift from one stage of thought to the next. All children experience cognitive conflict or disequilibrium in trying to understand the world, but eventually they resolve this conflict about new information and reach the state of balance, or equilibrium of thought. For example, in the example given above, the child got confused when s/he encountered that all vehicles are not cars. This brought the child into a state of disequilibrium but when the child realized that all vehicles are not cars and the conflict was resolved; then the child came to the state of equilibrium. Children resolve these cognitive conflicts as their thought becomes more advanced. These back and forth movements between states of equilibrium and disequilibrium are called equilibration.

Keeping these processes in mind, let us study how children develop cognitively during infancy and childhood.

13.2.1 Cognitive Development in Sensorimotor Stage

Children from birth to two years of age are in the sensorimotor stage of cognitive development. In this stage, they understand the world by co-coordinating sensory experiences (such as seeing and hearing) with physical and motor actions. Cognitive achievements during infancy are as follows-

1. At the beginning very young infants suck anything that comes in contact with their lips but later they learn to adapt their sucking scheme and suck differently at different objects. Infant actions are first directed towards their own bodies (for example, sucking their own thumb) and later directed towards the outside environment (putting another object into their mouth).
2. Infants begin to understand that objects and events continue to exist even when they are out of sight. This is called object permanence. You must have observed that 8 to 9 month olds would not reach for a ball if it has disappeared whereas an 18 month old child would reach for it.

3. **Imitation:** Around 4 months of age infants copy or reproduce someone's act or language which is called imitation. Till 8 months of age they imitate only those actions that they already able to produce. In other words, if someone makes the actions and sounds that the infant can produce then the infant copies those from the person making them. But if the person makes any new actions and sounds that the infant has not already mastered, then the infant cannot make those. By 8-12 months, infants are able to imitate behaviours slightly different from what they usually perform. Ability to imitate improves further in the coming months and by 18-24 months, infants become capable of deferred imitation i.e. they can remember, recall and enact or imitate a person or an event that is currently absent from the scene and the infant may have observed at an earlier point of time.



Notes

13.2.2 Cognitive Development during Pre-operational stage

The Pre-operational stage extends from 2 to 7 years of age.

- The first sub-stage of pre-operational thought called the symbolic function occurs roughly between the ages of 2-4 years. In this sub-stage children begin to represent the world with words and images. For example, children would start using the term 'cycle' for the object or picture of a cycle or 'ball' for the object ball. They use scribble designs to represent what they are thinking about and also engages in pretend play. You must have observed small children playing doctor-doctor, teacher in a class etc.
- The second sub-stage of pre-operational thought called the intuitive sub-stage occurs roughly between the ages of 4-7 years. In this stage of pre-operational thought children bombard adults with all sorts of questions about the world they live in. This shows they are beginning to use primitive reasoning in figuring out why things are the way they are.

However, children's understanding in this stage is also very limited. Pre-operational children's thought is characterized by -

- **Egocentrism:** It is the pre-operational children's inability to distinguish one's own and someone's perspective. For example, in the picture a child at this stage may not understand that a person sitting at different spot (B) than them (A) will see a different view of the mountain as compared to what they are seeing.

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Figure 13.1: Piaget's three-mountain problem

- **Animism:** It is the belief that inanimate (non-living) objects have life-like qualities. For example, a pre-operational child might believe that the angry sun is chased by the clouds. Here, just as living objects have emotions and their actions are directed by their emotions; emotions are being attached to life-less objects.
- **Centration:** Children in pre-operational stage are able to 'centre' their attention on only one aspect or characteristic of the object and exclude all other aspects.
- **Lack of conservation:** In this stage, children fail to understand that altering an object's physical appearance does not change its basic properties. For instance, an adult understands that a certain amount of liquid remains the same, regardless of the shape of the container in which the liquid is poured. But a pre-operational child might believe that out of the two different sized containers, one might have more and the other might have less liquid even when the same amount of liquid is poured into the two containers.

13.3.3 Cognitive Development during Concrete Operational stage

Concrete operational stage lasts approximately from 7-11 years. In this stage, children start applying logical reasoning to problems but their thinking is tied to specific or concrete examples i.e. children can perform concrete operations or mental actions on real, concrete objects. For example, they can solve arithmetic problems like addition, subtraction, division when concrete objects are given to them. Some of the other cognitive attainments of concrete operational thought are mentioned below-



Figure 13.2: Disription not mention in word file

- **Conservation:** To understand conservation better, refer to Figure 2 once again. When this activity is done with concrete operational children, they are likely to focus on both dimensions of the beaker, i.e they will take both height and weight into consideration, when deciding which of the two beakers has more liquid in it. Thus, children in this stage are able to conserve liquid, length, number, mass, of objects and substances.
- **Classification:** Concrete operational children are able to divide and categorize objects into sets and subsets by understanding their relations. For example, they can categorize fruits and vegetables of different types in multiple ways such as those based on their colour, taste, size and so forth.
- **Seriation:** It is the ability to order objects along a quantitative dimension. When children of this age are asked to order sticks by length, they can put the sticks in correct order, either ascending or descending whatever is asked for.



Notes



INTEXT QUESTIONS 13.2

1. Match the following

a. Organization	i. Adjusting existing schemes to fit new information and experiences
b. Assimilation	ii. Back and forth movements between states of equilibrium and disequilibrium
c. Accommodation	iii. Incorporating new information into existing schemes
d. Equilibration	iv. Grouping and reorganizing information
2. State which of the following statements are 'true' or 'false'
 1. Piaget believed that children actively construct knowledge about the world around them.
 2. 4 months old infants can imitate actions that they cannot even produce.
 3. Preoperational thought is egocentric.
 4. Children in the concrete operational stage can perform concrete operations or mental actions on real, concrete objects.

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Notes

13.3 SOCIO-EMOTIONAL DEVELOPMENT

Have you ever thought how do children develop an understanding about themselves and others? How do they use this understanding to get along with others? How do they develop emotions?

In this section let us study how children develop a sense of self; interact socially with other people; develop and learn to manage their emotions from infancy through adolescence.

Social development refers to a child's ability to interact with others in their environment. It involves a number of social skills such as learning to act as per the rules and regulations of society, getting along with others, participation and involvement in social groups and so forth. This ability is closely entwined with the ability to understand and manage one's own emotions and judging the emotional reactions of others. Emotional development refers to the development of emotions and feelings.

Socio-emotional development is a gradual process through which children acquire the ability to understand, experience and manage emotions of their own as well as others. This helps them in developing healthy interpersonal relationship with others. Socio-emotional development involves learning many social skills such as learning to act as per the values and regulations of the society, getting along with others, participation and involvement in social groups and so forth.

13.3.1 Socio-emotional development during Infancy

When infants begin to understand that the child they see in the mirror are they themselves, this is the time when they begin to understand that they are a separate entity in the environment around them. Self-recognition begins by 18 months of age and is usually fully attained by 2 years of age. This is the beginning of understanding to self as distinct and unique.

Crying is the most basic mechanism newborns have for communication. It is the way through which they express their emotions. Emotions such as joy, sadness, anger, surprise and fear that are present in the first months of life are called primary emotions. Since parents observe their babies more closely than other people, they can better differentiate between infant's 'basic' cry from 'anger' cry and 'pain' cry. They can also understand reactions of joy and fear in their babies.

Babies interact and connect socially with other people in their own environment through smiling. It is a way in which infants communicate their emotions. Until around 2 to 3

months of age, a smile does not occur in response to external stimuli, but appears reflexively, especially during sleep. But after 2 to 3 months of age, infants begin to smile in response to external stimuli. This response may be to a familiar person or an amusing event in the environment.

Another significant emotion in babies is fear, which typically appears at about 6 months of age and peaks at about 18 months. The most frequent expression of an infant's fear involves stranger anxiety in which infants show a fear of persons they do not recognize. Along with stranger anxiety, infants also experience fear of being separated from their mothers or primary caregivers. This leads to separation protests, where the infants cry out aloud and resist separation from the mother or primary caregiver. Not all infants show distress when they either encounter strangers or are separated from the mother. Whether an infant will show stranger anxiety or not, depends on the social context and the characteristics of the stranger. Infants show less stranger anxiety when they are in their familiar settings and feel secure by mother presence. Infants 'read' the emotions of other people, especially their mother before they act. They look at her to see if she is happy, angry or fearful. They use her reaction as a source of information on how to act in a situation. This is called social referencing.

Around 2 year old children start recognizing themselves in the mirror or in a photograph. This indicates the beginning of understanding of self as distinct and unique. During this period they also use words like 'I', 'me', and cry for things 'its mine'.

13.3.2 Socio-emotional Development during Early Childhood

In early childhood children can verbally communicate about themselves, but they define themselves in concrete terms. Their descriptions center on what they know, what they can 'count' or tell and what are their possessions such as toys and other play materials. These descriptions are woven around physical and material attributes and activities that they can do.

Early childhood is the period of childhood when children develop an understanding of themselves and begin to see social comparisons. This thus becomes the period of development of emotions that require evaluation of oneself and consciousness. These are called self-conscious emotions. They emotions include empathy, jealousy and embarrassment. These first appear at about one and a half years of age. There are other emotions such as pride, shame and guilt which appear at about two and a half years of age. These appear when children are able to understand societal standards and rules and evaluate their behaviour against those.



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Development of evaluative, self-conscious emotions is influenced by parents and other people's responses to children's behaviour. When children feel successful by achieving a particular goal, they feel joy and express pride. On the other hand, children experience shame when they have not met the standards or goals. It is a child's reaction to failure or success and is evaluative in nature. Since what other people say about children influence them and hence parents and other people should be careful about what they say and how they behave with children.

The ability to understand and talk about one's own and other people's emotions increases in children in early childhood stage. Between ages 2 to 4, children acquire more words to describe their emotions. They also start relating the causes and consequences of feelings. Their increased ability to deal with emotions gets reflected in their usage of words in pretend play. By ages 4 to 5, children start understanding that same events can elicit different emotions in different people. They become better at understanding social situations and emotional reactions to those social situations. They express their emotions keeping the social implications of those expressions in mind.

13.3.3 Socio-emotional Development during Middle and Late Childhood

Children's self-evaluations become more complex during middle and late childhood. This is the period when they start defining themselves in terms of their internal characteristics. These also include their subjective inner states. For instance, they may say that 'they are smart and popular'. They may also talk about their affiliations to their social groups such as school, class etc. in their descriptions of themselves. They may start comparing themselves with others. Moreover, they may not just talk about the person that they are, but may also talk about what they aspire to become.

Their increased social understanding about themselves and other people during middle and late childhood, help them understand different aspects of a social situation. This gives them an edge at understanding their own emotions and emotional reactions of others. Their ability to understand complex emotions such as pride and shame increases. They begin to understand that same situation can trigger different emotions in different people.

Children show a marked improvement in suppressing or concealing negative emotional reactions. For instance, if they anticipate punishment in response to display of anger, then they learn to conceal their anger. In fact this is the time when they start reflecting on their own emotional states and start using strategies for redirecting their feelings. By now, they have learnt to engage themselves in different activities to distract themselves from troubling emotions.



INTEXT QUESTIONS 13.3

Fill in the blanks:

1. Infants show fear for persons they do not know. This is called _____.
2. Infants cry and resist separation from mother. This is called _____.
3. Socio-emotional development means managing the _____ of oneself and others.
4. Children gradually develop evaluative emotions in response of people's reactions to children's behaviours. These emotions are called _____.



Notes

13.4 ISSUES AND CONCERNS DURING INFANCY AND CHILDHOOD

Each of the developmental stages has its own issues and concerns that children in these stages have to deal with. These concerns are significant for the children as well as for their parents and teachers. Some of these are discussed below.

13.4.1 Issues and Concerns during Infancy

Role of early stimulation: Early stimulation is used with children from birth to age 6, with the aim of optimizing infants' development in different domains. The goal of the stimulation is not accelerating development or forcing the child to achieve goals that they are not prepared to meet, but to recognize and encourage the potential of each individual child and present challenges and appropriate activities to strengthen their self-esteem, initiative and learning. Early stimulation may be given in all domains of development such as physical and motor, language, cognitive. Infants may be supported to sit, crawl and walk. Infants learn to communicate better if their earlier attempts at usage of speech are promoted. Children learn to use language more confidently when they feel that the persons in their environment are receptive to their attempts at using speech. Their mistakes get corrected in due course of time. Similarly, to optimize cognitive attainments, children should be provided with a rich and stimulating environment where they get a chance to explore objects and play around without fear. This makes them better at experimenting with their environment and rests their curiosities.

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Early Identification of Developmental Delays: As already discussed in the sections above, certain competencies in different domains of development, are expected during each of the periods of development. Although there are individual differences in the attainment of these competencies yet there is a general developmental pattern and range that remains alike for all children. In case a child is observed to show a delay in this developmental pattern, then this may be a cause of concern. To put it simply, if a child does not start to walk and attain other physical milestones, begin to communicate and use speech appropriately. When all children of her/his age have already mastered these, then this must be brought to the attention of experts in this field. Failure to achieve developmental milestones is a serious concern and any delay in reporting means delay in timely intervention. It is significant to mention here that many of the developmental lags can be rectified by early intervention.

Dealing with Infant Anxieties: As mentioned above, infants show stranger and separation anxieties. It is up to parents how to deal sensitively with infants over these anxieties. If infants are introduced to the strangers in a non-threatening way, they are more likely to get comfortable in the presence of the stranger. Stranger or visitors in the family should also be briefed and requested to approach the infants after meeting other persons in the family. Their friendly behaviour with others makes the infants feel that the stranger is harmless. In addition to that, whenever parents especially mothers are leaving the infants behind, they must leave them with those adults whom the children are familiar with. The infants slowly understand the permanency of the mother and understand that the mother may go away for brief intervals for work and once the work is over she is likely to return back to the infant.

Parenting concerns: Parents of infants first have the task to adjust their lives and daily routines as per the needs and requirements of the child. This is physically as well as emotionally a challenging task for the parents. In addition, fulfilling immediate needs of the child, such as feeding and keeping them dry and warm, take precedence over other things. Parents have to understand that early childhood experiences are formative in the child's life and essential for the growth of the child. The child is to be fed well and kept clean, the child learns to trust her/his environment as predictable and believes in the caretakers for being there for her/him. Hence, the role of parents in providing constant support to the child is significant.

13.4.2 Issues and Concerns during Early childhood

Toilet-training: One of the major tasks at the beginning of early childhood is toilet training. This task has two aspects-physical as well as socio-emotional. In terms of the

physical aspect of toilet training, children must be ready bodily to be able to tell or indicate in advance that need to go to the toilet. The socio-emotional aspect of toilet training is closely related to the reaction of parents' and other people in the child's environment to toileting. There are times when children are unable to communicate in advance the need to pass urine and hence pass urine at a place inappropriate to do so. In such a case, if the child is ashamed and made fun of or scolded badly, this leads to stress related to toileting. The child may start showing up the stress symptoms in terms of withdrawal, shyness or aggression. On the other hand, in the same situation, if the child is dealt patiently and responsively, then the child will become much more alert and confident about his/her physical states.

School readiness: You must have seen children crying and clinging to their parents resisting to go to playschool or pre-school. Early childhood is the time when children enter any form of play pre-school activities. Separation from informal setting of the home and getting used to the 'formal' arena of 'school' where all activities are timed and one has to follow the rules of participation is a huge task for the children in early childhood. Role of parents and teachers is significant in helping children settle down in schools. If children are given a positive and caring environment then this seemingly difficult transition becomes smooth for the children.

Autonomy and initiative: Children in early childhood are beginning to take control of their bodies and learning to do their everyday tasks on their own. Sometimes, when they mess up in their activities such as eating on their own, trying to bathe themselves, then parents either readily rush to help children and do their activities themselves or ridicule and shame the child on his/her incompetency. This makes the children under-confident of their attempts to do things for themselves. On the other hand, if children are given autonomy and encouraged for their initiatives they are taking, they are likely to feel secure and confident in doing things for themselves.

13.4.3 Issues and Concerns during Middle and Late childhood

'Industry versus inferiority': Middle and late childhood coincides with Erikson's psycho-social stage of 'industry versus inferiority' (Erikson). It is the time when children's social world expands and their peers become significant part of their social circle. During this stage of life, two of the important developmental concerns are practicing future adult roles and responsibilities and learning to become industrious in whatever one does. This gets reflected most in children's games that they play with their peers. You must have seen children racing with each other on cycles, competing with each other in games of badminton, cricket, pithu and so forth. One can also see them step



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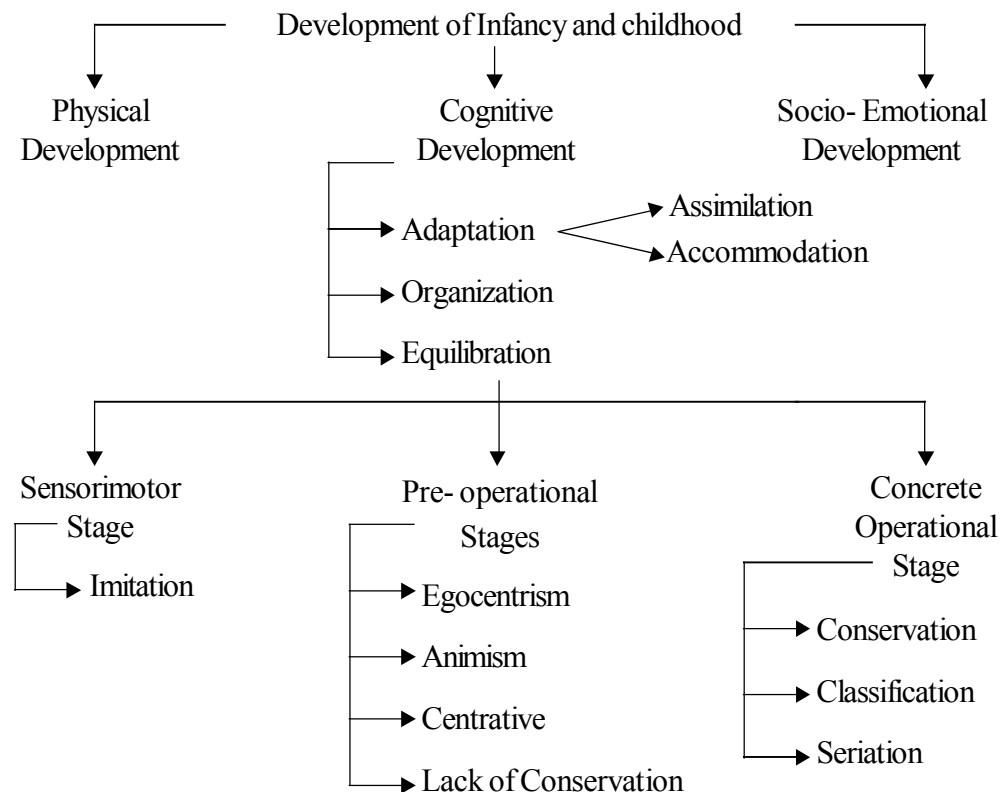
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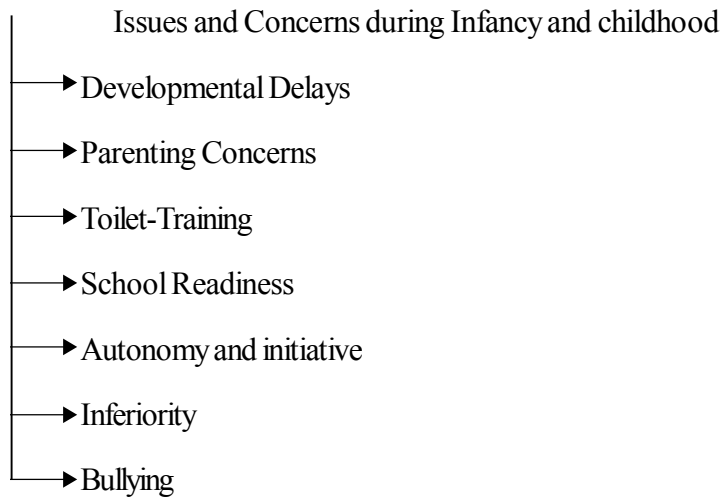
into adult social roles temporarily and take care of younger siblings and guiding younger playmates. All such activities become the practice ground for children to believe in their capacities. Those children who are not able to show their competence and often 'loose' to others in games, sometimes develop feelings of inferiority about themselves. Role of parents becomes significant in this regard. It is their responsibility to help children understand that their achievements and failures are just one small part of their overall self. Often schools organize competitive programmes for children. Here, the teachers must explain the children that the whole purpose of such engagements is student participation rather than competition among them; winning and losing being part and parcel of the games and competitions and hence not to be taken too seriously.

Bullying: Bullying means situations where children face verbal and non-verbal aggressive advances and threats from children of their age or older than them. These can include hurt, humiliation, and or use of abusive language.. The children who bully and those who get bullied; both need attention and help from their parents, teachers and sometimes experts in the field.



WHAT YOU HAVE LEARNT





Notes



TERMINAL QUESTIONS

1. Discuss physical development from infancy through late childhood.
2. Define the processes that children use to construct knowledge.
3. Discuss the limitations of preoperational and concrete operational thought.
4. Trace the development of emotions in children from birth to childhood.
5. Define object permanence, imitation, stranger anxiety and separation anxiety.
6. Discuss in brief the role of parents in dealing with the issues and concerns of the following stages of childhood-
 - a. Infancy
 - b. Early childhood
7. Define cognitive development. According to Piaget what processes do children use to construct their own cognitive worlds?
8. How socio-emotional development does takes place in early childhood?
9. Explain different concerns and issues during middle and late childhood?
10. How does cognitive development during concrete operational stage.

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**ANSWERS TO INTEXT QUESTIONS**

Notes

13.1

Fill in the blanks:

1. Physical Development
2. Gross, Fine
3. Consistent
4. Skeletal and Muscular

13.2

Match the following

a-iv

b-iii

c-i

d-ii.

True and False

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

13.3

Fill in the blanks:

1. Stranger anxiety
2. Separation anxiety
3. Emotions
4. Self-conscious emotions.



Notes

ADOLESCENCE AND YOUNG ADULTHOOD

I am Mahika. I am a 16 year old girl. I have many interests and I want to do so many things. But I am very confused about who I am and what I can do. I have grown tall but I am told that I am still young to discuss family matters. My primary task is to study all the time but I cannot decide what I want to become. My brother is 14 years old. He is also confused about himself. My father keeps telling him that he should rather grow up to be ‘macho’. But my mother and grandmother still consider him the ‘younger baby’ of the family. I am his elder sister but sometimes he is expected to be my ‘protector’. With our growing age, our capacities have changed and so have our responsibilities.

As children we want to grow up soon believing that grown ups have certain privileges and rights which we don’t seem to have as children. But soon we realize that childhood (at least of middle and higher socio-economic status group) was rather carefree as compared to adolescence and young adulthood. Maturity brings with it a set of privileges as well as challenges of all sorts, responsibilities and concerns. Although there is no definite age for the beginning of adolescence and young adulthood yet adolescence is seen to begin by age 12 years and young adulthood is considered to begin by 18 years of age. Young adulthood may extend up to early to mid 30s. In this chapter we will read about different life changes and challenges as one enters the stage of adolescence and moves through young adulthood.

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**LEARNING OUTCOMES**

After studying this lesson, learner :

- explain the key characteristics that take place during adolescence and young adulthood; and
- reflect on various issues like problems in relationships, family issues, body image problems and the influence of media on adolescents.



Notes

14.1 PHYSICAL DEVELOPMENT DURING ADOLESCENCE AND YOUNG ADULTHOOD

Adolescence is a period of rapid physical maturation. This is first time in life, when obvious differences between boys and girls appear, which involves several bodily changes and hormonal upsurge. Features and proportions of the body undergo changes. This is also the period when an individual becomes capable of reproducing. It is marked by puberty.

Adolescent girls experience menarche, which is the first menstruation. The age for menarche is around 9-15 years. Girls also experience growth in height, widening of hips, appearance of hair in armpits and pubic area, breast enlargement and so forth.

Adolescent boys experience increase in height, size of penis and testicles, growth of hair over different parts of the body such as face and armpits, changes in voice and widening of shoulders.

The growth spurt begins about 2 two years earlier for girls than boys but it lasts longer for boys. For Indian girls, growth spurt occurs at approximately between 10 and 13 years of age and for Indian boys, it occurs between 12 to 17 years of age (Sharma, 1999). It is important to note that the most significant factors that influence puberty among boys and girls are heredity, hormones, weight and body fat.

As adolescent years end, a person enters the new stage of life that is called young adulthood. Generally by this stage one witnesses the completion of physical and sexual maturity. Individuals at this stage have gained their adult height. They continue to gain weight over the coming years. They are at the peak of their physical strength. They are able to undertake strenuous tasks for long hours. Young men and women also become more comfortable and in-control of their sexual development.



INTEXT QUESTIONS 14.1

Match the following in column A with Column B-

- | | |
|--|-----------------------------|
| a. Adolescent boys | (i) Widening of hips |
| b. Beginning of growth spurt for boys | (ii) Widening of shoulders |
| c. Adolescent girls | (iii) 12 to 17 years of age |
| d. Beginning of growth spurt for girls | (iv) First menstruation |
| e. Menarche | (v) 10 and 13 years of age |

14.2 COGNITIVE DEVELOPMENT DURING ADOLESCENCE AND YOUNG ADULTHOOD

You have already studied the first three stages of cognitive development as proposed by Piaget. The fourth stage of this theory is called formal operations. It begins from 11 years of age. This coincides with adolescence. In this stage, individuals are able to move beyond concrete experiences. They begin to think in abstract and more logical ways. They become more systematic in solving problems. Some of the cognitive attainments of adolescents are as under-

- **Hypothetical deductive reasoning:** Adolescents think more like scientists. They think of all possible solutions of a problem and systematically test those solutions. In other words, they develop hypothesis and systematically try out those options and choose the best possible option. For example, when given the task of seeing what affects the speed of the pendulum, they test like scientists varying the mass of the bob tied to the string, the length of the string, from how far we swing the pendulum, the height at which the pendulum is and so forth. They consider all explicit and implicit factors in arriving at the solution of the problem.
- **Propositional thought:** Formal operational thinkers can solve problems merely through verbal presentation of the problems. They understand relations between objects by making logical inferences mentally. They do not need to see the related concrete elements. Consider the statements given below-
 - ❖ Elephants are smaller than dogs



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Notes

- ❖ Dogs are smaller than mice.
- ❖ Then which are the largest animals?

Formal operational thinkers are likely to focus only on the verbal logic of the statements; detaching them from the actual real-life situations where elephant is the largest of the three animals.

- **Idealistic thinking:** Adolescents might think what ideal standards are and they might compare themselves and others against those standards. Here, the adolescents will compare themselves with their role models and try to become like them if they think they are already not like them; or as good as they are. They will also think about an ideal society that they would like to make around them.
- **Adolescent egocentrism:** Adolescents are at times self-conscious. This is reflected in their belief that others are always interested in and following what they are doing. They think they are unique and hence that are always under the watchful eyes of others. They believe that they are 'on-stage' and everyone is always looking at them. This makes them conscious, sometimes of the way they look or appear and at other times, of what they do. This aspect of adolescent egocentrism that involves attention-getting behaviour is called *imaginary audience*. In addition to this, they develop *personal fable* which often shows in their feeling of being unique and indestructible.

During young adulthood, one reaches rational and logical adult cognition. Their thoughts become organized. They are now able to understand multiple perspectives of a situation and how different persons may perceive the same problem differently. Their competence in making decisions increases manifolds as they become better at generating options. They become more spontaneous in their use of strategies such as planning, monitoring and considering options. Other than that, their ability for critical thinking improves. They become better equipped in putting forth their points of view more sensibly. In fact their meta-cognition i.e. their ability to think about their own thinking improves and they are able to manage their thoughts more efficiently. This helps them to deliberately focus their attention and concentrate better on their tasks at hand.



INTEXT QUESTIONS 14.2

Fill in the blanks-

1. Thinking of adolescents is and
2. The ability of adolescents to think of all possible solutions of a problem and systematically test those solutions is called.....
3. Imaginary audience and personal fable in adolescents is a feature of
4. Ability of young adults to think about their own thinking is termed as

14.3 SOCIO-EMOTIONAL DEVELOPMENT DURING ADOLESCENCE AND YOUNG ADULTHOOD

Transition from childhood to adolescence brings with it an upheaval of emotions and social expectations. As children start with growth spurt, expectations from their parents, older persons in family, neighbourhood, teachers and peers towards them start changing. The question of 'Who am I' comes up every now and then. This becomes the major cause of role confusion among adolescent boys and girls. Read the case studies given below to understand the issue of self and identity of adolescents' better—

Case Studies Sushma- Sushma is 13 years old. She has grown taller enough to reach her mother's height. Physically she looks mature but she is very uncomfortable with her growing body. She does not understand why her mother and grandmother make a fuss about the 'right clothing' that she is now supposed to wear. In her family there are certain restrictions on her food and movement inside and outside home while she is menstruating which makes her feel pulled down. She fails to understand why when she feels absolutely fine to run around and play like any other days in the ground, still she is asked to abstain from rough-housing. **Samaira-** Samaira feels that everyone at home expects her to behave like older people as she has grown up but unlike grown ups she has no privacy of her own. She cannot choose for how long she can talk over phone and whom she can be friends with. Moreover, she feels confused and sometimes annoyed why she cannot voice her opinions over matters of concern in her family. Whenever she makes a comment about any of their relatives, she is quickly dismissed by her parents and grandparents on account of being too young to speak up in 'adult' matters. It makes her wonder, on the one hand she keeps questioning her place and



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role in the larger society and how she can play a key role in making the world around her a better place and on the other hand here at her own home she is still treated 'like a child'. **Mandeep**- Mandeep is a 16 year old boy who likes to drive a scooty. He is often asked by his mother to go to the market on his scooty and buy household items. He also goes to drop and pick his sister who is one year older to him to the tuition centre (as her mother considers it is not safe for her to go alone, especially during late evening). Mandeep likes to spend time with his friends in the evening and his father does not like this. His father often scolds him for wasting his precious time with '*useless boys who have no goals in life and will never do anything in life*'. Mandeep feels bad at his father's opinion about his friends who are important to him. He argues that he is old enough to decide who his friends will be and what will be his interaction with them.

In the three case studies mentioned above, the challenges faced when one transitions from childhood to adolescence are clearly evident. Adolescents feel overwhelmed by the fact that at times they are expected to be grown ups and behave like ones with regard to clothing, mannerisms, actions, responsibilities and tasks one can contribute in and at other times they are told to keep quite in matters of adult concerns. Likewise, they feel they are often denied their right to their privacy and choice; they have to face uninvited and unnecessary surveillance by parents, grandparents, neighbours, teachers and other adult members of the larger community.

Issues such as these are related to adolescents' confusion of their role. At one instance they are considered to be 'old enough' and at other instances, they are expected to behave as 'children'. They get conflicting messages from the various social agents such as parents, uncles, aunts, grandparents, teachers and so on in their environment. This makes it difficult for them to always behave appropriately in different social situations. They are already struggling with the physical, cognitive and socio-emotional changes occurring within themselves and conflicting information from the social environment around them makes it even more difficult for them to deal with such huge changes both within and outside.

Emotionally, adolescent boys and girls experience unusual swings of emotions. Sometimes they feel very good and show heights of love and affection and at other times they show loneliness, sadness and disinterest. Changes in hormones at this stage may be held responsible for such extreme emotional reactions of adolescents. You can also see these in the case studies mentioned in the box above. Unlike younger children, adolescents are capable of reacting strongly to what they perceive as unjustified treatment; hence, conflicts between them and their parents and other figures of authority

can occur frequently.

During the stage of young adulthood, young men and women become apt at identifying and managing their emotions. They are no more slaves of mood swings. They are better at expressing their emotions in socially appropriate ways. They have most often resolved the confusions about their role and are more comfortable with their sense of self and identity. Young adult's interactions with others around them become more responsible. Unlike adolescents who may some days behave responsibly and at other days may become totally irresponsible, young adult's behaviour with others becomes more coherent and predictable.



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INTEXT QUESTIONS 14.3

1. What challenges does adolescents face while growing up from childhood to adolescence?



ACTIVITY

Ask four adolescent boys and girls to answer the following questions-

- Who am I?
- What are my qualities that make me unique and different from others
- What is the goal of my life?

Compare their responses with each other.

14.4 ISSUES AND CONCERNS DURING ADOLESCENCE

There are a number of concerns that adolescents have to deal with in their everyday lives. These revolve around their career choices, body image, early and late maturation, substance use and drugs, engagement with media and technology and so on. These are discussed at length below.

14.4.1 Career Choices

Adolescence is the period of life when one is expected to decide about the future occupation that one may settle in. As adolescents are struggling with their quest for identity, they may one day declare to 'become something' and the next day they would declare to become something completely different; and this goes on until they finally

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resolve this confusion and settle down on any one path. Gender differences are observed in adolescents' decisions regarding career. Boys are pushed more by their parents to settle down in their careers. For girls, settling into income generating occupations is more a matter of personal choice. Moreover, girls in the lower socio-economic group and in rural areas, despite laws setting age limits for marriage, are pushed into early marriage.

14.4.2 Body Image

Have you observed how much time adolescents spend looking into the mirror examining the minutest details about their bodies, especially their face. This is one of the psychological aspects of the physical changes that take place in adolescents. Their over pre-occupation and consciousness about their bodies heightens during puberty and continues until late adolescence. Adolescents are trying to understand and accept the changes occurring in their bodies and this makes them over-conscious of the way they look.

At times, adolescent boys and girls compare their bodies and the overall way they look with popular models. When dissatisfied with their bodies, they develop a negative body image of themselves. To achieve 'near perfect' bodies, they put themselves to extreme dietary restrictions and exercise regimes. Girls often get over-concerned especially with their weights. This may lead to unhealthy eating and excessive dieting. Anorexia nervosa is an eating disorder where adolescents nearly starve themselves in order to control their weight and remain thin. Another eating disorder involves adolescents to first eat lavishly and later self-induce vomiting.

14.4.3 Early and Late Maturation

Did you enter puberty around the same time as your friends did? Or was it earlier or later than them? Did your friends who entered puberty early or late perceived themselves any differently?

Early maturing boys often perceive themselves more positively and develop positive peer relations as against early maturing girls. This is so because early maturation in girls increases their vulnerability to a number of social problems. These girls face issues related to independence, dietary restrictions as per their culture and early sexual experiences. Although these girls begin to attain physical maturity but socially and cognitively they remain immature and this makes them susceptible to problems. They find it difficult to anticipate the long term problems accompanied by early independence and experimentation.

14.4.4 Substance Use and Drugs

You might have seen young boys buying cigarettes and other forbidden substances from unscrupulous vendors outside schools and other public places. Although government has put strict restrictions on selling of such harmful products to children and adolescents yet the above mentioned sight is not uncommon. Adolescents often get into the trap of trying these substances 'once' to either 'show off' to their friends and others or sometimes under extreme peer pressure to consume these and later become habitual to them. At times, they start drinking alcohol, caffeine and smoke cigarettes as a way to cope with adolescence related stresses. Later, these drugs themselves become responsible for impeding and interfering with healthy coping mechanisms. Once habituated, adolescents find it difficult to leave these drugs. They fail to acknowledge that substance use and drugs have detrimental long term physical, socio and psychological effects on adolescents. These pose special health hazards to their development.

Some of the Symptoms of Drug Addiction

- Feeling that one has to take the drug regularly
- Having intense urge for the drug
- Over time, needing more and more quantities of drug
- Keeping a constant supply of drug so that one is not short of it
- Arranging for money by unfair means to buy drugs
- Continuing to take drugs even after knowing its harmful effects

14.4.5 Engagement with Media and Technology

In the contemporary times, adolescents have exposure to all types of media, it may be print or electronic. They have access to newspapers, television, Internet in phones, laptops, cyber cafes and so forth. This opens doors of unfiltered information to them. Some of them may discuss about this information with their friends, who have only as much understanding to deal with such information as they themselves have. Sometimes, adolescents' ability to deal with such information, which may be related to health, nutrition, sexuality, relationships, career and so forth, may be limited. This may make them vulnerable and susceptible to make 'wrong' choices.

At times, they may construct an entire virtual self-image where they interact with people on the internet with a disguised identity. They may post pictures and information about



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themselves that is so untrue and mismatched with what they truly are in reality. By doing so, they try to live a fantasy life which seems unthreatening. Their engagement with media may sometimes turn compulsive and they cannot stop themselves from always being 'online'; posting about every little aspect and event of their lives; and checking their and other persons 'status'.

14.4.6 Role of Peers, Parents and Teachers

With the advent of adolescence, relationship with significant members undergoes changes. Peers become more important and influence significantly the adolescents' lives. Adolescents like to confide in their friends on matters that are important to them. These may include issues pertaining to career choices, body image, clothes, desires, attraction towards members of the opposite sex, fears and so on. It may be noted that peers sometimes can be helpful in solving problems of their adolescent friends; however, they may also sometimes pressurize them for substance use, consumption of alcohol, cigarettes and drugs, conform to certain kind of clothing, hairstyle, language and so on.

Relationship of adolescents with their parents may undergo drastic changes. Parents of adolescents may start feeling that their children are no more sharing their heart out with them. Adolescents on the other hand may start believing that their parents do not understand their newly emerging concerns. They perceive their parents as rather outdated and inflexible. This is not to say that parents become unimportant. Parents continue to monitor and keep adolescents on track. Many parents talk to their adolescent children about the changes during adolescence and deal with issues of adolescents sensitively.

Teacher of adolescents are expected to be particularly sensitive to dealing with the above mentioned adolescent concerns. One of their key jobs is to guide adolescent boys and girls of the possible career choices. Along with that they are expected to give space to the adolescents in solving their problems and making decisions for themselves. Teachers become the anchors that adolescents can approach in need of advice and care.



INTEXT QUESTIONS 14.4

State whether the statements given below are True or False.

1. Adolescents are often satisfied with their bodies and overall appearance.

2. Early maturing boys often think positively about themselves and develop healthy peer relations.
3. Adolescent boys sometimes start drinking alcohol, caffeine and smoke cigarettes to 'show off' to their friends.
4. Excessive exposure to media is detrimental for healthy development.



ACTIVITY

In a diary, write how you have engaged with different forms of media over a period of one week.

Reflect and write some of the advantages and disadvantages of media in the light of how much time you have spent in engagement with media. In particular, how it has affected your physical, mental and emotional well-being.

14.5 ISSUES AND CONCERNS DURING YOUNG ADULTHOOD

Young adulthood brings with it certain issues and concerns related to relationships and vocational and career choices. Let us discuss this below.

14.5.1 Relationships during Young Adulthood

In Erikson's (1950) theory of psycho-social development, the crisis of young adulthood is 'intimacy versus isolation'. He proposed that for young adults finding a mate and having a loving relationship with that partner fulfils the need for intimacy. Those who are able to establish and maintain caring and affectionate relationships with partners of the opposite sex feel positive and fulfilled at this stage of life. On the contrary, those who fail to establish such relationships feel a sense of emptiness and isolation.

It is significant to note that many Indian girls become wives and mothers before they reach their twentieth year as they have been married early in life. And there are others who continue to get educated and delay settling down with a life-partner either through marriage or otherwise until mid 30s. Although this is a rather recent trend and limited to urban metropolitan cities, but it no longer remains uncommon to identify such young men and women.

With marriage, partners of both the genders learn to adjust their ways of living to adjust to their life-partner. The nature and degree of these adjustments may vary but both the partners face these settlement issues. They also face the question of starting a



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family and subsequently raising children. Managing homes and social obligations that are part and parcel of getting married are other important issues in marriages.

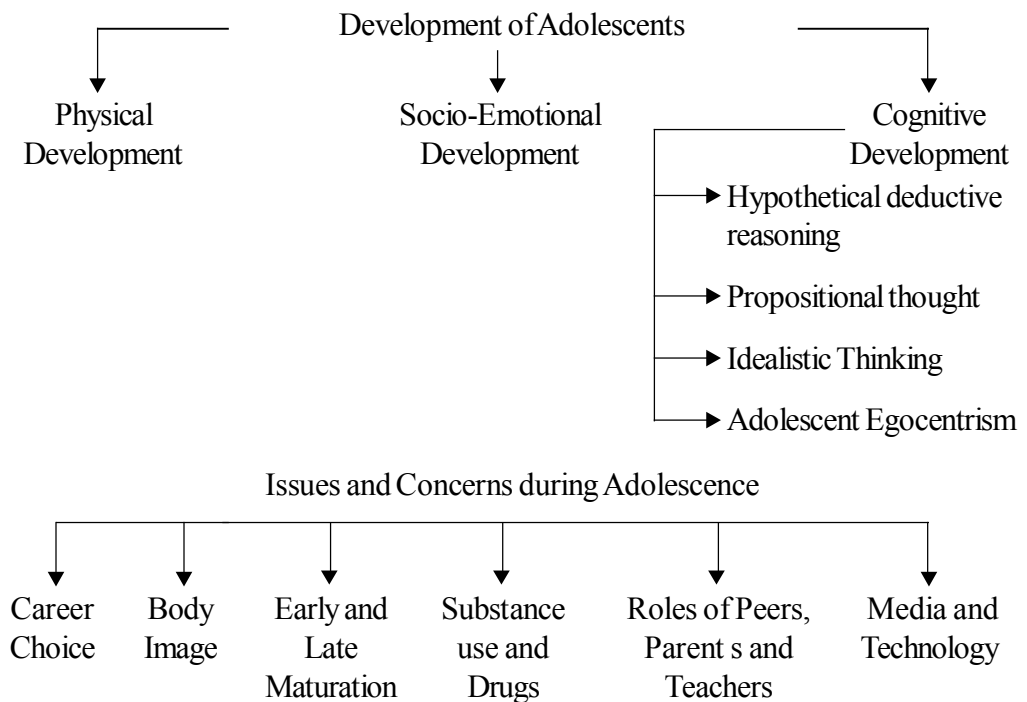
14.5.2 Settling into Vocational or Career Choices

Another significant concern of young adulthood is completing higher studies and eventually becoming financially self-supporting. By young adulthood, most men are expected to settle down in their vocational choices. They no longer remain dependent on their parents to generate finances for them. Young adulthood is also seen as a time to work hard and establish oneself in one's chosen profession.

Gender differences are observed in identifying and working towards life goals. While the priority task for men is taking up a job, for girls whether to enter an income generating profession is a matter of personal choice. Young women may either choose to work outside home or to get married and settle into the role of a wife and eventually a mother. In recent times due to availability of educational opportunity, India has seen a encouraging number of women entering into the work force.



WHAT YOU HAVE LEARNT



**TERMINAL QUESTIONS**

1. Discuss physical development in adolescent boys and girls.
2. Discuss the cognitive attainments of those in formal operational stage.
3. State the challenges of transitions from childhood to adolescence.
4. Elaborate differences in growing up as a male and female during adolescence and young adulthood.
5. Discuss adolescents' engagement with media and issues of self-image.
6. Describe the role of peers and parents in the lives of adolescents.
7. Comment on the issues and concerns during young adulthood.
8. What are the issues and concerns related to substance use drugs?
9. Describe the different symptoms of drugs and substance addiction.
10. During the stage of young adulthood, how young men and women become apt at identifying and managing their emotions?

**ANSWERS TO INTEXT QUESTIONS****14.1**

- a. ii
- b. iii
- c. i
- d. v
- e. iv

14.2

1. Abstract and logical
2. Hypothetical deductive reasoning
3. Adolescent egocentrism

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4. Meta-cognition

14.3

There are different challenges adolescents' face when one goes through the transition from childhood to adolescence, and it is clearly evident as well. They get overwhelmed by the fact that at times they are expected to be grown ups and behave like ones with regard to clothing, mannerisms, actions, responsibilities and tasks one can contribute in and at other times they are told to keep quite in matters of adult concerns. Likewise, they feel they are often denied their right to their privacy and choice; they have to face uninvited and unnecessary surveillance by parents, grandparents, neighbours, teachers and other adult members of the larger community.

14.4

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



ADULTHOOD AND OLD AGE



Notes

What do people strive to achieve during young adulthood?

What sort of relationship gives satisfaction to people in middle adulthood?

What type of achievements lead to a sense of integrity in old age?

Alka, after completing her post-graduation, is planning to get married to Raj. Alka's friend, Rani, has taken up a job in a multi-national company after completing her studies. Anju, another one of Alka's friends, got married after graduation. She is the mother of a child. As her wedding day approaches, Alka has been feeling agitated thinking if she should get married first or find a suitable job. On the other hand, Raj is successfully settled in his job and is happy with how his career has been shaping. He has been thinking about starting a family. Meanwhile, Alka is still struggling to find a job of her choice. This is an example showing the emotional and social side of early adulthood.

Erik Erikson (1989) has developed a psycho-social development theory of personality. He described eight stages. Each stage is a transition period in an individual's life. According to theory, if a person passes successfully through each stage - that is, if he/she achieves whatever is required in that stage - then the person is said to be moving towards healthy development. Otherwise, the stages can cause crises in the individual's life.

Erik Erikson's theory of psycho-social development explained two important themes which dominate adulthood, which are love and work. During early adulthood, adults are faced with intimacy versus isolation. Young adults during this stage develop deep and intimate relationships with others. Those who get consistent care and love from others are able to form intimate relationships with them. However, those who fail to

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find intimacy become socially isolated. Adults learn to function independently, become parents and develop friendships.

Alka's inner conflict is regarding whether to marry or to find a job of her choice. Here, Alka is trying to find her identity. Maturity involves a balance between the need for independence and intimacy. Without independence, adults may feel a lack of self-respect.

Erikson labled the middle adulthood stage as a period of generativity versus stagnation. Individuals at this time start showing concerns for others. They take an active interest in helping and guiding others. Parents help their children in choosing a career and mentor them. Adults who successfully resolve this stage feel generativity. Those who are unable to help others turn out to be self-centered and suffer from a feeling of stagnation.

During late adulthood, individuals enter Erikson's ego-integrity versus despair stage. When older adults look back at their lives, they often ask themselves questions like "what have I achieved?" and "what is the meaning of my life?" If they are able to find answers to these questions, they can be said to have achieved their goals. They feel a sense of integrity. If not, then they may perceive despair. It is the way we deal with our life's problems which determine the course and nature of life.

**LEARNING OUTCOMES**

After studying this lesson, learner :

- identifies the stages of development during adulthood and old age;
- states the key characteristics - physical , cognitive, socio-emotional - during adulthood and old age;
- understands the concerns faced during adulthood such as career transition, family responsibility and change; and
- recognizes the concerns of old age and act responsibly.

15.1 ADULTHOOD AND OLD-AGE**15.1.1 Adulthood**

An adult is generally defined as someone who can take care of himself/herself, is fully-

developed, has the resources to be able to survive without external assistance and is well-organised to work independently. Important life events take place during adulthood such as getting a job, getting married and having children. The timeline for these events may vary across different countries according to their respective cultural norms. But the course of adult development may be the same within a culture. During adulthood, two major events happen: choosing a career and selecting a life partner for marriage. It is a gradual transition from dependence to independence.

15.1.2 Old Age

This is the period of late adulthood which starts around the age of 60-65 years. It is often characterized by physical, cognitive and social decline. Early adulthood, middle adulthood, and late adulthood are the three main periods of physical, social and emotional development.

Table 15.1 Developmental Stages of Adulthood

Stages	Age
Early Adulthood	(18-40) years
Middle Adulthood	(41-60) years
Late Adulthood	61 years & above

15.2 LEVINSON'S THEORY OF ADULT DEVELOPMENT

Daniel Levinson (1986) has developed a stage theory of social development. He described four eras of adult life. Each era presents a different type of problem.

Table 15.2 Four Eras of Adult Life

Adolescence (11-17) years	Early Adulthood (18-45) years	Middle Adulthood (46-65) years	Late adulthood 65 years onwards

i. Adolescence (11-17) years

Levinson divides life into four major eras, each separated from the other stage by a transition period. The first transition occurs between childhood and early adulthood. It involves establishing one's independence both emotional and financial. After this, Individual enters early adulthood.



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ii. Early Adulthood (18-45) years

Levinson talks about two key components of their life structure. They are the dream and the mentor. Dream is a vision of future accomplishments that the individual hopes to achieve in years ahead. Mentor is more experienced person who guides and helps a young adult. An individual's life choices during adulthood pertain to family, job and lifestyle. Throughout this period, they raise their children and achieve positions of seniority in society. They move towards independence. Adults begin to see their children settle in their own lives. It is a period of accepting responsibilities. People in this era start realizing that half of their life is over, and if they have to make changes in their life, they have to make them now. This era is equivalent to Erickson's generativity versus stagnation. People start showing concerns for others besides themselves and their families. They start guiding and nurturing younger generations.

iii Middle Adulthood (46-65) years

Adults who had faced a mid-life crisis are now living with the decisions which they had made earlier. Families and career are settled and established. Some people experience self-worth and self-satisfaction because they have achieved what they wanted to. Others may feel like much of their life has been wasted. This crisis may continue from earlier crisis or manifest itself as a new one. People in their 60s also begin to prepare themselves for retirement depending upon their sense of achievement.

iv Late Adulthood (65 years onwards)

Late adulthood is considered to begin at about 65 years of age. Many people at this point are satisfied with their lives and begin to relax and enjoy time with their children and grandchildren. They also find the time to pursue their own interests and hobbies. By the onset of this stage, it is important to find meaning in life rather than feel disappointed.

15.3 PHYSICAL DEVELOPMENT DURING ADULTHOOD

People change physically across their lifespan. As adults go through early, middle and late adulthood, they go through a variety of changes in their sensory abilities, muscular strength, reaction time, visual capacity, motor co-ordination, respiratory function, cardiovascular changes, immune functioning and reproductive capacity.

Aging is of two types

- (i) Primary Aging
 - (ii) Secondary Aging
- (i) **Primary Aging:** In primary aging, changes are based on biological factors such as cellular and molecular changes.
- (ii) **Secondary Aging:** Secondary aging is related to controllable factors such as lack of physical exercise, poor diet, etc.
- In middle adulthood (41-60 years), the aging process becomes more visible. It is a period of increasing social interaction and responsibility. These adults help the younger generation in becoming competent and self-sufficient individuals. They are at the peak of their careers but a decline in their physical self is noticeable.
 - After the age of 55, bones become less dense, and as a result men lose up to 1 inch in height and women lose 2 inches. Their weight also drops after the age of 50 years because of muscle loss. Stamina begins to decline.
 - They find it difficult to see things in dim light because of the accommodative capacity of the eye declining. They are unable to discriminate between colours. Sensitivity to glare also increases with age.
 - Hair begins to turn grey and wrinkles start appearing on the face.
 - Physical strength and lung capacity also decreases.
 - The hormonal cycle of adult women around the age of 50 years lead to the cessation of menstruation. The process is called menopause. Men's testosterone levels decrease at about the same age.
 - Chronic health problems such as heart disease, hypertension and diabetes may also start at this age.
 - Humans are complex beings, which is why aging of physiology can depend on a number of variables. Adults who indulge in routine exercises such as walking, jogging, etc., can reduce the negative effects associated with aging.



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15.4 COGNITIVE DEVELOPMENT DURING ADULTHOOD

Physical changes are observable to the eyes. But what about cognitive changes? Do adults change cognitively? The human brain is responsible for cognition. Since human beings change and deteriorate physically across their life span, it is justified to expect

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some cognitive changes in brain with age. But as we grow older, we also learn to solve a lot of problems with the help of our experience. This is why it is said that wisdom increases with age.

15.4.1 Memory and adulthood

Memory can get trickier with age. People who were able to maintain their daily schedules in their heads, now have to write it down and carry it around in their pocket diaries.

- Research indicates that older people are able to retain as much information as young adults, i.e., seven to nine items in short term memory. But their ability to transfer information from working memory to long-term memory declines with age.
- Old adults have more trouble with recall than the young adults. They find difficulty in recognizing others. They complain about recalling new information such as names and events. They find difficulty in retrieving information from long-term memory.
- They are unable to plan activities, decide what to say and how to explain their words.
- Sensory storage problem occurs in the short term memory rather than long-term memory.
- There is also some decline found in episodic memory. (Episodic memory is the memory dedicated to remembering events experienced by an individual and is associated with particular places and times.)
- Meanwhile, semantic memory remains the same. (Semantic memory is related to general knowledge.)
- Procedural memory (used in actions like tying shoelaces and cooking a recipe) seems to be stable across one's lifespan.
- Research also indicates that recall of meaningless information such as non-sense syllables or paired associates decline with increasing age.
- The memory of meaningful information remains largely intact, unless an individual suffers from Alzheimer's disease.
- Old people can improve their memory functions by practising mental exercises like playing chess, solving puzzles and reading. All the activities which make use think, reason and remember keep our memory intact throughout age.
- Brain weight of the individual decreases 5 to 10% by the age of 80 years and 29% by the age of 90 years. Almost 50% neurons of motor, visual and auditory

functions die in old age.

- The frontal lobe of the brain is related to working memory. It experiences a greater loss of neurons than other area of the brain.
- The hippocampus plays an important role in memory, but it also suffers from damage due to ageing.
- Women seem to experience less cognitive damage with ageing than men. It maybe because female sex hormones protect their brains from age-related decline.

15.4.2 Intelligence during Adulthood

Intelligence may also increase or decline with age. Researchers have found that various aspects of cognitive functioning remain stable throughout the lifespan of adults.

- As adults age, their crystallized intelligence increases and fluid intelligence declines. Fluid intelligence is the ability to use logic and solve problems in novel or new ways without taking help from pre-existing knowledge. Crystallized intelligence is the ability to use knowledge that was previously acquired through education and experience. Their ability to divide and control complex tasks deteriorates, which adults usually achieve through practice and experience in life.
- Some researchers suggest that general intelligence remains stable across life spans, but certain aspects of it decline with age. Old people do poorly on standardized intelligence tests because they have to manipulate objects within set intervals of time during the tests. Their reaction times becomes impaired with age. As a result, this may impair other related activities, such as driving skills.
- Cross-sectional studies have reported different types of results to show that cognitive and intellectual capabilities do decrease with age.

15.5 SOCIAL AND EMOTIONAL DEVELOPMENT DURING ADULTHOOD

- Adults have a strong need of affiliation and a desire to meet & interact with other individuals. They gain help, support and information from friends.
- Interacting with relatives, friends and neighbours is always beneficial as we age. We continue to interact with other individuals throughout our life spans. Adult individuals may have casual relationships with a lot of friends, but they may grow closer with a select few as they age. Although the size of their friend groups decrease over time, adults usually maintain close and strong friendships with a small number of people.



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**ACTIVITY**

Observe the adults staying in your locality to understand whether those who have a close knit and stable social support in their life are emotionally more balanced than those who lead a solitary life without social interaction.

**Notes****INTEXT QUESTIONS**

1. What do you understand by the term Adult and Old-Age?
2. What are the three stages of Adulthood?

15.6 PHYSICAL, COGNITIVE & EMOTIONAL DEVELOPMENT IN OLD AGE**15.6.1 Physical Changes During Late Adulthood/Old Age**

- This is the period that begins in the 60s and lasts till death. People generally see significant biological decline during late adulthood/old age.
- Physical changes include the reduction in the pumping capacity of the heart and digestive system becoming less efficient.
- Skin loses its elasticity and as a result, wrinkles become more noticeable.
- Nails and bones become brittle because of calcium deficiency, which also causes arthritis in a lot of adults.
- Teeth may also fall out due to gum disease.
- Eye ailments also become a possibility in old age. Cataract of the eye and glaucoma are the most common. Cataract is the thickening of the lens of the eye, because of which vision becomes cloudy and distorted. Glaucoma occurs due to the damage to the optic nerve.

15.6.2 Cognitive Development In Late Adulthood/Old Age

- Information processing speed declines in late adulthood/old age. The most common reason is often due to decline in the central nervous system and brain functioning.
- Mental activities such as reading books, playing computer games and solving

crossword puzzles can improve cognitive skills and reduce cognitive decline.

15.6.3 Emotional Development In Late Adulthood/Old Age

- Old people usually experience loneliness after children leave home for various reasons like jobs, marriage, etc.
- Religious and social support systems in old age may help people achieve better physical and psychological health.

Table 15.3 The Cognitive, Emotional And Biological Symptoms Of Late Adulthood / Old age

Cognitive Symptoms	Emotional symptoms	Biological symptoms
Slow thinking	Loneliness	Joint pains
Confusion with identity	Irritability	Sensory deficits
Dullness of mind	Anxiety	Cardiovascular dysfunction
Feeling lost or confused	Depression	Respiratory decline
Deline in perceptual speed	Agitation	Age-related changes in lungs
Slow problem solving	Unexplained pain	Diminished motor activity
Slow judgement	Less cooperation	Degeneration of muscles
Impaired memory	Less social interaction	Loss of coordination
Problem with language	Loss of appetite	Less effective immune system
Lack of attention	Sadness	
	Lack of energy	

15.7 CAREER TRANSITION, FAMILY RESPONSIBILITY AND CHANGE DURING ADULTHOOD

i. Choice of a career

Choosing an appropriate job and building a career are important goals for an adult. A career gives them a sense of security, self-worth and brings financial

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independence. A person may start at their first job, switch to a more satisfying or interesting job if required, retire and stop working outside their house altogether. Each of these life events is termed as a career transition and serves as an important era in their lifespan. The term career transition may refer to the process when an individual shifts to a new position or a new role in the same company or organization. There are various types of career transition which also include any undesired and unanticipated changes in an individual's career. There are two categories of career transitions

- Involuntary career transition
- Voluntary career transition

Voluntary career transition

Some individuals choose a career based on the following

- Wishes of their parents
- To earn money
- As a substitute for a job of their choice
- As a change from a different work or interest area
- As a result of their company moving their base to other country, where labour is cheaper
- As a result of their company forcing them to undergo a career transition

Career transition has become more common now. Employees change their job more frequently and a career change is also perceived more positively. Earlier career change was seen in a negative light, such as an individual being unable to perform adequately in a company, lacking in skills to perform or to hold a position, etc. Now that perception is changing. Research indicates adaptation to career change is important for the psychological well-being of the individual. Some individuals adapt quickly to career transitions, while others face anxiety or depression. Adulthood is a period of loss and decline, but there can be growth also. Many factors such as individual personality traits, age and sex contribute to how well they adjust to mid-life transition.

iii. Marriage and family responsibility

Adults adjust their lives after marriage and take care of the likes and dislikes of their partners. When both partners are working, they share the roles and responsibilities. After marriage, becoming a parent brings another transition in life. It can be stressful but coping depends on a number of other factors such as

support from the family in bringing up the child and the level of happiness of both the partners. Sometimes only one of the parents has to take the entire responsibility of the child because of reasons like divorce or death of a spouse. More women are now working outside their homes. The stress of divorce affects working women greatly too. They are faced with taking care of the health and education of their children alone as well as coping with and balancing the workload in the office and at home. Yet, despite all the stress associated with parenting, adults find an opportunity for growth and self-respect as parents.



Notes

15.8 COMMON ISSUES AND CONCERNS OF LATE ADULTHOOD/OLD AGE

Some of the most common concerns of old people are:

- Financial insecurity
- Social isolation/Empty-nest syndrome
- Feeling left behind or left out by technology
- Declining health
- Malnutrition
- Feeling a lack of warmth and affection in their relationships

i. Financial issues of late adulthood/old age

Financial problems are often experienced by old people. As the individual grows old and retires from work, his finances become constraints. They have to depend on sources like their pension or a fixed income from their savings. These savings may not be enough to meet their medical expenses and household responsibilities. A major concern in their lives is their deteriorating health. They need regular medical check-ups. A large chunk of their income is spent on healthcare. Some of them may be diagnosed with major chronic illnesses. They need money for surgeries and medicines. Their savings are not enough to meet their medical expenses. They may slip into poverty as their earnings diminish. They do not find themselves in a position to do a job and earn a livelihood. Even if some of them may try getting a job, not many avenues are open for them because of their age. They may also face ageist discrimination. Many elderly people in India are exploited financially by their children. Another problem they are more prone to when living alone is theft and robbery. There are others who have to attend to the needs of their grandchildren or children. Some grandparents pay for higher education, which may be exponentially higher for foreign universities. Some may take a loan to support this, but have to manage their own households

Human Development



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alongside. In such situations, they may find it difficult to take care of essentials like cleaning, cooking and paying bills.

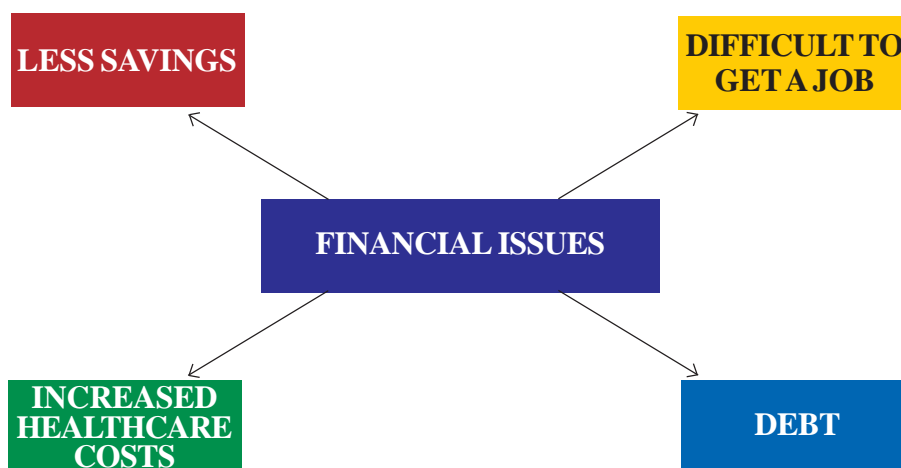


Figure 15.1. Financial issues faced by old people

Widowed individuals become more prone to financial difficulties. Although many of them have savings, insurance and a pension, others experience a sharp decline in their income. Economic dependence can be very stressful in late adulthood and even cause suicidal feelings. It stems from a sense of deep insecurity and low esteem due to low income. Therefore, good financial planning is crucial to maintaining adequate funds and reduce financial insecurity in old age. It can make aged individuals financially independent and take care of their own needs.

(ii) Health Concerns of late adulthood/old age

Arthritis and osteoporosis are the most common health problems among the elderly. Arthritis is the inflammation of joints in the body, while osteoporosis is the extensive loss of bone tissue and decreased bone density. It affects more women than men. Some behavioural factors also trigger biological decline. Old people who live alone and suffer from loneliness become inattentive to nutritious eating. This leads to vitamin deficiency. This may or may not affect their day-to-day functioning. Stress related to situational factors such as the loss of a loved one, diagnosis of chronic illness, financial losses and other family-related issues may also have severe impacts on the biological and psychological functioning of old people. Those individuals who take care of their health, do regular exercise and eat nutritious food full of vitamins and minerals and low in fat are found to be healthier. They have reduced risks of heart disease, hypertension, weight gain and osteoporosis.

Today, people all over the world can expect to live longer than ever before.

Many old people are managing their chronic illnesses by adopting various healthy lifestyle interventions. But still, chronic health conditions lead to two-thirds of deaths worldwide every year. Most common issues faced by old people are:

- Hypertension
- Heart attacks
- Cancer
- Diabetes
- Arthritis
- Chronic pains
- Liver dysfunction
- Kidney dysfunction
- Dementia
- Alzheimer's disease

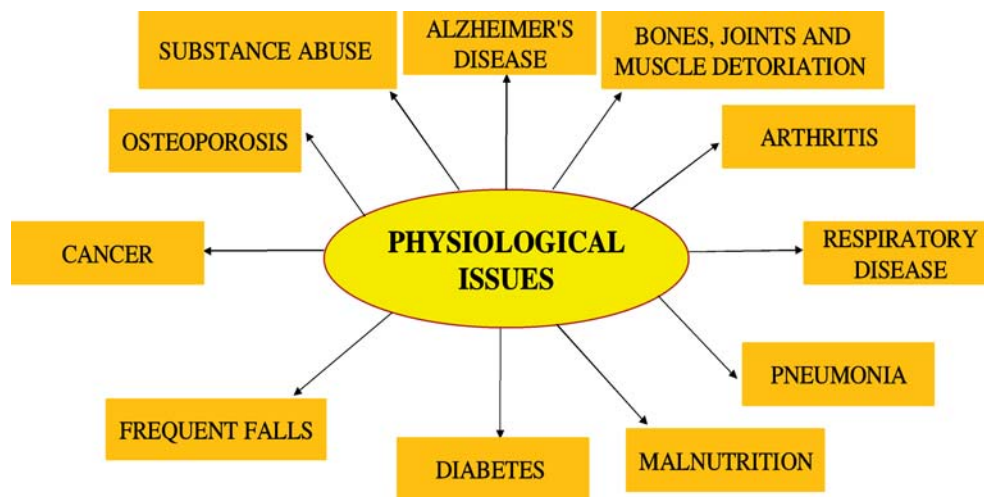


Figure 15.2 Most common health issues faced by old people

There are many diseases and illnesses which are specific to old people, but they are also more prone to other chronic and infectious illnesses. Most of them suffer from a long-term disease such as arthritis, Alzheimer's, hypertension, diabetes and cancer. Around 15 to 20% of the elderly over the age of 65 years also suffer from psychological disorders. However, the symptoms of psychological disorders are different in older and younger adults. One of the most prevalent disorders is depression. Unfortunately, it is often under-diagnosed and left untreated. Factors such as the loss of close family members, financial insecurity, loneliness and declining health trigger depression in old people. Depression may even be the side-effect of medicines which they consume to



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treat physical ailments. Dementia in older people may also be an underlying symptom of Alzheimer's disease. It is a progressive brain disorder leading to loss of memory and confusion. Doctors can prescribe a treatment plan and medicine to manage the disease, but currently, there are no cures for dementia.

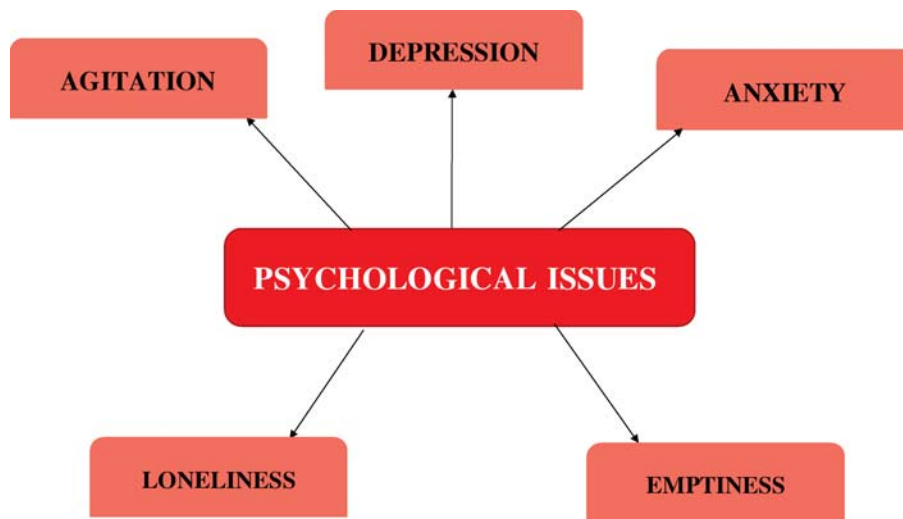


Figure 15.3 Psychological issues faced by old people

(iii) Emptiness in old age

Emptiness is a feeling of isolation. With advancing age, people lose contact with their old friends and find it difficult to initiate new friendships. Old people usually start feeling left out when their children leave the home to go abroad for higher education, jobs or change residence permanently. There are also cases where children ignore their parents when they get old, making them feel unwanted and lonely. The negative effects of emptiness on health in old age have been indicated by many researchers. Some of the contributing factors leading to emptiness are:

- Divorce
- Death of a spouse
- Living alone
- Inability to actively participate in activities
- Loss of socialization after leaving work/ after retirement
- Limited opportunities to participate in social gatherings or activities
- Children moving away
- Isolation because of chronic illnesses like cancer, Alzheimer's disease, etc.

As individuals grow old, they face numerous psychological and social role changes that challenge their sense of self and feelings of happiness. They can maintain their

physical and psychological strength by engaging in regular exercise and adopting other healthy lifestyle habits. There is a need for the government to create guidelines and policies to support and protect the health, emotional and financial needs of the elderly. These may include:

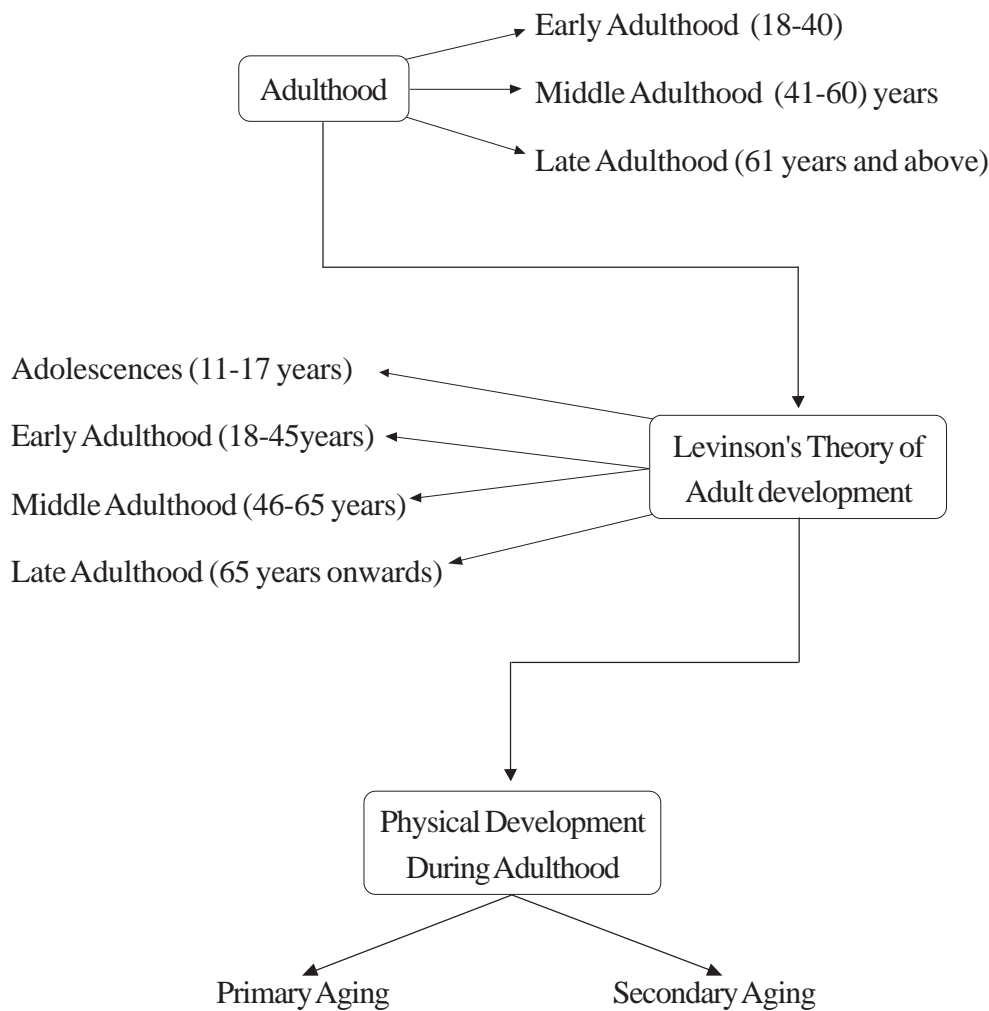
- Recognizing the concerns of old citizens and acting responsibly
- Providing preventive healthcare services
- Helping the elderly in managing chronic illnesses
- Encouraging exercise and social activities for healthy aging



Notes



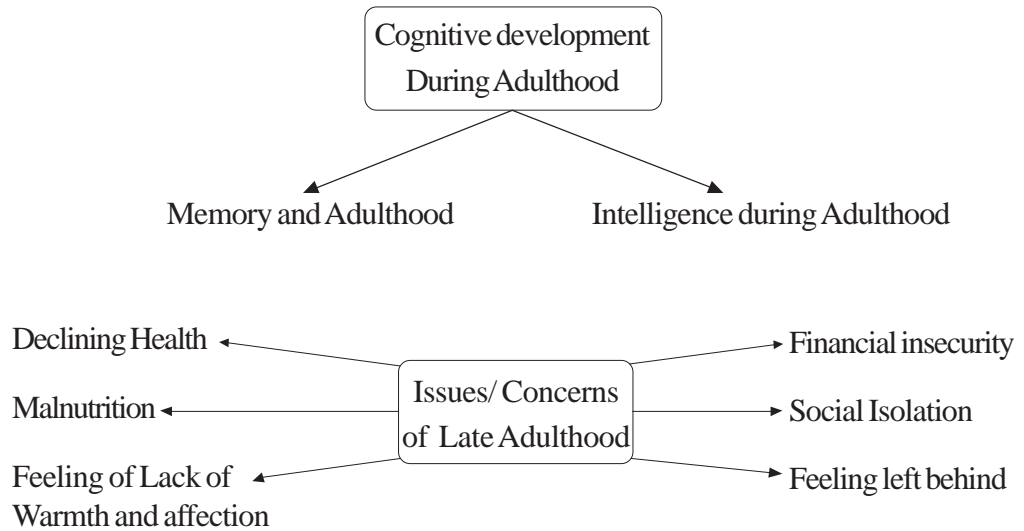
WHAT YOU HAVE LEARNT



Human Development



Notes



TERMINAL QUESTIONS

1. What do you understand by physical development in middle adulthood?
2. What is cognitive development in adulthood?
3. What cognitive changes occur during middle adulthood?
4. Does memory improve as you get older?
5. What do you mean by career transition?
6. Write short notes on
 - a) Social and emotional development during adulthood
 - b) Emptiness
 - c) Financial insecurity
 - d) Health concerns
7. What are some of the transitions and challenges that adults face in their personal lives after marriage, particularly related to parenting and working?
8. What are some of the physical changes that occur during middle and late adulthood, and what are some factors that can influence the aging process?
9. What are the four eras of adult life according to Daniel Levinson's stage theory of social development, and what are the challenges associated with each era?

10. What are the specific challenges individuals face during the intimacy versus isolation, generativity versus stagnation, and ego-integrity versus despair stages?



ANSWERS TO INTEXT QUESTIONS

15.1

1. An adult is generally defined as someone who can take care of himself, is fully-developed, has the resources to be able to survive without external assistance and is organised enough to work independently. Old age is period of decline in physical and psychological factors.

2. Three stages of adulthood are:

Early Adulthood	(18-40) Years
Middle Adulthood	(41-60) Years
Late Adulthood or Old Age	(61) Years and Above

15.2

1. Middle adulthood refers to the period of the life span where an individual experiences physical decline such as greying of hair or hair loss, vision loss, and hearing loss.
2. Late Adulthood or Old Age is the period from age 61 years and above.



Notes

MODULE -4

Individual Differences

Human beings not only respond to the external world but also attend to themselves. In other words self is also an object and all of us deal with it. In recent years, self has been given significant place in the analysis of cognition, motivation and emotion. The kind of self concept which people have is also influenced by our culture. Understanding of personality has also been detailed out in this module. Various factors such as genetics, environmental and cultural influencing personality of an individual are also dealt with. Intelligence, key theories of intelligence and emotional intelligence and creativity has also been discussed.

16. Diversity and Individual variations
17. Self and Personality
18. Intelligence

Psychology Course Curriculum

Senior Secondary Level

(328)

RATIONALE

Psychology is a discipline which is relevant to all walks of life. Its applications to the various areas of personal, organizational and social functioning are well recognized. All of us use various psychological concepts without really knowing them. This course has been designed in such a way that the learners will know the basics of psychology in simple language. Attention has also been paid to the Indian context while dealing with the content. It also contributes to the development of scientific approach different from common sense or speculation. Further, practical applications of various psychological concepts with the help of case studies, examples and real life experiences have been provided.

COURSE OBJECTIVES

After completing this course, the learner will be able to:

- understand the basic concepts used in psychology;
- apply the methods of psychological enquiry in real setting;
- develop a holistic understanding of human development;
- develop an understanding of basic psychological processes;
- appreciate individual differences and diversity;
- understand social processes that influence human behaviour including pro social behaviour;
- adopt effective strategies for sound health and well being; and
- apply the principles of psychology in field work

COURSE STRUCTURE

S.N.	Modules	Study Hours	Marks
1.	Foundations of Psychology	40	15
2.	Basic Psychological Processes	70	25
3.	Human Development	40	15
4.	Individual Differences	30	15
5.	Social Processes and Behaviour	30	15
6.	Health and Well Being	30	15
Theory Examination (3 Hours)		240	100

COURSE DESCRIPTION

Module-1 Foundations of Psychology

Marks: 15

Hours: 40

Approach

The module aims at developing an understanding about the subject of psychology, its evolution, different branches, relationship with other disciplines and applications of psychology. It would also help the learners to understand the bases of human behaviour, different methods used in studying psychology and orientation towards basics of statistics.

Lesson 1 : Understanding Psychology

Topics

The lesson covers :

- Nature (definition, science and social science)
- Evolution of psychology as a discipline
- Psychology and other disciplines
- Applications of Psychology (Military, Sports, Clinical, Counselling , Environment, Forensic, Community, Organisational psychology)

Learning Outcomes

The learner:

- Demonstrates fundamental knowledge and comprehension of the major concepts, theoretical perspectives and historical trends in psychology;
- Identifies the various approaches, fields and subfields of psychology and other disciplines
- recognises the application of psychology and possible career paths;

Lesson 2 : Bases of human behaviour

Topics

The lesson covers :

- Structure of neuron,
- Central Nervous System and Peripheral Nervous System
- Endocrine glands
- Hereditary and environment
- Socio-cultural and ecological factors

Learning Outcomes

The learner:

- describes the basic structure of neuron
- discusses the role of nervous system and endocrine system on human behaviour
- Identifies the role of heredity and environment on human behaviour;
- explains the social, cultural and ecological factors influencing human behaviour.

Lesson 3 : Methods of Psychological Enquiry-I

Topics

The lesson covers :

- Experimental method
- Survey method
- Correlation method

Learning Outcomes

The learner:

- Understands different methods used in psychological research;

- makes use of different techniques of descriptive statistics including research design;

Lesson 4 : Methods of Psychological Enquiry-II

Topics

The lesson covers :

- Interview
- Observation
- Case study
- Ethical considerations

Learning Outcomes

The learner:

- Appreciates basic research skills in psychology
- Outlines the various ethical issues in psychology.

Lesson 5 : Basic Statistics

Topics

The lesson covers :

- Measures of central tendency: Mean, Median, Mode
- Graphical representation (Bar diagram, Histogram, Frequency Polygon, Pie Chart)

Learning Outcomes

The learner:

- Calculates the central tendencies: mean, median and mode
- Represents the data graphically

Module-2 Basic Psychological Processes

Marks: 25

Hours: 70

Approach

To make the learners aware about how information

Psychology

gathered through different sense modalities influences attention and perception, and the laws that govern these processes. The learners will also become aware of how learning and memorisation take place and the influences on these underlying processes. The learners will understand how and why forgetting takes place, along with techniques of enhancing memory. The students will become aware of motivation as extrinsic and intrinsic and how different needs and aspirations the process of achievement and effort. They will also understand how emotions facilitate our well being and will learn to manage emotions better. This module will introduce them to thinking processes and the role of language.

Lesson 6 : Attention and Perceptual Processes

Topics

The lesson covers :

- Different sense modalities (visual and auditory)
- Attention processes (selective attention, sustained and divided attention)
- Perception (what is perception, laws of perception, perceptual organisation, space and depth perception)
- Illusion

Learning Outcomes

The learner:

- Understands the nature and functioning of two sense modalities like, eye and ear.
- Explains the nature and processes underlying attention.
- Discusses the role of different stimuli in perceptual organisation.
- Appreciates the role of socio cultural factors on perception.

- Understands space and depth perception.
- illustrates different types of illusions.

Lesson 7 : Learning

Topics

The lesson covers :

- Nature of learning
- Classical conditioning,
- operant conditioning: Concept,
- Principles and applications
- Insight learning,
- Observational learning
- Skill learning,
- verbal learning
- Transfer of learning

Learning Outcomes

The learner:

- Explains the nature of learning
- Elaborates the different types of learning.
- Describes the ways in which learning gets transferred.

Lesson 8 : Human Memory

Topics

The lesson covers :

- Nature of memory
- Memory processes
- Model of memory (Atkinson and Shiffrin Model)
- Forgetting ,

- causes of forgetting
- Techniques of enhancing memory

Learning Outcomes

The learner:

- discusses the nature of memory.
- Explains the underlying processes of memory.
- Illustrates the nature and causes of forgetting.
- States the application of mnemonics in enhancing memory

Lesson 9 : Motivation

Topics

The lesson covers :

- Concept of motivation (meaning and nature of motivation)
- Intrinsic and extrinsic motivation)
- Maslow's theory of need Hierarchy
- Aspiration, achievement and human effort

Learning Outcomes

The learner:

- Defines the concept of motivation.
- Discusses intrinsic and extrinsic motivation.
- States Maslow's theory of needs.
- Outlines the role of aspiration in achievement and human effort.

Lesson 10 : Emotion

Topics

The lesson covers :

- Nature of emotion

- Types of emotions theories (James-Lange, Cannon-Bard, Lazarus)
- Emotions and wellbeing
- Managing emotions

Learning Outcomes

The learner:

- Explains the nature of emotions
- States the theories of emotions
- Discusses the need for managing negative emotions

Lesson 11 : Thinking and Problem Solving

Topics

The lesson covers :

- Nature of thinking
- Process of thinking (reasoning, problem solving, decision making)
- Nature and process of creative thinking
- Language and thought

Learning Outcomes

The learner:

- Explains the nature of thinking.
- Describes the processes underlying thinking.
- Elaborates upon the process of creative thinking.
- Analyses the relationship between language and thought

Module-3 : Human Development

Marks: 15

Hours: 40

Approach

The module aims at building an understanding of human development across the lifespan and deals with key features and challenges across different stages of development. This will help the learners reflect on their own course of development and related experiences.

Lesson 12 : Life Span Perspective on Development

Topics

The lesson covers :

- Understanding growth, development and maturation
- Principles of development
- Factors affecting development

Learning Outcomes

The learner:

- differentiates between growth, development and maturation;
- understands and enumerate the principles of development;
- describes factors affecting development across different stages; and
- develops an understanding of human development from lifespan perspective.

Lesson 13 : Infancy and Childhood

Topics

The lesson covers :

- Stages of infancy and childhood
- Key characteristics (physical, cognitive, socio-emotional)

- Issues and concerns (parenting issues, developmental delays, children at risk)

Learning Outcomes

The learner:

- identifies the stages of development during infancy and childhood;
- states the physical, cognitive and socio-emotional characteristics during infancy and childhood; and
- develops understanding of some issues and concerns specific to infancy and childhood stage such as presenting, developmental delay and children at risk.

Lesson 14 : Adolescence and Young Adulthood

Topics

The lesson covers :

- Stages of Adolescence and young adulthood
- Key characteristics (physical, cognitive, socio-emotional)
- Issues and concerns- relationships (family, peer group), media influence, substance use, bullying, body image

Learning Outcomes

The learner:

- identifies the stages of development during adolescence and young adulthood;
- states the key characteristics (physical, cognitive, socio-emotional) during adolescence and young adulthood; and
- develops understanding of how issues like relationship (family, peer) influence of media, substance use, effect of bullying and body image impact development.

Lesson 15 : Adulthood and Old age

Topics

The lesson covers :

- Stages of adulthood and old age
- Key characteristics (physical, cognitive, socio-emotional)
- Issues and concerns of adulthood (career transitions, family)
- Issues and concerns of old age (health concerns, emptiness, economic dependence)

Learning Outcomes

The learner:

- identifies the stages of development during adulthood and old age;
- states key characteristics -physical, cognitive, socio-emotional during adulthood and old ages;
- understands the concerns faced during adulthood such as career transition, family responsibilities and change; and
- recognizes the concerns of old age and act responsibly.

Module-4 : Individual Differences

Marks: 15

Hours: 30

Approach

Human beings not only respond to the external world but also attend to themselves. In other words self is also an object and all of us deal with it. In recent years, self has been given significant place in the analysis of cognition, motivation and emotion. The kind of self concept which people have is also influenced by our culture. Understanding of personality has also been detailed out

in this module. Various factors such as genetics, environmental and cultural influencing personality of an individual are also dealt with. Intelligence, key theories of intelligence and emotional intelligence and creativity has also been discussed.

Lesson 16 : Diversity and Individual Variations

Topics

The lesson covers :

- Understanding Diversity
- Differences in physical, physiological, psychological, social, economic contexts
- Special needs arising out of diversity

Learning Outcomes

The learner:

- Explains the meaning of diversity
- Illustrates factors causing diversity
- Appreciates Special needs arising out of diversity

Lesson 17 : Self and Personality

Topics

The lesson covers :

- Understanding self: Self concept, self efficacy, self esteem
- Concept of Personality
- Key theories (type and trait, psychoanalysis, humanistic)
- Assessment (Self report and projective technique- word association test, TAT)

Learning Outcomes

The learner:

- Defines Self, self concept, self efficacy and self esteem;
- Describes the meaning of personality;
- Discusses type and trait, psychoanalytic and humanistic theories of personality;
- Explains Self report measures and projective techniques (Word Association Test & TAT)

Lesson 18 : Intelligence

Topics

The lesson covers :

- Concept of intelligence (Assessment, IQ, Extremes of intelligence)
- Understanding intelligence (Spearman, Gardener, Sternberg)
- Emotional intelligence
- Creativity and intelligence

Learning Outcomes

The learner:

- Describes the meaning of intelligence
- discusses theories of intelligence;
- explains the meaning of emotional intelligence;
- examines relationship between creativity and intelligence.

Module-5 : Social Processes and Behaviour**Marks: 15****Hours: 30****Approach**

This module introduces the learners to the various social processes that influence human behaviour and social functioning. The learners will understand different group processes and their influence on individuals and groups. Further the learners will also understand the concept of leadership, attitude and pro-social behaviour.

Lesson 19 : Group Processes**Topics**

The lesson covers :

- Characteristics of groups
- Group formation
- Types of groups
- Influence of group on performance and decision making (social loafing and facilitation, group think and polarisation)
- Leadership

Learning Outcomes

The learner:

- states the meaning, characteristics and types of groups;
- explains the formation of groups;
- discusses how groups affect individual, group performance and decision making;
- explains the concept of leadership;
- lists the characteristics of effective leaders.

Lesson 20 : Attitude**Topics**

The lesson covers :

- Attitude: Concept, process of formation and change
- Prejudice and discrimination
- Inter group conflicts and resolution

Learning Outcomes

The learner:

- describes the concept of attitude and its components;
- explains the process of attitude formation and change;
- discusses the nature of prejudice and discrimination
- identifies the factors causing prejudice and discrimination;
- explains inter-group conflicts and their resolution

Lesson 21 : Pro Social Behaviour**Topics**

The lesson covers :

- Forms of pro social behaviour: sharing, cooperation, helping and giving, volunteerism
- Developing pro social behaviour
- Promoting pro environmental behaviour
- Benefits for individual and society

Learning Outcomes

The learner:

- describes the various forms of pro-social behaviour;
- states how to develop pro-social behaviour;
- enumerates the strategies for promoting pro-environmental behaviour; and

- appreciates the benefits of pro-social and pro-environmental behaviour for individual and society.

Module-6 : Health and Well Being

Marks: 15

Hours: 30

Approach

This module aims at developing and understanding about the concepts of health and well being. It explains the barriers in the achievement of positive mental health and well being leading to holistic development. It also explains the concepts of stress, how to cope with it, mental health problems and concerns and positive interventions for health and well being.

Lesson 22 : Coping with Stress

Topics

The lesson covers :

- Nature of stress
- Sources of stress
- Coping strategies

Learning Outcomes

The learner:

- Describes the meaning and nature of stress.
- Recognizes the physical, mental, emotional and behavioural signs and symptoms of stress.
- Identifies the various factors leading to stress.
- Explains the effects of stress on physical and mental health.
- describes the ways and strategies to cope with stress.

Lesson 23 : Mental Health Problems

Topics

The lesson covers :

- Mental health and related challenges
- Anxiety
- Depression
- Obsessive Compulsive Behaviour
- Disruptive Behaviour

Learning Outcomes

The learner:

- explains the meaning of mental health.
- States the signs of poor mental health.
- Identifies the various factors that can lead to poor mental health.
- Recognizes various ways and strategies to maintain good mental health
- enumerates the symptoms, causes and ways of dealing with anxiety, depression, obsessive compulsive behaviour and disruptive behaviour

Lesson 24 : Psychology for Holistic Development

Topics

The lesson covers :

- Meaning of Holistic development
- Health and positive emotions (happiness, life satisfaction, resilience
- Interventions for health and well being (Diet & life style, exercise, yoga & meditation, developing positive emotions)

Learning Outcomes

The learner:

- states the meaning of holistic development.
- Interpret the relationship between the positive emotions and health.
- Appraises the importance of happiness, life satisfaction and resilience for health and well being.
- Appreciates various ways of promoting positive emotions, happiness, life satisfaction and resilience
- discusses the importance of diet, lifestyle, exercise, yoga and meditation to facilitate good health and well being.

SCHEME OF EVALUATION

Examination	Marks	Duration	Paper
Public Examination	100	3 Hour	1
Tutor Marked Assignment	20	Self-paced	1

Feed back on Lesson 1-24

Lesson No.	Lesson Name	Was the content				Was the language		Were the Illustrations		What you have learnt is		
		Easy	Difficult	Interesting	Confusing	Simple	Complex	Useful	Not Useful	Very helpful	Somewhat helpful	Not helpful
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2.												
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