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Topic – 1
INTRODUCTION – BEGINNINGS

Unit Structure

1.0 OBJECTIVES

After studying this unit you should:

a) Understand what is life span development and the different approaches to it.

b) Know how culture, ethnicity and race influence development.

c) Comprehend the key issues and questions, the nature and nurture influences on development.

d) Become aware of the various theoretical perspectives on life span development.

e) Know the various research methods and related areas in the study of life span development.

1.1 INTORDUCTION

In this section we would study how the world's first test-tube baby was born and the various aspects of life span development. We would also discuss the field of life span development, its scope, approaches, etc.

1.1.1 New Conception:

The first test tube baby born in the world was called as Louise Brown and it was born as a result of "In Vitro Fertilization

(IVF) method. In this method fertilization of a mother's egg by a father's sperm takes place outside the mother's body.

The case of Louise Brown is not an isolated one. More than 1.5 million babies have been born till date, using IVF procedure, which has become routine.

Though Louise Brown's conception was novel, but her development has followed a predictable pattern.

Many issues influence human development ranging from cloning to poverty to prevention of AIDS.

1.1.2 Issues Central to Life Span Development:

Many issues are central to life span development which includes:

- How does one develop physically?
- How does an individual's understanding of the world changes through different periods of one's life.
- How our personality and social relationship develop and change over a period of time.

Development psychologists have attempted to understand how our biological development is shaped by our inheritance (nature) and environment (nurture).

1.2 NEW CONCEPTIONS: AN ORIENTAION TO LIFE SPAN DEVELOPMENT

1.2.1 What is Life Span Development?

Life span development is an important field of Developmental Psychology which is concerned with various developmental changes occurring in an individual from conception till death. It is a diversified and a growing field concerned with application. It studies various aspects of human development including physical, intellectual and social.

Life span development is a field of study that takes a scientific approach and examines patterns of growth, change and stability in behaviour that occur throughout the lifespan. Life span development focuses on human development.

- It seeks to understand universal principles of development.
- To know how cultural, racial and ethnic differences affect development.

- To understand the traits and characteristics that differentiates one person from another.

It should be remembered that human development is a continuous process which lasts throughout one's life.

Developmental Psychologists are not only interested in changes that take place as we develop, but they are also interested in stability. They are interested in knowing when and how human behaviour reveals consistency and continuity with prior behaviour.

1.2.2 Scope of Life Span Development:

Life span development covers several diverse areas. Some topical areas in lifespan development are as follows:

a) Physical Development: Physical development includes how our brain, nervous system, muscles and sense organs influence our development. Our biological needs such as the need for food, hunger, drink, sleep, etc., influence and shape our behaviour. It also studies how malnutrition influence human growth, how one's physical performance declines as one ages, etc.

b) Cognitive Development: It studies how growth and changes influence intellectual capabilities. Cognitive developmentalists examine how learning, memory, problem solving and intelligence influence our development. They also study how problem solving and intelligence influence our development. They also study how problem –solving skills change over the course of one's life.

c) Personality and social development: Personality development is the study of stability and change in the characteristics that differentiate one person from another over the life span. Social development is concerned with the ways in which individuals interactions and relationships with others grow, change and remain stable over the course of life.

Developmental psychologists are interested in personality development and are interested in studying stable, enduring personality traits throughout the life span. Social developmental psychologists are interested in examining how racism or poverty or divorce influences our development.

1.2.3 Age Ranges and Individual Differences with respect to Development:

Our life span is divided into following broad age ranges.

1) The Prenatal Period (from conception to birth)
2) Infancy and Toddlerhood (birth to three years)

3) The Preschool Period (3 to 6 years)
4) Middle Childhood (6 to 12 years)
5) Adolescence (12 to 20 years)
6) Young Adulthood (20 to 40 years)
7) Middle Adulthood (40 to 65 years)
8) Late Adulthood (65 to Death)

1.2.4 Social Constructions:

These above mentioned periods or age ranges are social constructions. A social construction is a shared notion of reality that is widely accepted but is a function of society and culture at a given time. Each of these periods is arbitrarily and culturally derived. For e.g., the concept of childhood as a special period did not exist during the 17th century. During this period, children were seen simply as miniature adults. Similarly, the adulthood period which is considered to have begun from 20 years varies from culture to culture. In some cultures, adulthood starts much earlier than what is stated above. There are also substantial differences in the timing of events in each people's lives. Individuals mature at different rates and reach developmental milestones at different points. Even environment plays a significant role. For example, the typical age of marriage varies from one culture to another, depending upon the functions that marriage plays.

1.2.5 Link between Topics and Ages:

Each of the broad areas of life span, such as physical, cognitive, social and personality development plays an important role throughout the life span. Developmental experts generally emphasize on one area at a given period of time such as:

- Physical development during prenatal period or adolescence, etc.
- Social development during preschool years.
- Social relationships in late adulthood, etc.

1.2.6 Influence of Culture, Ethnicity, Race and Development:

Many variables influence one's development. One such variable is culture. Different cultures and subcultures have their own views of appropriate and inappropriate child rearing, depending upon the goals for children that they have. We can achieve a better understanding of human development if we take into consideration:

a) Broad culture factors such as orientation toward individualism or collectivism.

b) Gender differences.

c) Differences in racial and socio economic levels.

When we take the above factors into consideration, not only can we achieve a better understanding of human development but we can also make precise applications for improving our social conditions.

At this stage, let us understand the difference between race and ethnic group.

Race: It is a biological concept, which refers to classification based on physical and structural characteristics of species. Unfortunately, the term race has acquired a negative connotation, ranging in its meaning from skin color to religion to culture. It is also imprecise as a concept. It should also be remembered that different races are not genetically distinct. About 99.9 % of human's genetic make up is identical in all humans. This makes the issue of race insignificant.

Ethnic Group and Ethnicity: These are broader terms referring to cultural background, nationality, religion and language. An ethnic group is a group of human individuals who share a common, unique self-identity. Some words used to refer to a group as a separate ethnic group are: tribe, clan, nation, lineage, family, society, community and heritage. An ethnic group or ethnicity is a population of human beings whose members identify with each other, either on the basis of a presumed common genealogy or ancestry, or recognition by others as a distinct group, or by common cultural, linguistic, religious, or territorial traits.

Understanding Human Diversity: In order to understand human developments one need to take into consideration the issue of human diversity. Development psychologists have acquired greater understanding about the universal principles of development and have been able to distinguish it from culturally determined differences by scientifically assessing and studying similarities and differences among various ethnic, cultural and racial groups.

1.2.7 Cohort Influences on Development:

Cohort refers to a group of people born at around the same time in the same place. Major social events such as wars, economic upturns and depressions, famines, epidemic, etc., have similar influences on members of a particular cohort. With respect to cohort influences or effects three types of influences are worth nothing.

i) History-graded influences

ii) Age graded influences

iii) Socio cultural-graded influences.

We would discuss each of this briefly.

History-graded Influences: Biological and environmental influences associated with a particular historical moment. For example people in Mumbai who witnessed 26/7 floods or those in New York who experienced 9/11 terrorist attack on the World Trade Center experienced biological and environmental challenges due to the attack.

Age-graded Influences: These are biological and external influences that are similar in a particular age, group, regardless of when or where they are raised. For example, biological events such as puberty and menopause are universal events that occur at about the same time in all societies. Similarly, socio cultural event such as entry into formal education can be considered as age-graded influence because it occurs in most cultures around the age of 6.

Sociocultural-graded Influences: These influences also influence development. It refers to socio-cultural factors present at a particular time for a particular individual depending upon many variables such as ethnicity, social class and sub-cultural membership. Socio-cultural graded influences within nation will be considered different for white and non-white children.

1.3 KEY ISSUES AND QUESTIONS: NATURE AND NURTURE OF LIFESPAN DEVELOPMENT

Life span development is a long journey of many decades which often raises many questions for developmental psychologists. Four important issues in lifespan development are as follows:

- Continuity v/s Discontinuity in Development.
- The Importance of Critical and Sensitive Period.
- Life Span Approaches v/s Focus on Particular Influence and Development Periods.
- Nature v/s Nurture.

We would discuss each of these briefly:

1.3.1 Continuity v/s Discontinuity in Development:

One of the important issues facing developmental psychologists is whether development proceeds in a continuous or discontinuous manner. Continuous change refers to changes that are gradual, subtle with achievement at one level building on those of previous levels. Continuous change is quantitative. The underlying development process remains the same over the

lifespan. In continuous change, changes are a matter of degree, not kind. According to some experts, changes in individual thinking abilities are also continuous as these build on gradual improvements rather than developing entirely new processing capabilities.

Discontinuous change: Development is also viewed as discontinuous. Discontinuous change occurs in distinct stages. Each stage brings about behavior that is assumed to be qualitatively different from behavior at earlier stages. For e.g., cognitive development experts have pointed out that our thinking changes in fundamental ways as we develop. It not only changes quantitatively but also qualitatively.

1.3.2 Critical and Sensitive Periods:

Another important issue related to development is that of critical and sensitive period. A critical period is a specific time during development when a particular event has its greater consequences. Critical periods occur when the presence of certain kinds of environmental stimuli are necessary for development to proceed normally. Critical period is more important for physical development rather than social or personality development.

In sensitive period, organisms are particularly susceptible to certain kinds of stimuli in their environments. In contrast to a critical period, however, the absence of those stimuli during a sensitive period does not always produce irreversible consequences.

1.3.3 Lifespan Approaches v/s Focus on Particular Periods:

Current era developmental psychologists believe that entire lifespan is important because developmental growth and change continue during every part of life. On the contrary, early developmental psychologists largely focused their attention on infancy and adolescence, largely to the exclusion of other parts of life span.

Individual's social environment influences his/her development. Similarly, one's age also considerably influences how, to be born child's development is shaped. For example, a 15 year old, first time mother and a 31 year old fourth time mother will influence the development of their child in different ways.

According to Paul Baltes with age, certain capabilities become more refined and sophisticated, while others decline. For example, one's vocabulary grows from childhood to adulthood and even during middle years and also beyond that. However, physical

abilities such as reaction time decline after late adulthood as well as memory declines in old age.

1.3.4 Nature v/s Nurture Influences on Development:

Nature refers to one's genetic makeup. It refers to traits, abilities and capacities that are inherited from one's parents. It encompasses any factor that is produced by the predetermined unfolding of genetic information – a process known as maturation. Nature influences many aspects of our behavior such as;

- Whether our eyes are blue or brown.
- Whether we have thick hair throughout life or eventually go bald.
- How good we are at athletics.

On the other hand nurture refers to the environmental influences that shape our behavior. Some of these environmental influences impact our biology such as pregnant mother's use of cocaine and its impact on to be born child or the amount and kind of food available to children. Some influences are social in nature such as the ways parents discipline their children and the effect of peer pressure on adolescents. Some other influence can be a result of socio economic influences.

The nature v/s nurture controversy has led to heated debates in psychology and social sciences especially with respect to intelligence. However, it should be remembered that genetic and environmental factors often operate jointly. Therefore, our genetic background orients us towards a particular behavior, those behaviors will not necessarily occur without an appropriate environment.

1.4 THEORETICAL PERSPECTIVE ON LIFESPAN DEVELOPMENT

Developmental psychologists have developed different perspectives. Each perspective consists of one or more theories which are broad, organized explanations and predictions concerning phenomenon of interest. A theory provides a framework for understanding the relationships among unorganized set of facts or principles. The following table lists six different perspectives on developments.

1) The Psychodynamic Perspectives a) Freud's Psychoanalytic Theory b) Erikson's Psychosocial Theory
2) The Behavioural Perspective a) Classical Conditioning b) Operant Conditioning c) Social-Cognitive Learning Theory
3) The Cognitive Perspective a) Piaget's Theory of Cognitive Development b) Information Processing Approaches c) Cognitive Neuroscience Approaches
4) The Humanistic Perspective
5) The Contextual Perspective a) Bio-ecological Approach to Development b) Vygotsky's Socio-cultural Theory
6) Evolutionary Perspectives

We would discuss each of these perspectives in detail:

1.4.1 The Psychodynamic Perspective:

Psychodynamic perspective was pioneered by Dr. Sigmund Freud who believed that human behavior is motivated by inner forces, memories and conflicts about which an individual has little awareness and control.

a) Freud's Psychoanalytic Theory: Freud's psychoanalytic theory suggests that unconscious forces determine personality and behavior. Our unconscious behavior contains:

- Infantile wishes
- Desires
- Demands
- Needs

These are hidden from our conscious awareness due to their disturbing nature.

According to Freud, our personality has three aspects:-

- Id
- Ego
- Superego

Id: It is the raw unorganized, inborn part of personality that is present at birth. It represents primitive drives related to hunger, sex, aggression, and irrational impulses. Id operates according to pleasure principle. Its main goal is to provide maximum satisfaction and reduce tension.

Ego: It is the rational and reasonable aspect of one's personality. The ego acts as a buffer between the external world and the primitive id. The ego operates on the reality principle. It attempts to restrain the instinctual energy so as to maintain safety of the individual or help him/her integrate into the society.

Superego: It represents a person's conscience. It tells us what is right and wrong. It develops around 5-6 years of age.

Psychosexual Development: A term used by Sigmund Freud to refer to a series of stages during which children pass through in which pleasure or gratification is focused on a particular biological function and body part.

b) Erikson's Psychosocial Theory:

Erik Erikson provided an alternative psychodynamic view which emphasized on social interaction with other people.

According to Erikson, development proceeds throughout our lives in eight stages, which emerge in a fixed pattern and are similar for all people. At each stage individual experiences conflict which must be resolved. Freud viewed development to be relatively complete by adolescence. Erikson on the other hand suggested that growth and change continue throughout an individual's lifespan.

Assessing Psychodynamic Perspective:

i) Freud's work is considered to be monumental and an important milestone in the study of human development.

ii) Current research in the area of cognitive psychology lend support to Freud's concept of unconsciousness. Research in the area of learning and memory suggest that we unconsciously carry with us memories that have a significant impact on our behavior.

iii) Some of the most basic principles of Freud's psychoanalytic theory have been questioned. They have not been validated by research especially the view that childhood stages determine adult personalities.

iv) Freud's work has also been criticized on the ground that his findings were based on limited population of upper middle class Austrians living during a strict puritanical era**.**

1.4.2 The Behavioural Perspective:

Focusing on Observable Behaviour: The behavioural perspective suggests that the key to understanding development are observable behaviour and environmental stimuli. This perspective reflects the view that nurture is more important to development than nature.

This perspective rejects the notion that people universally pass through a series of stages. Instead people are affected by environmental stimuli to which they happen to be exposed. Developmental pattern is viewed as personal reflecting a particular set of environmental stimuli. Some important views of this perspective include:

- Development change is quantitative rather than qualitative.
- Behaviour is a result of continuing exposure to specific factors in the environment.
- Advances in problem solving capabilities, as children age, are largely a result of greater mental capacities rather than changes in the kind of thinking that children bring to bear on the problem.

Three important theories of behavioural perspective include:

a) Classical Conditioning

b) Operant Conditioning

c) Social-cognitive Learning Theory

We would discuss each of these briefly:

a) Classical Conditioning: Classical conditioning is one form of associative learning and can be defined as a learning process in which a previously neutral stimulus becomes associated with another stimulus (which always produces a response) through repeated pairing with that stimulus. The systematic study of classical conditioning began in Russia with the work of Ivan P. Pavlov. Classical conditioning gets its name from the fact that it is a kind of learning situation that existed in the 'classical' experiments of Pavlov. This form of conditioning is also called as respondent or Pavlovian conditioning. We have studied about classical conditioning in detail in the XI Class as well as in FYBA.

b) Operant Conditioning: It is a form of learning in which a voluntary response is strengthened or weakened by its association

with positive or negative consequences. It differs from classical conditioning in that the response being conditioned is voluntary and purposeful rather than automatic (as in classical conditioning, for example saliva).

One important concept in operant conditioning is reinforcement. One application of operant conditioning is behaviour modification which is a formal technique for promoting the frequency of desirable behaviours and decreasing the incidence of unwanted ones. Behaviour modification is used to share many practical problems such as;

- Teaching basic language to people with severe retardation
- Helping people achieve self control problems
- Stick to dieting, etc.

Social-cognitive Learning Theory: This theory was provided by Albert Bandura. It is also called as learning through imitation. It is an approach that emphasizes learning by observing the behavior of another person (i.e., model). According to social cognitive learning theory we are more likely to imitate the behavior of others whom we observe (i.e., model a given behavior).

Assessing Behavioral Perspective: Behavioural Perspective has applications in many areas such as

- Education of children with severe mental retardation.
- Procedures for curbing aggression.

The major criticism of behavioral perspective is that there is no agreement between different theories of behavioural perspective. For e.g., Classical, operant and social learning theories considerably differ from each other and disagree on important areas.

Classical and operant conditioning consider learning in terms of external stimuli and responses in which only important factors are the observable features of the environment. On the other hand social learning theory view such an analysis as over simplistic. They argue that what makes people different from rats and pigeons are the mental activity in the form of thoughts and expectations. According to social learning, theorists we cannot understand human development without moving beyond external stimuli or responses.

1.4.3 The Cognitive Perspective:

The cognitive perspective is concerned with gaining insight into an individual’s understanding and knowledge. It focuses on the

processes that allow people to know understand and think about the world. Cognitive perspective:

- Emphasizes how people internally represent and think about the world.
- How children and adults process information and how their ways of thinking and understanding affect their behavior.
- Seek to learn how cognitive abilities change as people develop and how different cognitive abilities are related to one another.

Theories within Cognitive Perspective: Within cognitive perspective, three theories are important:

a) Piaget's Theory of Cognitive Development.

b) Information Processing Approaches.

c) Cognitive Neuroscience Approach.

We would discuss each of these briefly:

(a) Piaget's Theory of Cognitive Development:

Jean Piaget was an influential figure in the area of cognitive development. According to him all people pass through a fixed sequence of universal stages of cognitive development. Not only does the quantity of information increases at each stage, but quality of knowledge and understanding changes as well.

Piaget focused on the changes in the cognition that occur as children move from one stage to the next. He was of the view that human thinking is arranged into schemes which are organized mental patterns that represent behaviours and actions. Schemes can be viewed as the intellectual computer software that direct and determine how data from the world are looked at and dealt with. Schemes varies at each stage. For example,

- During infancy, schemes represent concrete behavior ; such as scheme for sucking, for reaching and for each separate behavior.
- In older children, the schemes become more sophisticated and abstract such as skills involved in riding a bike or playing an interactive video game.

Two important principles for explaining children's understanding of the word:

According to Piaget, growth in children's understanding of the world can be explained by two basic principles.

i) Assimilation

ii) Accommodation

I) Assimilation: It can be defined as a process in which people understand a new experience in terms of their current stage of cognitive development and existing ways of thinking.

II) Accommodation: It refers to changes in existing ways of thinking in response to encounters with new stimuli or environment.

Assessing Piaget's Theory of Development:

Piaget is a towering figure in the area of lifespan development. His stages of intellectual growth during childhood is excellent. Piaget has been criticized on the following grounds;

i) Some cognitive skills emerge earlier than that suggested by Piaget.

ii) Universality of Piaget's stages has been disputed. Evidence suggests that certain specific skills emerge at a different time in non-western cultures than what was suggested by Piaget.

iii) Some people never reach the highest level of cognitive thought or sophistication such as formal logical thought suggested by Piaget.

(b) Information Processing Approaches:

It is an important alternative to Piagetian approach which seeks to understand and explain as to various ways in which individuals process, store and use information that is available to them. This approach originated as a result of developments in the area of computers. According to this approach, complex human behavior such as learning, rehearsing, categorizing and thinking can be broken down into series of individual specific steps. This approach further asserts that children like computers, have limited capacity for processing information as they develop, they employ increasingly sophisticated strategies that allow them to process information more efficiently.

This approach, in sharp contrast to the Piagetian approach, assume that development is marked more by quantitative advances than qualitative ones. This approach further states that our capacity to handle information changes with age, even speed and efficiency gets influenced as we age. As we age, we are better able to control the nature of processing and the strategies we choose to process information.

One type of information processing approach that builds on Piaget's research is called as Neo-Piagetan theory. In contrast to the Piaget's original work which viewed cognition as a single system of increasingly sophisticated general cognitive abilities, neo

piagetian theory considers cognition as made up of different types of individual skills. Neo-piagetian theory suggests that cognitive development proceeds quickly in certain areas and more slowly in other areas. For e.g., reading ability and the skills needed to recall stories may progress sooner than the abstract computational abilities used in algebra or trigonometry.

Neo-piagetian also believe that experience plays a greater role in advancing cognitive development than traditional piagetian approaches.

Assessing Information Processing Approach:

Information Processing Approach has become a central part of our understanding of development, but they do not offer complete explanation of behavior. This approach pays little attention to areas such as creativity. This approach also does not take into account the social context in which development occurs.

(c) Cognitive Neuroscience Approach:

This approach is a recent development which takes into consideration cognitive development related to brain processes. They emphasize on neurological activity that underlies thinking, problem solving and other cognitive behaviors.

Cognitive neuroscience approach seeks to identify actual locations and functions within the brain that are related to different types of cognitive activity. For example, they have used brain imaging techniques to demonstrate how thinking about meaning of the word activated different areas of the brain than thinking about how the words sound when spoken.

Cognitive neuroscience have also attempted to understand the relationship between autism and brain processes as well as the relationship between brain enlargement and other developmental disorders.

Cognitive neuroscience research has also attempted to discover certain genes which are associated with specific developmental disorders.

1.4.4 The Humanistic Perspective:

This perspective concentrates on uniquely human qualities. This perspective holds the view that people have a natural capacity to make decisions about their lives and to control their behavior. This perspective also holds the view that each individual has the ability and motivation to make free choices and take decisions

about their lives independently of the societal standards. The two major proponents of humanistic perspective were:

i) Carl Rogers and

ii) Abraham Maslow.

According to Carl Rogers individuals need positive regard which arises from an underlying wish to be loved and respected. Since positive regard comes from other people, we are dependent upon them and hence their view of us becomes important for us.

According to Abraham Maslow the primary goal of one's life is self-actualisation. It is a state of self fulfillment in which people achieve their highest potential in their own unique ways.

Assessing Humanistic Perspective:

This perspective did not have a major impact on the field of life span development. This perspective was unable to identify any broad based developmental change that is the result of increasing age or experiences. Inspite of its limitations humanistic perspective have had its greatest impact in the area of health care and business.

1.4.5 The Contextual Perspective:

This perspective takes a broad approach to development. This perspective considers the relationship between individuals and their physical, cognitive, personality and social worlds. Two major theories that emphasise this perspective are as follows:

i) Urie Bronfenbrenner's Bioecological Approach

ii) Lev Semenovich Vygotsky's Sociocultural Theory.

We would discuss each of these briefly:

(i) The Biological Approach to Development:

This approach to development suggests that individuals are influenced simultaneously by five levels of environment which include:

a) The Microsystem

b) The Mesosystem

c) The Exosystem

d) The Macrosystem

e) The Chronosystem

We would discuss each of these briefly.

(a) **The Microsystem:** It is the everyday immediate environment of a child's life. It includes parents, siblings, friends, teachers, etc. The children are not passive recipients from environment. They actively change and construct their microsystem.

(b) **The Mesosystem:** It refers to all those that connect the children to parents, students to teachers, employees to bosses, friends to friends, etc. It takes in to consideration direct and indirect influences that bind us together.

(c) **The Exosystem:** It represents the broader influences such as social institutions like the local government, the community, schools, places of worship, local media, etc. Each of these institutions have an immediate and major impact on our personal development and each effect how micro and mesosystems work.

(d) **The Macrosystem:** It represents the larger cultural influences on an individual, including society in general, types of government, religions and political value systems, etc.

(e) **The Chronosystem**: It underlies each of the previous systems. It involves the way the passage of time affects children's development. Passage of time would include historical events, such as 9/11 terrorist attacks or gradual changes in value system such as women working out, changes in marriage laws, etc., that impact on children's development.

The Bioecological Approach emphasizes the interconnectedness of the influences on development because the various levels are related to one another; a change in one part of the system affects the other parts.

Bioecological Approach is important because it suggests the multiple levels at which the environment affects children.

(ii) Lev Semenovich Vygotsky's Sociocultural Theory:

According to Vygotsky, a full understanding of development is not possible without taking in to account the culture in which people develop. This theory describes how cognitive development is influenced as a result of social interactions between members of a culture.

According to Vygotsky, children's understanding of the world is acquired through their problem solving interactions with adults and other children. As children play and interact with others, they learn what is important in their society and at the same time advance cognitively.

Sociocultural theory emphasizes that development is influenced by reciprocal transactions between people in child's environment and the child.

Assessing Vygotsky's Theory:

The emphasis on the role of sociocultural influences on our development was the greatest contribution of Vygotsky. Most societies today are becoming multicultural as a result of globalization. However, this theory was criticized for ignoring the effects of biological factors on development. This perspective also minimized the role of individuals in shaping their environment.

1.4.6 Evolutionary Perspective:

This perspective emphasizes on the contributions of our ancestors to our development. This theory seeks to identify behaviour that are a result of our genetic inheritance from our ancestors. Evolutionary Perspective grew out of the groundbreaking work of Charles Darwin. It states that our genetic inheritance not only determines such physical traits such as skin and eye colour but also personality traits and social behaviours. According to evolutionary perspective behaviours such as jealousy, shyness and aggression are produced in part by genetic causes, presumably because they helped in increasing survival rates of human ancient relatives.

Evolutionary perspective includes the following two important fields of study:

a) Ethology

b) Behaviour Genetics.

We would discuss each of these briefly:

Ethology: It examines the ways in which our biologicl makeup influences our behaviour. One of the most vocal advocates of ethology was Konrad Lorenz. His work demonstrated the importance of biological determinants in influencing behaviour patterns. According to him much human behaviour reflects inborn genetic patterns.

Behaviour Genetics: It studies the effects of heredity on behaivour. Behavioural genetics explains how we inherit certain behavioural traits and how environment influences whether we actually display those traits.

Assessing the Evolutionary Perspective: Evolutionary Perspective emphasizes on genetic and biological factors but pays little attention to environmental and social factors. Experimental research is not sufficient to test theories based on evolutionary perspective.

1.5 RESEARCH METHODS

Developmental Psychologists use wide variety of research methods. Some important topics included under research methods are:

- Theories and Hypothesis.
- Correlational Studies.
- Experiments.
- Theoretical and Applied Research.
- Measuring Developmental Change: Longitudinal Cross-sectional and Sequential.
- Ethics of Research.

We would discuss each of these topics briefly.

1.5.1 Theories and Hypothesis:

Theories can be defined as broad explanations and predictions about phenomenon of interest. Theories are used to form hypothesis. We can define hypothesis as a prediction which can be tested. Theories and hypothesis are related to scientific method which can be defined as the process of posing and answering questions using careful, controlled techniques that includes systematic orderly observation and collection of data. The scientific method involves three major steps:

- Identifying questions of interest.
- Formulating an explanation.
- Carrying out research that either supports or refutes explanation.

Types of Research:

Once a hypothesis is formed, researchers test its validity by using any one of the following two types of research.

- Correlational research.
- Experimental research.

Correlational Research: This type of research seeks to identify whether an association or relationship exists between two factors. Correlational research cannot tell us whether one factor causes changes in the other. Piaget and Vygotsky used correlational research.

Experimental Research: It is aimed at discovering causal relationship between various factors. Experimental research helps us to answer the question of causality.

1.5.2 Types of Correlational Studies:

There are many different types of correlational studies, some of which are as follows:

- Naturalistic Observation
- Ethnography
- Case Studies
- Survey Research
- Psychophysiological Methods

We would discuss each of these:

Naturalistic Observation: It is an observation of naturally occurring behaviour without any intervention. For example, an observer may observe three year old preschooler with respect to number of times he has shared his toys with his class mates while playing with them or number of aggressive acts indulged in by a child while playing with his friends, etc. The greatest advantage of this method is that the behaviour is studied in its natural habitat. The greatest drawback of this method is that:

i) The observer has no control over factors of interest.

ii) Some behaviours in its natural environment occurs less frequently and hence meaningful conclusions cannot be drawn from it.

ii) If a child comes to know that his behaviour is being observed, he/she would modify their behaviour.

Ethnography:

It is a method which developmental psychologists have borrowed from anthropology and used to investigate cultural questions. Ethnography helps us to understand culture's values and attitudes through careful, extended examination. In ethnographic study the researchers act as a participant observer, living for a period of weeks, months or years in another culture. Ethnographic researcher obtains a deep understanding of the life within another culture by carefully observing everyday life events and conducting in-depth interviews.

Case Studies:

It involves extensive in-depth interviews with a particular individual or small group of individuals. Case studies are used to:

- Learn about the individual being interviewed.
- To derive broader principles.
- To draw tentative conclusions that might apply to others.

Case studies are generally conducted on children who display unusual genius and on children who have spent their early years in the wild, without any human contact.

One variant of case study is the use of dairies. In this participants are asked to keep a record of their behaviour on a regular basis.

Survey Research:

It is one type of study where a group of people chosen to represent some larger population are asked questions about their attitudes, behaviour or thinking on a given topic. Surveys have been conducted about parent's use of punishment on their children and on attitudes towards breastfeeding.

Psychophysiological Methods:

These methods focus on relationship between physiological processes and behaviour. For example, a researcher might study the relationship between blood flow in the brain and problem solving ability. The three most frequently used psychophysiological measures are as follows:

- Electroencephalogram (EEG).
- Computerised Axial Tomography (CAT).
- Functional Magnetic Resonance Imaging (fMRI).

1.5.3 Experiments:

Experiment is one of the most scientific method which helps us to determine the exact cause-effect relationship. Experiment involves devising two different types of conditions or treatments. One condition is called as the Experimental Group and another condition is called as the Control Group. In the experimental group, independent variable is introduced. In the control group, independent variable is not introduced and the behaviour is observed under natural conditions.

Independent Variable and Dependent Variable:

Independent variable can be defined as the factor whose effect the experimenter wishes to find out. In other words it is a condition selected by the experimenter. For e.g., stimulus presented, a drug administered, etc. Independent variable is also defined as that variable whose quantitative value can be independently controlled by the researcher. Independent variable is within the hands of the experimenter. Its quantitative value can be increased decreased or withdrawn.

Dependent Variable:

The effect of the independent variable is called as the dependent variable or in other words change that comes about as a result of the changes in the independent variable is called as the dependent variable. The variable whose quantitative value depends on the effects of the independent variable is called as the dependent variable. The term dependent variable is used to show that this factor depends upon something else. The dependent variable is the measure of the behaviour of the subject or a report of the subject's response to a stimulus, a change in the behaviour after administration of a drug, a score on a test and so on. The dependent variable is almost always some measure of the participant's behavior.

Random Assignment to Groups:

This is one of the basic requirements for conducting valid experimentation. According to this principle, each person taking part in a study must have an equal chance of being exposed to each level of the independent variable. The reason for this rule is simple. If participants are not randomly assigned to each group, it may prove impossible to determine whether differences in their behaviour in the study stem from differences they brought with them, from the impact of the independent variable, or from both. Thus, we can define random assignment as a process of assigning

subjects to the experimental or control groups randomly, so that each subject has an equal chance of being in either group (i.e., experimental or control group).

Choosing a Research Setting:

One of the important issues in conducting a research is how to choose a research setting. This depends upon the purpose as well as nature of the research study. **There are two types of research settings:**

i) **Field Study:** It is a research investigation carried out in a naturally occurring setting. Field studies can be used in correlational research and experiments.

ii) **Laboratory Study:** It is a research investigation conducted in a controlled setting so that certain events can be held constant.

1.5.4 Theoretical and Applied Research:

Theoretical research is also called as basic or fundamental research. It is a research designed to test some developmental explanation and expand scientific knowledge. Applied Research is oriented towards providing practical solutions to immediate problems.

1.5.5 Measuring Developmental Change:

Three important research strategies to measure developmental change include:

i) Longitudinal Studies

ii) Cross sectional Studies

iii) Sequential Studies

We would discuss each of these briefly:

i) Longitudinal Studies:

Longitudinal research measures change over time. By following many individuals over time, researchers can understand the general course of change across some period of time.

Longitudinal research has number of drawbacks:

a) They require tremendous investment of time, because research must wait for participants to become older.

b) Another limitation of Longitudinal Study is that participants often drop out over the course of the research because they loose interest, move away, become ill or die.

c) Another drawback of Longitudinal Study is that participants become “test wise” or “familiar” and hence perform better each time they are assessed.

d) They may also be affected by the repeated presence of an experimenter or observer.

ii) Cross sectional Studies:

In Cross sectional research, people of different ages are compared at the same point of time. Cross sectional studies provide information about differences in development between the age groups.

Cross sectional research is better than longitudinal research as it takes far less time. In Cross sectional research participants are tested at just one point of time.

Cross sectional research has the following limitations:

They are unable to inform us about changes in individuals or groups.

iii) Sequential Studies:

These are a combination of longitudinal and Cross sectional Studies. In Sequential Studies, researchers examine a number of different age groups at several points in time.

1.5.6 Ethics of Research:

Ethics is a branch of philosophy which is concerned with what is right and what is wrong. Behavioural sciences, such as developmental psychology involves many ethical issues in research. Some ethical issues are clear cut where as others are subtle. In order to deal with ethical problems, researchers use several ethical guidelines for research.

i) Researchers must protect participants form physical and psychological harm. Participant’s rights, welfare and interest come first and before that of the researchers.

ii) Researchers must obtain informed consent from participants before their involvement in a study. Those participants who are above 07 years of age must be included in the study only if they voluntarily agree. If children are below 18 years of age

then besides their consent, their parent's consent should also be obtained.

Deception in psychological research must be used only if it is required and the deception used must not cause any harm to the participants.

iii) Privacy of the participants must be maintained. If participants are required to be videotaped then their consent must be obtained. Access to tapes must be restricted.

1.6 LET US SUM UP

In this unit we have discussed the concept of life span development, its scope and individual differences with respect to development. Some important influences on development nature and nurture aspects of development and issues related to it were also briefly discussed. Various theories and perspectives related to lifespan development were also discussed towards the end of the unit we had discussed. Various topics related to research methods as well as ethics of research.

1.7 QUESTIONS

Q1. What is life span development? Discuss its Scope.

Q2. Define the following terms:

i) Social Construction.

ii) Race.

iii) Ethnic Group and Ethnicity.

iv) Critical and Sensitive Periods.

Q3. Discuss Cohort Influences on Development.

Q4. Discuss the key issues and questions with respect to nature and nurture of life span development.

Q5. Discuss the various theoretical perspectives on life span development.

Q6. Discuss the various research methods used by Developmental Psychologists.

Q7. Write short notes on the following:

a) Longitudinal Studies.

b) Cross sectional Studies.

c) Sequential Studies.

d) Ethics of Research.

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2

Topic - 2

START OF LIFE

Unit Structure

2.0 OBJECTIVES

This unit explains

1) Development during earlier period (before birth).

2) Introduction to heredity and Environment.

3) Prenatal growth and changes.

2.1 INTRODUCTION

The story of human life begins with a single cell. In a span of 266 days a living breathing pink bundle of joys is born. The male reproductive organ creates a sperm cell, this sperm cell in pushed through ovum (egg cell from female). Thus, a cell in fertilized. The fertilized cell in described as zygote. This zygote contains almost two billions chemically coded messages for creating a fully functioning individual.

Development during earlier period:

(i) Genes and chromosomes:

Genes are the basic unit of heredity. There are almost 25,000 human genes that form the software of our future development. Genes are made up of specific sequences of DNA (Deoxyribonucleic Acid) molecules.

Genes are arranged in specific location or the body of 46 Chromosomes. Child gets 23 chromosomes from each parent at the time of conception.

Genes determine the nature and function of every cell in the body. The genes received by zygote determine the individual differences found in human beings. After sexual maturation, sperms and egg cells are formed in the body of male and females respectively. Through the process of cell division, called as Mitosis....each reproductive cell receives only 23 chromosomes. Thus, at the time conception fertilized cell has 46 chromosomes. Out of the millions of sperms and thousands of eggs, which will be selected is purely a matter of chance...., Thus, there is chance of different possible combinations. Therefore, there in no chance that one can come across anyone who is completely duplicate to any other individual.

ii) Multiple births:

Multiple births result when a single fertilized cell divides into two identical cells. These, are two individuals with identical genetic combination. These are the monozygotic twins as they are born out of single fertilized cell. They are always of the same sex.

Many a times two separate sperms fertilize two separate ova. Twins produced in these manners are called as dizygotic twins. These twins are born out of two separate zygotes, they are not genetically identical, they are like two siblings born at different times. They may be of different sex also. Triplets, quadruplets may be produced either by combination of monozygotic or dizygotic process.

The chances of multiple births are higher when fertility drugs are used before conception. Similarly, increase in mother’s age is also responsible for increasing chances of having a multiple births.

Studies have shown that there are racial, ethnic and cultural differences when multiple births are conceived.

iii) Sex of the child:

Baby receives 23 Chromosomes from each parent. The first 22 chromosomes are called as autosomes.... in these pairs each member of the Chromosomes is similar to other pair. The 23rd pair of the Chromosomes determines the sex of the child. In males one member of the pair is X

shaped chromosome and the other in Y shaped chromosome. Y chromosome is usually smaller and shorter than X chromosome.

In females the 23rd pair is of XX Chromosomes. Only female ovum always carries X chromosomes when it meets the sperm. It is the sperm that decides the sex of the offspring. If male sperm carries 'Y' Chromosomes then the offspring is a male child.

Now a days, with the advances of science and technology, it has become possible to select the sex of the offspring. In this new technique, lasers measure the DNA in the sperm. The sperm with unwanted sex chromosomes is discarded. Thus, increasing the chances of having a child with desired sex. (Hayden 1998, Belk in 1999 and Van Belen 2005).

Sex selection raises number of ethical and practical problems. This is a kind of gender discrimination that starts before birth.

iv) Basics of genetics:

The studies in the genetics started with Gregor Mendel. In 1800 he carried out series of experiments with garden peas. On the basis of his experiments he proposed that in human beings very few traits are transmitted by single gene pair. Most of the traits are the result of combination of gene pairs. Such type of inheritance is called as polygenic inheritance.

Polygenic inheritance is one in which combination of multiple gene pair is responsible for production of a particular trait. Some genes are found in several alternate forms, some act to modify the way particular genetic traits act. Genes differ in terms of potential range, degree of variability and in the expression of trait due to environmental conditions.

X linked genes are recessive genes and they are located on X Chromosomes only. Now recall that females have XX Chromosomes and males have XY chromosomes. Males do not have another X Chromosomes to counteract the deficits of one X Chromosome. Therefore, males are more likely to have disorders associated with X linked genes. Eye disorders like red-green colorblindness and hemophilia are only found in males.

v) Dominant trait:

It is a trait that is expressed when two competing traits are present.

vi) Recessive trait:

It is a trait that in not expressed or remains unexpressed.

vii) Genotype:

It refers to underlying combination of genetic material that is present at the time of conception. It may not be outwardly visible.

viii) Phenotype:

It is an observable trait, a trait that is actually seen as result of interaction of heredity and environment.

Those genes that occur in pairs are called as alleles. They are the states in which genes can be found. A Child's alleles may contain similar and dissimilar genes from each parent.

ix) Homozygous Trait:

If child receives similar genes for a given trait then it is said to be homozygous in nature.

x) Heterozygous Trait:

If child receives different genes for a given trait then it is said to be heterozygous in nature.

Transmission of genetic information: -

Most of the traits are governed by a combination of a gene pairs. Very few traits are governed by a single pair of genes.

The traits that are determined number of gene pairs are described as polygenic traits, such inheritance is called as polygenic inheritance. Genes can be found in several different forms. Some gene pairs modify the way particular genetic trait is displayed. Genes are also influenced by environmental conditions, the variation found in the expression of number of inherited traits are due to the

environmental conditions. Traits like blood type, are determined by a class of genes that are neither dominant or recessive, such traits may be expressed by a combination of genes such as AB type.

A number of recessive genes called as linked genes, are only found on the X Chromosomes. Therefore, males are more likely to have disorders related to X linked genes.

2.1 a. Inherited Genetic Disorders:

1) PKU- phenylketonuria :

In this disorder child is unable to make use of phenylalanine, an amino acid present in proteins found in milk.

If this is not treated, it can lead to an increase in the toxic substances in the body. It may cause brain damage and mental retardation in a baby.

The gene for this disorder may be passed unknowingly from one generation to other. It expresses when dominant gene is paired with another recessive gene.

2) Down's Syndrome:

Children with Down's Syndrome have an extra Chromosome in the 21st pair of chromosome. It is one of the most frequent cause of retardation. The chances of having Down's Syndrome baby are more when mother is very young or very old.

3) Fragile X Syndrome:

It occurs when a particular gene is injured or the X Chromosome. It causes mild to moderate retardation.

4) Sickle Cell Anemia:

Found more commonly in the people of African origin. Sickle cell anemia has been, named after the misshapen red blood cells, found in the individuals suffering from sickle cell anemia.

Poor appetite, stunted growth, swollen stomach and yellowish eyes are the symptoms of sickle cell anemia. Children with severe form very rarely live beyond childhood.

Today's medical advances have increased the life span of these children.

5) Tay Sachs Disease:

Mainly found in Jews of Eastern Europe and French, Canadians. The main symptoms are blindness and degeneration of muscles leading to paralysis and death. There is no treatment for this disorder.

6) Klinefelter's Syndrome:

It is caused by presence of extra X chromosome in the 23rd pair of Chromosome. The resulting combination is XXY Chromosome in males. The resulting changes are seen as underdeveloped genitals, extreme height and enlarged breasts.

The disorder in which other Chromosome is missing is (XO) is described as Turner's Syndrome.

It has to be understood that in most of the cases the genetic mechanism seem to function quiet effectively. Advances in behavioral genetics has made it possible to anticipate and forecast the genetic disorders before birth. This has helped in reducing the severity of genetic disorders.

2.1. b. Genetic Counseling : -

It helps people to deal with issues related to inherited disorders. The genetic counselor usually guides couple by considering the following factors.

a) Family history of birth defects.
b) Age of mother and father.
c) Abnormalities in previous children.

The genetic counselors advice thorough physical examination along with blood, skin and urinal tests.

1) Prenatal testing:

The health of the unborn baby can be examined by various types of tests. Doctors usually advise blood test and sonography during 11^{th} & 13^{th} week of pregnancy. This helps in finding out abnormalities of chromosomes and heart defects.

2) Chronic villus sampling:

It is advised if there in any family history of birth defect or genetic abnormalities. It involves inserting thin needle in to fetus and taking a small sample of hair like material that surrounds baby. This is a highly risky test. It is done very rarely because of risk of miscarriage.

3) Amniocentesis:

It is carried on after 3 to 4 months of pregnancy. In this technique, a tiny needle is inserted in the uterus to take out a small sample of fetal cell. This test is a best test for identifying genetic defects and it also can identity the sex of the baby.

After these tests, the genetic counselors present the facts before couple and suggests the options regarding the baby.

Genetic counselors now place emphasis on testing parent rather then their children. Number of illnesses start very late in life e.g. Huntington's disorder appears only after 40. Genetic testing is helpful in the prevention and diagnosis of various disorders from cystic fibrosis to ovarian cancer.

Genetic testing is surrounded by number of ethical and moral issues. Because, it never provides simple Yes or No answer. It just tells us the possibilities. The possibilities of illness also depend on the stress factor in the environment.

Therefore, today many medical practitioners have moved further to a technique that involves actual modification of flawed genes.

2.2 INTERACTION OF HEREDITY AND ENVIRONMENT. THE ROLE OF ENVIRONMENT IN DETERMINING EXPRESSION OF GENES.

Studies conducted so far has made it clear that behaviour is a product of interaction of heredity and environment e.g., temperament. Temperament refers to patterns of arousal and emotionality, and it happens to be enduring characteristics of individual's personality. Studies suggest that some children are born with unusual physical activity as compared to other children. Still further, the difference is caused by the opportunities provided by parents that may encourage some children to overcome their shyness. Children raised in a stressful environment, where there is marital discord or prolonged illness in the family, may continue to remain shy. (Kagar & Snidman, 1991, McCrae et al 2000).

Traits determined by combination of genetic and environmental factors reflect multi-factorial transmission. In multi-factorial transmission genotype provides the range within which phenotype vary. Hence, genotype refers to underlying genetic combination that a child receives from parents. Phenotype refers to actual observable characteristics that are due to interaction of genetic and environmental conditions, e.g., People may have a genotype of average intelligence, but their intelligence differs depending upon the exposure received by them. In such cases, environment determines how a particular genotype will be expressed, as a phenotype.

It is also like that not all the behaviours and traits are influenced by environmental conditions. It is not possible to say that a specific behiviour is caused only by environment or by hereditary factors. It can not be determined as to how much of given behaviour is caused by the genetic factors and to what extent it is caused by the environmental conditions.

2.2.1. Nature or Nurture:

The following are the methods used for studying the relative influence of hereditary and environmental factors.

1) Animal studies:

One of the methods of studying relative influence of heredity and environment. For studying the impact of the environmental factors, animals similar in genetic make up are breed together, in this way it is often possible to study the effect of different environmental settings, e.g. genetically similar animals can be raised in stimulating environmental settings and others in relatively impoverished environmental settings. Similarly researchers can examine the role of genetic factors by exposing genetically dissimilar animals to identical environment.

Animal studies offer sufficient evidence for drawing inferences, but the question remains how far these findings can be stretched for human beings.

2) Adoption, twin studies and family studies:

It is not possible for researchers to control genetic backgrounds or environmental conditions, for human beings. The ideal way of studying the role of genetic and environmental condition is to study monozygotic twins. I hope you remember that monozygotic twins are the twins

born out of same fertilized cell and hence they are genetically identical. They share exactly same genetic make-up therefore any difference in their behaviour must be only due to environmental conditions.

Researchers can study the impact of environmental conditions by studying identical twins, who are adopted at birth and brought up in different environmental conditions. (Bouchard & Pederson, 1999, Bailey et al 2000, Richardson & Norgate, 2007).

Limitations of twin studies:

1) Twin studies are useful but are not always without bias.

2) Adoption agencies try to match the characteristics of birth others with the adoption families in terms of race and religion. As a result these twins have similar environments. In such situations, it is difficult to accept that differences in behaviour are found only due to difference in the environment alone.

Monozygotic and dyzygotic twins can be compared, for determining if monozygotic twins are more similar in trait in comparison with the dyzygotic twin.

3) Family studies:

This is another approach, in which people who are totally unrelated, but share similar environment are studied, e.g. family that adopts two young unrelated children usually provide them with similar environment. In such cases the observed similarities in these children can be attributed to similar environmental conditions.

Developmental psychologist also study people on the basis of their degree of genetic similarity, e.g. certain trait has high association between biological parents and their children and weaker association between adaptive parents and their children, then there is enough evidence to support the importance of genetic factor in determining the trait.

On the other hand a particular trait has stronger association between adaptive parents and their children than between biological parents and their children. There is an evidence to support the role of environmental condition in determining that particular trait. If a particular trait is found at the similar level in genetically similar individuals and at different level in genetically different individuals then genetics play an important role in a given trait (Rowe, 1949).

Developmental psychologist have come to the conclusion that all the traits, characteristics and behaviour are result of interaction of nature and nurture.

2.2.2. TRAITS INFLUENCED BY HEREDITY-FAMILY RESEMBLANCES AND PHYSICAL TRAITS:

We generally observe that tall parents have tall children and short parents have short children. Similarly obesity, also seems to have genetic basis. Even less obvious, physical characteristics show strong influence of genetic factors. Blood pressure, respiration rate, and the age at which life ends tend to be similar in closely related individuals than those who are not related (Jost and Sonteg 1944; Sorensen et al, 1988; Price & Gottesman, 1991).

1) Intelligence:

Intelligence has been most extensively studied by developmental psychologist. Intelligence shown as IQ score, is strongly related to achievement in school and several other forms of achievement.

Studies of overall intelligence and various sub-components of intelligence, such as spatial skills, verbal skills and memory show that closely related individuals, sharing similar type of genetic make up, tend to have similar IQ scores. The impact of heredity increases with increasing years, e.g., as fraternal twins move from infancy to adolescence there are increasing differences in IQ scores, whereas, as identical twins grow older, they tend to become more similar in the IQ scores,

Arthur Jensen (2006) proposed that 80% of intelligence is due to hereditary factor. But this may be an extremist view towards intelligence. It must be remembered that whatever role may be played by the genetic factors, the environmental factors, such as exposure to books, educational experience and intelligent friends also have their influence on intelligence scores. Environmental influences determine whether the hereditary potentialities will be maximised or not.

2) Personality:

The genetic and environmental influences also act on personality - Studies suggest that most basic personality traits are inherited. Neuroticism and extroversion the two traits are linked to heredity. Neuroticism refers to the degree of emotional stability displayed by an individual and

extroversion refers to the extent to which person seeks the company of others and is outgoing and sociable by nature.

There is evidence to suggest that there is a specific gene that plays an important role in risk taking behaviour. This novelty seeking gene affects the secretion of dopamine in the brain, which makes some people more prone to risk taking behavior.

Twin studies have shown that personality traits are also influenced by genetic factors. Researchers studied identical twins reared apart, in these twins; it was found that certain traits like tendency to be master and forceful leader, traditionalism, (Following rules and authority) are strongly associated with the genetic factors (Harris Verton & Tong, 2007). Even less basic traits like political attitudes, religious interests and values and attitudes towards human sexuality are inherited. (Eley, Belton & O'Connor, 2003, Bouchard, 2004, Koenigetal 2005).

The above studies clearly indicate the role of genetic factors in the personality make up. The environmental conditions such as encouragement by parents for participation and interaction in society also plays an important role shaping of few in personality traits.

Personality development is a best example of interaction of heredity and environment. It is not only an individual who reflects interaction of heredity and environment, but sometimes, the entire culture reveals interaction of heredity and environment.

Developmental psychologists such as Jerome Kagan, and his colleagues have demonstrated that underlying temperament of society is genetically determined which may predispose people towards acceptance of certain philosophy. The interaction of heredity and environment in a given culture produces a framework for understanding and viewing the world.

3) Psychological disorders:

Schizophrenia one of the severe types of disorder involving loss of touch with reality and disturbed thinking is found to have genetic basis. Studies have shown that schizophrenia seems to run in families. The incidence of schizophrenia is higher among closely related family members, it is more likely that if one member develops

schizophrenia the other family member is also likely to develop the same disorder.

There are 50% chances of developing schizophrenia for a twin member, if other twin member suffers from schizophrenia. The niece and nephew of a person with schizophrenia has less than 5% chance of suffering from schizophrenia (Prescote and Gothesman, 1993, Hanson & Goltesman, 2005).

The above information suggests that, heredity is not the only cause of schizophrenia if it was so, then the other member of monozygotic twin pair must have 100% chance of developing schizophrenia. In addition to hereditary factors, structural abnormalities, imbalance in the brain is also a cause of schizophrenia.

Individuals may have predisposition for schizophrenia, but it is not necessary that with predisposition to develop schizophrenia, person likely to have schophrenia. People may inherit unusual sensitivity to environmental stress, but if stress level is low, person may not develop schizophrenia. There are some individuals who show signs of schizophrenia even in the absence of strong environmental stress.

Disorders like major depression, alcoholism, autism, attention deficit disorders and hyperactivity seem to have genetic basis. To summarize genetic factors provide predisposition for development of certain characteristics, but whether characteristics will be displayed or not will depend on the environmental conditions. Child may be born with the predisposition for disorder, but disorder may not be seen till child reaches adolescences.

Some traits are more likely to be displayed because of the influence of parents e.g., adopted children may show some characteristics that reveal the influence of their biological parents. As these children get older, the influence of adopted parents becomes less and less, and then genetically predisposed characteristics may be shown.

4) Influence of genes on environment:

Sandra Scarr (1993, 98) a developmental psychologist suggested that genetic predisposition not only influences the characteristics, but it also influences their environment. Scarr suggests three ways in which child's genetic predisposition Influences environment.

(a) Children select the environment, that is in tune with their genetic predisposition e.g., active and aggressive child may select sports as his career, whereas reserved child may engage in indoor activities such as academics, drawing, painting etc.

(b) Secondly, the influence of genetic factors may be less passive and less direct e.g. children of professional parents may be born with genes for above average intelligence, will follow a professional career, because of atmosphere at home.

(c) Finally, genetically driven environment may form certain environmental influences e.g., Children interested in Cricket will be more demanding for equipments, or whenever an opportunity is available, may engage in playing cricket.

To summarize, behaviour and traits are the result of interaction of heredity and environment. The relative influence of heredity or environment shifts over a lifespan. Genes provide stage for future development, but how traits will develop is determined by experiences and temperament.

2.3 PRENATAL STAGES OF DEVELOPMENT

The saga of human life begins with conception. The process of development completes after a period of 9 months of development & single fertilized cell divides into 800 billion cells.

The stages of prenatal development can be given as following.

1) Germinal Stage (Conception to two weeks):

During this period a single cell develops into more complex individual within 36 hours after fertilization, the single cell zygote starts dividing rapidly. Seventy two hours after fertilization a fertilized cell turns into 32 cells a day after it turns into 64 cells. The process of cell division continues till the original cell becomes 800 billion or more cells. In the process of cell division the fertilized cell also starts moving down from the fallopian tube to the uterus. It is a journey of 0 to 4 days. Now the fluid filled cell is called as blastocyst. Blastocyst starts floating in the uterus within a day or two. The edges of the blastoayst form an emobryonic disc. It is a thickened cell mass, from which baby develops. The mass starts differentiating in two layers, the upper layer is called as the ectoderm. It turns into nails, hair teeth and sensory organs, outer layer of skin and nervous system including brain and spinal cord.

The mesoderm, the middle layer develops into skin, muscles, skeleton, excretion and circulatory system.

The inner layer, the endoderm develops into digestive system, liver, pancreas, salivary glands and respiratory system.

During the germinal stage the other parts of the blastocyst and protective organ like placenta and umbilical cord, an amiotic sac develop. Placenta is connected to the embryo by an umbilical cord. Baby gets nutrition and oxygen through the umbilical cord, it also throws body waste of the developing embryo.

Placenta protects baby from infections of all types. It also produces hormones that support pregnancy. It prepares mother for lactation. Placenta is a fluid filled sac that protects baby and gives a place for moving around.

The other layer of the blastocyst is called as trophoblast that produces many threadlike structures, they penetrate in the wall of the uterus till the time it finds its nesting place is the uterus, where it receives nourishment from the mother. At the time of implantation blastocyst has 150 cells. When it is fully planted it is called as an embryo.

2) Embryonic Stage: (2 to 8 weeks)

During this period the three layers of the cell are differentiated. The outer layer or ectoderm develops into sensory cell skin and nervous system. The middle layer or the mesoderm becomes the excretory system, muscles and blood. The inner layer the endoderm develops into glands, digestive system, liver, pancreas and respiratory system.

By the end of third week of development, the nervous system is formed rapidly and heart starts breathing. After the fourth weeks legs of the baby can be seen.

After two months of pregnancy all the vital parts of the body cells and kidneys start moving the waste products. The facial features become clear and distinct by this time. The head is half of the body size now. The fingers and toes are blunt, ribs start appearing under the skin.

The first month of pregnancy is the most critical period. During this period the embryo is most vulnerable. All the birth defects are seen during first three months of

pregnancy. Birth defects like cleft palate, incomplete or missing limb, blindness and deafness occur during first three months of pregnancy.

Three out of four spontaneous abortions occur during first three months of pregnancy. The most defective embryos do not survive beyond three months. The defective embryos are spontaneously expelled by the uterus.

3) Fetal Stage (9TH week to birth):

The fetal stage of pregnancy continues till the birth of baby. The fourth week of pregnancy is the fastest period of growth. The length of the embryo is 6 inches. Limbs become sensitive to touch and heartbeat can be heard through stethoscope.

After five months skin of the embryos and fully developed hair, nail and sweat glands appear. The fetus sleeps and wakes up. In the sixth month fetus can open and close eyes. The weight of the baby is 672 grams. Brain of the infant has more control on the body system than before. Baby born at the end of sixth month has fair chance of survival. In the last two months of pregnancy baby gains 224 grams weight per week.

Fetal period of development is an important period as nervous system become mature and starts functioning. The fetus with lower weights, such as three to four pounds, have less chance of survival than the heavier ones.

Another hazard to fetal development is complications during delivery. The prenatal conditions in mother especially in the fetal period, influences the ease or difficulty of childbirth. One such factor is attitude of mother. If mother is anxious during childbirth it tends to lead to difficulty in childbirth because emotions and attitude of mother are likely to influence uterine contractions of mother. Anxiety in the mother makes the labour process longer and fetus delivery difficult.

Inspite of this most fetus develop normally and have capacity to adjust with outside environment.

2.3.1. Problems Associated With Pregnancy:

Infertility:

It is an inability to conceive after 12 to 18 months of trying. The chances of infertility are more with elder couples.

The causes of infertility among men are:

1) Less sperms are produced.
2) Use of illicit drugs or smoking.
3) Previous problem of sexually transmitted diseases.

The causes of infertility among women are.

a) Failure to release on egg through ovulation, this may happen due to hormonal imbalance or damaged fallopian tubes or uterus.
b) Use or abuse of drugs or alcohol.

The possible solutions to the problems of infertility are:

1) **Artificial insemination -** This is a procedure in when men's sperm is directly placed in the vagina of woman. Sometimes donor is anonymous as it may be taken from sperm banks or the husband.
2) **In vitro fertilization (IVF) -** In this case fertilization takes places out of women body. Women's egg is then transferred to women's uterus.

The other two similar procedures are gamete intrafallopian transfer (GIFT) and zygote intrafallopien transfer (ZIFT).

In Gamete intrafallopian tube transfer egg and sperm are transplanted in mother’s uterus. In the zygote, intrafallopien tube transfer, fertilized egg is directly transferred to mother’s uterus.

Surrogate motherhood is another very rarely used option. The surrogate mother is artificially inseminated by biological father, mother brings up the child, hands over to the father and gives up all the rights over the child.

IVF technique is more successful with younger women as compared with the older women. It is also possible for parents to choose the sex of the baby. One such technique is where sperms carrying X and Y chromosomes are separated and required type of sperm is implanted in mother's uterus.

Second technique of having desired sexed baby, is eggs are removed from mother's body and they are fertilised with sperms through invitro fertilization. Three days after embryos are tested in the laboratory to determine their sex. The desired sex embryo is implanted in the uterus of mother. Surrogate motherhood is surrounded by many ethical moral and legal issues. Many a times rights of surrogate mother, mother father and child are in conflict with each other.

Similarly, termination of embryo and the basis of sex are also surrounded by ethical and moral questions. In our culture there is a pressure to have a male child as a result in several states like Haryana MP and UP there is an imbalance in the sex ratio. This imbalance is mainly caused by sex determination tests and termination of female embryo.

Miscarriage and abortion:

Miscarriage is a spontaneous abortion, in which uterus expels the embryo. Most of the time in such cases mother is not aware of the pregnancy. Hence, she may not take the required precautions.

Some genetic abnormality is associated with miscarriages that take place in the earlier months of pregnancy.

Abortion is a process in which mother deliberately terminates the pregnancy. Once again abortion involves many religions, ethical and moral issues. In most cases, women experience a combination of relief with guilt.

2.3.2. Factors Influencing Parental Environment:

Most of the problems during prenatal period are caused by teratogenic agents. A teratogen is an environmental agent such as drug, medicine or virus that produces birth defect in the developing embryo. The influence of above factors depend on what time these agents must have occurred or influenced the prenatal environment. The teratogenic factors will have maximum influence during the earlier months of pregnancy. Similarly, sensitivity to particular teratogenic agent is also related to cultural and social background. Brain is susceptible to teratogenic agents during first 15 to 25 days after conception whereas heart is more susceptible during 20 to 49 days after conception.

i) Mother's diet:

It is a primary concern of all the developing and underdeveloped nations. In our country male members are given top priority, many a times pregnant mother is ignored. Now Central government has launched a mass scale awareness programme for giving nutrient food to expectant mothers.

Mother who eats nutrient food during pregnancy is less likely to have complications during pregnancy. She is more likely to have healthy baby and easy labour. Doctors generally prescribe the dietary supplements to counteract the effect of poor diet. Research shows that babies who are malnourished as fetus, but when enriched environment can overcome the effects of early malnutrition. In reality, it has become possible for malnourished fetus to have enriched environment after birth.

ii) Mother's age:

Today, women seek career advancement or choose to continue their education as a result they get married much later. Since 1970s number of women who become mothers during 30s 40s have increased. Women who give birth to child after 30's are at greater risks for variety of problems associated with pregnancy and child birth. These mothers are more likely to give birth prematurely and they are more likely to have babies with low birth weight. This occurs because of decline in the condition of women's eggs. After the age of 42, the eggs of women do not continue to remain normal. Those women who become mothers after 40 are more likely to give birth to a baby with Down's syndrome or mental retardation. The chances of having baby with Down's syndrome or mentally retarded baby increase with advancing years of pregnancy.

Studies show that if a mother has not experienced any major health problem till 40 years, she is not likely to have prenatal problems.

Women, who become mothers during adolescence, are also likely to give birth to premature babies.

Teenage mothers very often may not get social support as a result they do not receive good prenatal care. The social situations such as poverty and lack of parental involvement after birth may also be responsible for high mortality ratio of infants especially among teenage mothers.

iii) Mother's health:

If mother develops any major health problem during pregnancy it can have devastating effect on the developing embryo. Some of the conditions that can create the maximum damage to embryo are given below:-

a) **Onset of Rubella or German measles** during 11th week of pregnancy can cause blindness deafness and heart defects in the baby. But in later stages of pregnancy result may have less serious effects.

b) **Chicken pox** may produce birth defect. Mumps during pregnancy may lead to miscarriage.

c) **Sexually transmitted diseases of mother** are transmitted to fetus and baby will be born with disease. Another STD like gonorrhea is directly transmitted to baby as it passes through birth canal at the time of birth.

d) **Mothers who are carriers of HIV**, Human Immunodeficiency virus or those who have AIDs (Acquired Immune Deficiency Syndrome) can easily infect their fetus through the blood that reaches the placenta. But if mothers are treated with AZT drug during pregnancy less than 5% infants are born with the disease.

e) **Mother's use of drugs: -** Medicines consumed by mother during 9 months of pregnancy can have disastrous effect on the unborn baby. Medicines given for ordinary ailments can have injurious consequences. e.g. Aspirin taken for headache can lead to fetal bleeding and impairment of growth of unborn embryo.

Some of the drugs taken by mother may not show their effects immediately, the effects may be seen several years later. In 1970's artificial hormones DES(diethylstilbestrol) was prescribed to prevent miscarriage later on it was found that the daughters of mothers who look DES had much higher chance of developing a rare form of virginal cancer and had more difficulties during pregnancies. Sons of mothers who had taken DES hormones had more chances of reproductive difficulties (Adams Hillard 2005).

Consumption of birth control pills due to lack of awareness of pregnancy or the part of mother leads to fetal damage.

If mother consumes marijuana during pregnancy, it can restrict oxygen that reaches fetus. Infants of such

mothers are irritable, nervous and are easily disturbed. These children at the age of 10, show learning and memory deficit (Porath, Fried, 2005, Huzink & Mulder 2006, Jones 2006).

Cocaine used by mother during pregnancy can constrict the arteries leading to fetus, reducing the blood flow and oxygen to fetus causing other to fetal disabilities. Children of such mother are shorter they many have less weight and serious respiratory problems. These children may be born addicted to cocaine and may show withdrawal symptoms.

It is difficult to isolate the effects of cocaine in the case of mothers who are addicted to cocaine. Usually their children are more likely to have poor prenatal and postnatal care. Such mothers are required to stop use of cocaine and their babies need improved postnatal case.

f) Mothers use of Alcohol and Tobacco: - Children of mothers who consume substantial amount of alcohol during pregnancy are at the risk of developing fetal alcohol syndrome (FAS). Child suffering from FAS, usually show mental retardation, delayed growth and facial deformities. It is possible to prevent FAS. Even those mothers who consume alcohol in smaller quantities are more likely to give

birth to children who may show effects of fetal alcohol effects.

Doctors usually advice pregnant mothers to stop alcohol completely.

Smoking during pregnancy is equally injurious to fetus, nicotine and other toxins reduce the respiratory rate of the fetus. Smoking mothers have higher chance of miscarriages and fetal death during pregnancy.

g) Father's effect on prenatal development : The father too can transmit environmentally caused defects like exposure to marijuana, tobacco smoke and large amounts of alcohol and radiation. Certain pesticides may result in production of abnormal sperms. Studies have shown that there is relationship between nervous system tumors in children and occupation of father, who works as auto mechanic, worker in mines, printers etc. (M.R. Sptis & Johnson 1985). In addition workplace toxins such as mercury may bind to sperm and cause birth defect.

Those fathers who are abusive towards mothers during pregnancy may actually harm to baby by producing stressful environment. Incidences of mothers facing abuses during pregnancy are not very uncommon.

2.4 SUMMARY

Genes and Chromosomes are the basic units of heredity. They are actually “software” programmes of future human development. Genes determine nature and function of every cell in the body. Each parent provides 23 chromosomes.

Multiple births occur when number of cells combine or when fertilized cell devides into two or three cells. The chances of having multiple birth increase with mother’s age and use of fertility drugs.

In the 23rd pairs of chromosomes, the last pair of chromosome decides the sex of the child. A combination of XX chromosomes produces. female offspring, and XY produces male offspring.

The genetic inheritance is determined by dominant and recessive trait.

Dominant trait is a trait that is expressed, a recessive trait is a trait that remains unexpressed. Genotype is the genetic material received from parents. How this genotype occurs as a result of interaction of heredity and environment is the phenotype.

If child receives similar genes then he is said to be homozygous for the trait. when child receives the different gene from both the parents it is said to be heterozygous in nature. Polygenic inheritance is an important principle of genetic inheritance, in which a combination of gene pair is responsible for particular traits in question. The science of genetics studies the effects of heredity or psychological characteristics.

Some of the hereditary disorders can have already been discussed in section 2.1a.

Genetic counseling focuses on helping people to deal with hereditary disorders. Couples who may want to have a child can be informed about the problems in future pregnancy.

Human characteristics are influenced by the interaction of heredity and environment Temperament is one of the characteristics influenced by both heredity and environment. When a trait is determined by both heredity and environment, it is described as multifactorial transmission. The role of heredity and environment is studied by animal studies, where genetically similar animals are breed to see the effect of the environmental conditions. Family studies and twin studies also explain the role of heredity and environment. Twin studies are useful but they are not without bias. Similarly studies about dizygotic twins are compared, with the monozygotic twins to determine whether monozygotics twins are more similar then dizygotic twins.

Intelligence is another area that is of a great concern where is when relative contributions of heredity and environment are involved. Studies show that genetics has its influence as intelligence increases with age. Heredity may play an important role in intelligence but factors such as exposure to books, educational experiences and intelligent friends also have their influence on intelligence.

Personality traits also seem to be influenced by heredity. Studies show that risk taking behaviour is especially influenced by genetic factors. Twin studies also show that genetically similar twins have similar personalities.

Individuals may have predisposition to develop Schizophernia, that does not mean that he/she is destined to develop Schizophernia. Person may be unusually sensitive to environmental stresses. If stress is low Schizophernia may not occur, if stress is strong enough, Schizophernia will be manifested.

Sandra Scarr suggested that genetic endowment provided by parents not only determines the characteristics but also influences their environment, prenatal growth and change.

Fertilization takes place when sperm cell and egg cell unite and single cell zygote is produced. The prenatal period consist of three phases- germinal embryonic and fetal. The germinal stage begins from fertilization. Within week a single cell turns into a ball of 100 to 150 cells. Two important structures start developing namely placenta, a thin membrane that covers and protects fetus during nine months and an umbilical cord, that provides nutrition and oxygen to fetus during nine months.

The embryonic stage – 2 weeks to 8 weeks – during this period ball of cell attaches itself to internal lining of uterus. Now the developing child has three distinct layers, outer layer ectoderm middle layer, mesoderm and inner layer, endoderm. Head and brain undergoes rapid growth during embryonic period. Petal period extends from 8 weeks to birth. The developing fetus undergoes tremendous amount of changes. The body changes its proportions dramatically.

Some couples may experience problems associated with pregnancy. The problems associated with infertility can be treated with artificial insemination or by invitrofertilization (IRF).

The prenatal development in influenced by the several factors such as mother's age, use a drugs, diet, health, use of alcohol and prenatal support. Fathers also have their influences on the prenatal development. Father's support, use and abuse of drug and alcohol and fathers relationship with mother influences prenatal growth and development.

2.5 QUESTION

1 Explain the various disorders transmitted by genetic conditions.

2. Write a note on Genetic counseling.

3. Explain some of the characteristics influenced by heredity and environment.

4. Explain the methods used to study the influence of heredity andenvironment.

5. Discuss the prenatal stages of development.

6. What are the factors influencing prenatal development.

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3

Topic – 2

BIRTH AND THE NEW BORN INFANT

Unit Structure

3.0 OBJECTIVES

This unit explains

1) How birth takes places?
2) What are the various methods of childbirth?
3) The various birth complications including cesarean delivery.
4) Still birth and the causes of infant morality.

3.1 INTRODUCTION

Birth of a newborn is always a mixture of pleasure and anxiety for parents and relatives. It is a joyous moment for every parent especially, when they see a bundle of joys born with the wonderful capacities. It is the end of long journey of nine months for both parents and newborn. Therefore a newborn is aptly described as "22 ounces miracle".

3.2 BIRTH

Most of the people have image of newborn that is depicted by the commercials. Most babies do resemble the babies shown in advertisement but appearance of some

babies may change during the journey from uterus to birth canal and finally into the world.

After 266 days of conception a protein called as Corticotrophin Releasing Hormone (CRH) causes the release of various hormones, and the processes that lead to birth. The pituitary gland of mother releases a hormone called as oxytocin. When the concentration of oxytocin becomes high enough, the periodic contractions of labour begin.

The uterus expands during the prenatal period. The muscles tissues of the uterus remain inactive till the 4^{th} month of pregnancy but after 4^{th} month there are occasional uterus contractions. Thus, these contractions prepare uterus for delivery. These contractions are described as Braxton Hicks contractions, very often called as false labour pain. These contractions may not actually cause birth, but they can give some moments of tension and anxiety for parents. The uterus begins to contract intermittently before birth. The contractions of the uterus become increasingly intense, when

babies head moves towards cervix i.e. to the neck of vagina that separates it from uterus, slowly the contractions become strong enough to push baby slowly downwards to birth canal and then to outside world. The narrow passage in the birth canal may misshapen head and nose of the body.

Labour : The process of child birth is also called as labour. It occurs three stages.

1) Dialation 2) Expulsion 3) Placental.

1) Dilation :

This is the first stage of labour. It lasts from 2 to 16 hours. If it is the first delivery of a woman. then this stage may last from 12 to 24 hours. During this stage the contractions of the muscles of uterus are so frequent, that cervix openings becomes wide enough for the baby's head it pass through.

Each contraction at first is of thirty to forty five seconds duration with a gap of fifteen to twenty minutes. The contractions are involuntary in nature, mother cannot make them faster or slower.

The main function of these contraction is to dialate cervix, till it becomes wide enough so that baby can be let out. The cervix widens up approximately about 10 cms.

In the first stage of labour, contraction become more frequent. Each contraction, may become more and more longer. At the end of first stage each contraction may last for about 90 seconds. The contractions become longer in duration and quicker in succession.

By the end of the first stage there may be series of contraction that are very intense, the cervix is stretched around the head of the body. The mother may feel ready to give up at this phase. This phase of transition does not last for more than half an hour.

2) Expulsion:

This stage lasts about 1 1/2 hour the baby's head begin to move from cervix to vaginal canal. During this stage, the involuntary contractions continue to be long in duration and now they are closely spaced. The mother has strong urge to bear down voluntarily with her abdominal muscles.

In between contractions she may drift into a stage of forgetfulness, but she rouses with each new contraction and pushes baby with all her strength, mother sweats, grunts and flushes. Now baby's scalp comes into view only to disappear again. This is known as *crowing,* with each contraction more and more of baby's head is seen. Many a times doctors may make a slight slit in the skin outside the vagina. This is called as *epistomy.* Now baby's head comes out and it is free within a short time.

The head of the baby may be misshapened during this journey, but very soon baby's head recovers normal shape, with the next contraction shoulders emerge and baby's body slips out. Mother experience a great feeling of relief and elation.

3) Placental:

The last stage of labour is the placental stage which last only for few minutes when umbilical cord and placenta are expelled.

Complications During Labour :-

A skilled gynecologist and obstretician can handle the situation efficiently. Today, the advancements in the technology has helped the labour. Sonography reveals the position of the baby, if baby is in breech position, where baby comes out with its legs. Sometimes umbilical cord may be entangled around baby's head.

This is where skill and expertise of the doctor is challenged as baby must be delivered without causing any harm to her. Sometimes during labour, contractions may slow down or may stop, doctors may give additional hormones so that contraction continue with required frequency.

3.2.1 Forceps Delivery:

If mother's contractions are not regular or when mother is falling short of strength, use of forceps is required. Sometime back forceps were used commonly during the early part of second stage. This procedure is called as high forceps delivery. Use of forceps can lead to brain damages in child because lot of pressure is applied to pull the head of the baby. For this reason high forces are rarely used today. The use of forceps during the actual stage of delivery, may not produce brain damages therefore doctors may use forceps during the second stage of delivery.

3.3 APPROACHES TO CHILDBIRTH OR - METHODS OF CHILDBIRTH

All the approaches to childbirth are concerned with 1) Baby's safety 2) Mother’s comfort.

The commonly used methods of childbirth are as follows:

i) Medicated delivery :

This is a delivery, involving use of anesthesia. Anesthesia can be general, making woman completely unconscious or can be partial, partial anesthesia is done by blocking the nerve pathways that could carry sensation of pain to brain or mother can be given analgesic for relaxation. All these drugs pass through the placenta and they have their impact or the blood supply of fetus.

Studies have shown that children born with the help of medication tend to show poor motor and physiological responses in their later life. They show poorer and slower development during first year, in sitting, standing, and moving around.

ii) Prepared childbirth:

In 1914, a British physician, Dr. Grantly Dick-Read put forth the theory of natural and prepared childbirth. This method eliminates fear by educating women on physiology of reproduction and delivery. Women are given training in breathing, relaxation and fitness.

Dr. Fernad Lamaze also proposed the method of prepared childbirth. In this method mother is taught to substitute new breathing and muscular responses to the sensation of uterine contraction for the old responses of fear and pain. The mother learns to relax her muscles as a conditioned response to the voice of her coach, who is usually the father or a friend of mother. The Coach attends classes with the expecting mother, takes a part in delivery and helps with exercises and thus tries to reduce her fear of childbirth.

iii) Caesarean delivery :

It is a medical procedure in which the baby is surgically removed from the uterus. The operation is commonly done when labour is not progressing at the required pace or it is performed when baby is in trouble. It is often performed when baby is in breech position (head last), or transverse position lying crosswise to the uterus or when baby's head is too big to pass through the pelvis of mother.

Caesarean deliveries have superior safety records, especially when baby is in breach position. But they may not help the overall survival of low birth weight baby. Caesarean delivery deprive the baby of experience of labour. During the process of birth when child is being pushed down through the birth canal stress related hormones such as catecholamines are released in the body of baby, they prepare the new born to deal with the stresses of outside world.

iv) Bradley Method:

Often known as husband coached method. It is based on the principle that childbirth should be natural, without medication and medical interventions. Those who are mothers to be, are taught muscle relaxation technique and are informed about nutrition, diet and exercise. Parents are asked to take responsibility and avoid physician as unnecessary and even dangerous. This is a controversial position adopted by followers of Bradley method.

v) Hypnobirthing:

This technique involves a form of self hypnoses during the delivery. The concepts is to induce state of concentration which a mother relaxes her body while focusing attention inwards. Studies show that this technique can reduce pain.

3.3 a Childbirth Attendants:

Recently there is an increasing trend of selecting of midwife, who stays with mother through labour and delivery. Midwifes, are often nurses, who specialize in childbirth. They are used in pregnancies, where there are no complications.

In the remote places of our villages in India there is a still practice of childbirth being helped by midwife, in the absence of physician. This is often dangerous from the point of view of safety of mother and child. Many a times a women who helps out delivery is an old experienced lady from village, who may not have formal training.

3.3 b Advantages of Hospital Delivery:

1) It is always better, when difficulty in birth are expected.
2) Emergencies before and after birth are handled better.
3) The hospital surroundings facilitate the work of the obstetrician.
4) The domestic routine need not be disturbed.
5) The trained staff is always present in the case of emergency.
6) Modern city homes are too small to afford privacy.

Birth occurs when baby finally emerges from mother’s body. Most of the babies automatically take over the transition from placenta to outside world, Most newboms cry spontaneously, it helps them to clear their lungs and start breathing on their own.

3.3 c Neonatal Screening:

The health care workers use Apgar scale for quick assessment of health and well being of the newborn. It is a standard measurement system that shows the well being of the baby by assessing the five basic qualities. The scale has been developed by Verginia Apgar.

The new born receives 0 to 2 points on each of the five qualities namely,

appearance	-	colour of baby
pulse	-	heart rate
grimace	-	reflex irritability
activity	-	muscle tone.

Respiration:

Respiratory effort.-On an average babies receive scores seven and above. But those babies who receive score less then seven are the ones who require help for breathing. Those babies who score less then 4, are in danger, require an immediate life saving interventions.

This may be due to problems already present in the fetus, or complications of labour, where umbilical cord may get wrapped around the neck of the baby, or may be pinched during prolonged labour. Lack of oxygen for longer time proves harmful to baby. A restriction of oxygen for few minutes can produce cognitive deficits, such as delayed language development or mental retardation.

The physical appearance:

Immediately after birth newborn is covered with thick greasy substance that makes its passage smooth through the birth canal.

After judging the health and well being of newborn, health workers become busy in cleaning this substance that covers newborn. Newborn's body is covered with fine dark hair known as *lanugo* that disappears in few days. The eyelids of the newborn may be puffy, due to accumulation of fluids during labour. Newborn baby may be still covered with blood and other remains of birth process.

Newborn is handed over to parents. Psychologist of 1970s and 80s argued that physical and emotional contact immediately after birth (bonding) is crucial from the point of view of lasting parent child relationship. The critical period of development after birth lasts for several hours. It is the skin to skin contact between mother and child, leads to deep emotional bonding. If something prevents this contact the deep emotional bond may not develop. Studies do not offer any support to this idea, though babies who receive early physical contact are more responsive towards their mothers, but this effect lasts only for few days. Newborns need touch and gentle massage soon after the birth. It stimulates the production of chemicals in brain that enhances growth.

3.4 BIRTH COMPLICATIONS

The chances of survival of infants are endangered because of the complications of labour and delivery.

1) Preterm Infants:

Preterm infants are born before 38 weeks after conception. These babies do not get the time to develop completely. They are at higher risks for illnesses and death.

On an average, the newborn baby has birth weight of 7 1/2 pounds i.e., 3400 grams. Low birth weight babies have a weight that is less than 2500 grams or 5 1/2 pounds. Low birth weight is one of the major causes of death of newborns.

It is not necessary that all low birth weights babies are premature babies. Some infants do not gain weight because of delayed fetal growth. These babies have weight that is less than 90% of average birth weight. These babies may complete the period of gestation, but they have not gained the required weight. Some of the low birth weight babies may also be prematurely born.

The risks for both types of babies are similar, but premature babies are more likely to die in infancy than the smaller for the date babies. The shorter the gestation period (i.e., less than 36 weeks) the more the problem the baby is likely to have. The neonatal transition takes longer time for premature babies because they enter the world with less fully developed body systems.

The risk factors or the causes of premature and low birth weight deliveries:

The low birth weight is associated with following factors (S.S. Brown 1985).

a) Factors like race, age, education and marital status.

b) Medical conditions before pregnancy such as, history of abortions, still birth and other medical conditions.

c) Prenatal behaviour of mother and environmental conditions such as poor nutrition, inadequate prenatal care, smoking, use or abuse of drugs and exposure to toxic substances.

The consequences of low birth weight:

1) The immune system of babies is not fully developed.
2) The reflexes may not be mature enough to perform functions. of survival e.g., sucking such babies may be fed intravenously.
3) The low birth weight babies have higher incidences of low blood sugar, jaundice and bleeding in the brain than babies of normal size.
4) They find it difficult to maintain normal body temperature.
5) A common disorder is respiratory distress syndrome, called as hyaline membrane disease. Babies with this disease breathe irregularly.
6) Low birth weight also causes psychological problems and affects intelligence to a greater extent.
7) Learning disabilities are commonly found among low birth weight babies.

2) Mortality and Stillbirth:

Sometimes a child does not live to pass through birth canal. Stillbirth is a delivery of a child who is not alive. If death is detected before labour, physician may induce labour or may perform a cesarean or remove the body as soon as possible. In some cases of stillbirth, baby dies during its travel through birth canal. The loss of baby is tragic and it has an impact on parents. Usually it is the lack of prenatal care, that is responsible for higher mortality rate. Our government tries to offer meaningful support to such mothers by providing subsidized care for economically disadvantaged women. The infant mortality rate in India has decreased in recent years because of improved medical care. But in rural areas, the situation continues to remain pathetic.

3) Postpartum depression:

It is a period of deep depression following the birth of the child. It affects 10% of mothers. It is a deep sadness that affects mothers from several days to months.

This depression may take a fatal form, where a mother may go to the extent of killing her young one.

Generally those mothers who are clinically depressed before delivery are more likely to suffer from depression after the birth of the child. Similarly, those mothers who are not prepared for positive and negative emotions during and after delivery are more likely to suffer from depression.

During pregnancy estrogen and androgen level increases, and after birth this increased hormones again return to normal levels. This rapid change may produce depression (Honey Bennett & Morgan, 2003 Verkerk et al 2003, Kiles et at 2007). Maternal depression has it impact on babies also. When depressed mothers interact with babies they are likely to be detached and withdrawn, this may affect bonding between mother and infant.

3.5 THE COMPETENT NEWBORN

The world of the newborn is markedly different than the world in the womb of mother. The first task of the newborn is to begin breathing. In mother's womb oxygen is supplied and carbon dioxide removed by the umbilical cord. Once the umbilical cord is cut, baby has to start breathing for lifetime. Most of the newborn starts breathing automatically as they are exposed to air. New born once they emerge from uterus, has to practice certain physical activities. Neonates are born with reflexes which are unlearned, organized patterns of responses that occur automatically in the presence of certain stimuli. Sucking reflex, swallowing reflex, rooting reflexes are practiced several months before birth. Sucking and swallowing reflex help newborn in ingestion of food. Rooting reflex helps newborn to turn in the direction of a stimulus.

Reflexes like coughing, sneezing and blinking help the newborn in avoiding dangerous stimulus. The newborn's digestive system initially produces feces. In the feces is a greenish black material (Muconium) that is the left over of fetal stage.

The liver of the newborn is still not developed as a result most of the newborn have yellowish colour is their eyes and skin. This is a neonatal jaundice, very often it is found in preterm and premature babies. It is not very dangerous - the treatment involves placing baby under florescent lights or giving medicines.

The physical characteristics and sensory capacities of neonate.

(1) Physical Characteristics:

Average neonate is 20 inches long and has a weight around 7 1/2 pounds approximately.

Neonate looses 10% of their body weight, after first 4 days of birth. Loss of body weight is found because of loss of fluids. Babies begin to gain weight by the fifth day and they are back to birth weight by tenth or fourteenth day.

The skin of the neonate is very sensitive and very rudy in appearance, some have little white bums around nose and or the checks. Darker complexioned babies have bluish colourations on the back or buttocks. Some babies are born with full head of hair as well as fine hair down on the ears and lower back and the shoulders.

The neonate baby has a frail look, does not have the thick fatty tissue that gives baby usual and soft soundness. It keeps its legs bent at the knee with its feet flexed outward that tends to give limbs an awkward look.

The eyes of the newborn seem small. The lids are puffy the eyes have dull colour because pigmentation has not developed. The gaze of neonate has almost unseeing quality. Most babies have blood spots in the eyes for the first few days due to pressure during delivery.

The nose also suffers some temporary distortions due to pressures exerted in the birth canal. The head of baby may also be moulded due to pressures of birth cabal.

The sensory capacities of neonate:

It is really very difficult to judge the "seeing" capacity of an infant". Seeing refers to seeing stimulus and interpreting. Newborn seem to pay active attention to certain types of information from environment. They pay attention to objects that sharply contrast with the rest of the environment. There is also evidence to suggests that they can discriminate between different types of light.

Newborns can distinguish different colours they also demonstrate preference for certain colours. They can distinguish different colours such as red, green blue and yellow.

Newborn can hear clearly they show startle response to loud and sudden noises. They also recognize sound. A crying newborn, cries more if he hears another baby crying. But if baby hears recordings of his own crying, baby is likely to stop. The auditory system of newborn is not completely developed.

The sense of smell and taste are very well developed e.g., If you put a bitter testing medicine on the tongue of newborn, you can see changes in the facial expression. Next time again you try to give the same medicine to the newborn and you will discover that he/she turns the neck and rejects the medicine.

Newborns are sensitive to touch and pain. Sensitivity of newborn to touch and pain is a controversial issue. This issue arises especially when certain religious groups and communities perform circumcision of male. Newborns circumcision is a surgical procedure that involves removal of the foreskin from penis.

Latest research suggests that circumcision may have medical benefits. It actually reduces the risk of urinary tract infections in males. Similarly, the chances of penile cancer are three time higher in uncircumcised, men than in men who are circumcised. (Frisch & Sergfried, 2006; National Institute of Health 2006).

Circumcision involves bleeding and pain but both can be easily treated. One ethical question that is raised often, how ethical is it to remove healthy body part without person's consent when there is no need to do so.

Early learning of newborn:

Learning during early days takes place through classical conditioning. In classical conditioning the natural stimulus acquires the qualities of the unconditioned stimulus because of repeated pairing. One of the earliest example of learning in infants is the case of 11 months old little Albert (Watson & Rayners 1920). The child initially played fearlessly with cute harmless white rat. Later on during laboratory demonstrations every time Albert played with rat, loud noise was made by the experimenters. As a result little Albert not only developed fear for white rat, he also developed fear for everything that had hair.

Young babies also learn through operant conditioning. In operant conditioning the responses is either strengthened or weakened with the reward or punishment.

The responses that are rewarded are repeated and the responses that are punished or negatively reinforced may not be learned. Example a baby may cry in certain ways to attract parent's attention.

Habituation:

It is a learning that takes place when a stimulus is repeatedly presented. Infants show an orienting response when they see a new stimuli, may be a toy! Child may become attentive and quite. But after sometime novelty of the toy decreases and the child does not pay same amount of attention to the toy. The development of habituation is related to physical and cognitive maturation. Difficulties in habituation may be a sign of metal retardation.

Social Competence:

Developmental psychologist Tiffany Field and her colleagues showed that infants could discriminate between the basic facial expressions such as happiness sadness and surprise. They exposed newborns with happy, sad and surprised facial expressions. The results showed that newborns accurately produced an imitation of adults response. The question is exactly when an imitation begins. Some form of imitation begins very early. It helps baby in social interactions.

Newborns moves through various states of arousal, different degrees of sleep and wakefulness. The caregivers and mothers engage in calming baby as he or she transforms from one state to another. Newborn baby fairly accurately recognize mother’s voices. Parents also change their tone of speech when they communicate with the young one.

Finally, social interactions with parents and significant others lay a foundation for later social development.

3.6 SUMMARY

Birth and Birth Complications:

Birth of baby is a joyous moment for every mother. This is the most memorable moment in the life of every parent. Most of the deliveries are normal deliveries but if delivery is complicated than it is a mixture of tension, anxiety and excitement.

This unit explained the stages of birth. Generally 266 days of conception the conticotropin releasing hormone releases the other hormones required for childbirth. Mother's pituitary glands releases oxytocin. When the concentration of

oxytocin become high enough, periodic contractions of uterus begin.

Labour proceed in three stages. In the first stage contraction occur around every 8 to 10 seconds and labour proceeds. The contraction becomes more frequent and they last longer. The first is the largest period of labour. It is of 16 to 24 hours for first child.

The second stage lasts around 90 minutes, where baby's head proceeds further with each contraction. The second stage ends when baby completely leaves mother's body.

In the third stage, umibilical cord and placenta is expelled from mother's body.

The health and wellbeing of baby is judged by Apgar Scale developed by Verginia Apgar. Newborn is handed over to parents after judging, the wellbeing of baby. The close emotional contact that develops between parent and child i.e., bonding is crucial for lasting parent child relationship.

The approaches of childbirth are:

1) Lamaze birthing techniques.
2) Bradley method.
3) Hypobirthing

Hospital stay for childbirth is required. It assures the safety of mother and child. Now a days there is increasing trend of having a midwife who provides support to mother.

The possible birth complications are baby may be in breech position across the uterus or sometimes unbiblical cord may be entangled around the neck of the baby. This requires hospital stay and emergency medical service.

Preterm infants or premature babies those who are born before 38 weeks after conception. Preterm babies do not have a time to develop fully therefore they are at a greater risk of illness and death. On an average low birth weight baby has a weight that is less than 2500 grams. Very low birth weight babies whose weight is less than 1250 gram are in danger from the moment of birth.

The causes of low birth weight babies include race, age education and marital status of the mother. Medical

factors associated with current pregnancy, etc; also influence birth weight of the babies Low birth weight babies have higher chances of low blood sugar, jaundice and bleeding in brain.

Newborn baby is born with varieties of abilities and reflexes. Most of the reflexes are practiced in mother's womb. Reflexes such as coughing. sneezing and blinking help newborn in avoiding stimuli that are dangerous.

The interactions of newborn are based on learning. Classical and operant conditioning is one of the most primitive forms of learning found in newborns. Newborns also have the capacity to imitate others. This helps them in interacting with others.

3.7 QUESTIONS

Q.1 Explain the process of birth.

Q.2 Discuss the various approaches of birth.

Q.3 Write a detailed note on preterm or premature babies.

Q.4 Explain the main characteristics of newborn baby.

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4

Topic 3
Physical Development in infancy

Unit Structure

4.0 OBJECTIVES

By the end of this unit you will be able to:

- Explain the principles of physical development during infancy.
- Name various aspects of motor development during infancy.
- Discuss the development of sensory system in infancy.

4.1 INTRODUCTION

Infancy is the first phase of development of the postnatal period. It begins at birth and continues till second year. This period is given importance from developmental perspective as it became a foundation for further development. Great scientist like Sigmund Freud and Piaget have emphasised the importance of this period in one's development. Freud explained that an infant derives pleasure through oral sensation and this behaviour contributes to the development of one's personality. Piaget's theory emphases on the sensory motor development and its importance in development. However, in this chapter we will be focusing on the physical development of the infant. The major points of emphasis are on the growth and stability, motor development and the development of the sensory system of the infant.

4.2 FIRST STEPS; GROWTH AND STABILITY

Life starts long back in the womb of the mother. However, the first day of life is the day of actual birth in the world (birthday). The time frame from the actual day of birth to the second year is generally considered as infancy. This period of life is observed as an important phase of life from psychodynamic, cognitive and various other perspectives of development. Physical development during infancy is also important from the point of view of later development, also as much important as others. Physical development during infancy is characterized by growth in height, weight and changes in the facial appearance of the newborn. These are the obvious features of development. However, simultaneously a considerable degree of internal development is taking place with in the body including development of various systems like respiratory system, digestive system, circulatory system and the development of the brain.

Physical growth: The Rapid Advances of Infancy:

Soon after the birth there are noticeable changes seen in infant's physical development. These changes are in variations in weight, height and other behavioural features of the infant. It is observed that these developmental variations are seen to be different according to the geo-ecological conditions and cultures.

Principles of growth:

There are individual differences in the physical development of the infant. The following are the principles that govern physical development during infancy. There are four principles that are related to physical development:

1. Cephalocaudal principle
2. Proximodistal principle
3. Principle of hierarchical integration
4. Principle of the independence of the system.

4.2.1 Principle # 1

Cephalocaudal principle: Sequence in which greatest growth occurs at top (head), working its way to neck, shoulders, middle truck, so on...

Principle # 2

Proximodistal principle: Sequence in which growth starts at center of body and moves toward extremities.

Principle # 3

Principle of hierarchical integration: This principle states that, complex skills follow simple skills. For example, an infant first develops the control of fingers and then only he/she is able to integrate and perform the more complex action of grasping an object.

Principle # 4

Principle of the independence of the system: This principle suggests that, different systems follow different rates of growth. For example, development of nervous system, body size and sexual characteristics develop at different rates.

4.2.2 Development of Nervous System and Brain:

1) The Nervous System and Brain:

The Foundation of Development in previous years under the topic of the biological perspective you have already studied about the Neurons and nerves as building blocks of the central nervous system and the peripheral nervous system. In addition, you have also studied what are different structures and functions of those structures of the brain along with the chemical connections of the brain.

The formation of the neural tube is beginning of the nervous system. This event takes place during the prenatal period. Before actual birth many events take place in the context of brain development, however, brain development continues after actual birth. The following discussion will encompass some of the important aspects of brain development that includes, synaptic pruning and myelination with other aspects.

2) Synaptic pruning:

Synaptic pruning is the systematic sculpting of the unused neurons or neural networks. In the process of brain development many neurons and neural networks are formed further, some gets stimulation from environment and experiences are survived and some do not receive stimulation and remain unused, these are removed i.e., pruned out of the system.

3) Myelination:

Myelin sheath is located on the axon of the neuron cell. In fact, a myelin is a cell which has wrap itself around the axon of the neuron cell (see the biological perspective discussed in your last years text book). The function of the myelin is to accelerate the action potential for effective functioning of the neural transmission.

As the neurons are formed and located at their predetermined locations, the process of myelination begins. The best illustration of the importance of myelination is the degenerative disorders like multiple sclerosis, where the myelin sheath degenerate and result in disturbances of motor behaviour.

Though the development is genetically determined, but, it is also susceptible to environmental influences. Plasticity, which is a tendency of the brain to modify according to the experiences, plays a significant role in brain development.

4) Integrating the bodily systems: the life cycles of infancy:

Soon after the birth the various systems like sleep cycles which are noticeable and some systems which are subtle like breathing are regularised.

5) Rhythms and States:

Behaviour becomes integrated through development of various rhythms. Rhythms are repetitive, cyclic patterns of behaviour. As the neurons of the nervous system become more and more integrated the pattern of rhythms becomes more regular.

6) States:

An infant's state is a major body rhythm, which is a degree of awareness that infant shows to the inner and outer stimulation. These states range from awake states to sleep states.

4.3 MOTOR DEVELOPMENT

At the time of birth the infant is not very proportionately developed. His head is bigger and heavy to lift. His limbs are shorter. Bones and skeleton muscles are

underdeveloped. However, the infant is still able to have some behavioural repertoires that are called as reflexes.

4.3.a Reflexes: Our Inborn Physical Skills:

Reflexes are unlearned, organised, involuntary responses to the stimuli. These reflexes have a survival value as well, like swimming reflex of an infant. Eye-blinking reflexes to protect any damage to eye. However, all reflexes do not remain life-long.

Swimming reflex extinguishes after some years but eye-blinking reflex remains throughout the life. The reason behind it is understood as; the reflexes those disappear become part of the more controlled voluntary motor behaviour.

Motor development in infancy: landmarks of physical achievement:

The landmarks in physical achievement can be divided in to two types: one is gross motor skills and second is fine motor skills.

4.3.b Gross motor skills:

Infant in the beginning is not able to make movement due to the lack of muscular development and strength. It can be observed that the infant struggles to make hand and leg movements. When placed on his stomach he will try to lift his head and as the strength grows he could make backward and forward movements. Approximately after three month he could roll over independently. Close to six months could sit with some support and latter could manage to sit without support. By eight to ten months can start crawling. Then walking with support and without support emerges later, which enables the infant to explore the world around him.

4.3. c Fine motor skills:

Along with the gross motor skills the infant is also developing the fine motor skills. These skills help him to hold certain objects and explore his/her environment. In the beginning it appears very difficult for the infant to coordinate the vision, hands approach and hold an object. However, with development of the nervous system this motor skill also became more and more sophisticated. By three month, infant can open hands prominently and is able to grasp certain objects such as toys and round shapes like ball. By

the eight months he/she is able to coordinate with his thumb and fingers. Further, his sophistication in visual-perception and visual-motor- perception helps to develop his skills.

4.3.d Nutrition in infancy: fuelling motor development:

Nutrition is the basic requirement for healthy overall development of the infant. However, some issues like malnutrition and obesity may interfere with the healthy development.

Malnutrition:

Malnutrition is the condition which is said to be present in an infant when he receives improper and unbalanced amount of nutrition. The current global scenario shows that there are some developing countries where malnutrition is one of the severe problems. In India, there are certain regions which are affected by this problem. Government and non-governmental organisations have programs for working on this problem. This condition can affect the infant and result in various physical and cognitive deficits.

4.3.e Obesity:

Obesity is said to be present when the weight is greater than 20% above the average for a given height. It is understood that obesity could be because of overfeeding. This situation leads to generating excess fat cells which further predispose an individual for being overweight. Though there is uncertainty about the causes and its real effect, but it is quite clear that a fat baby is not necessarily a healthy one. This fact suggests that parents should focus more on the nutritive value of the food than the quantity of eating.

4.4 THE DEVELOPMENT OF THE SENSES

Our senses are the windows of knowledge. We learn through our four senses; vision (eyes), auditory (ears), olfactory (nose) and touch (body). These senses interact and orient us with the external and internal stimuli. Physical stimulation of these sensory organs is called as sensation cognitive processes of sorting, interpreting and integration of sensory information is referred as perception.

i) Visual perception:

At the time of birth and for next six months the visual acuity of the infant is 1/10 to 1/3rd of the adult. Near six month of age the infant develops vision of adult level.

ii) Depth perception:

Depth perception is an ability to acknowledge height and avoid falls. It is seen that infants of six to fourteen months have developed the ability to perceive the depth.

iii) Visual preferences:

Visual preference is the tendency to prefer certain visual stimuli since birth. In this regard it is seen that infants prefer more complex stimuli than simple stimuli.

iv) Auditory perception:

Development of health auditory perception is very important for language development. The auditory perception is developed even before birth. At the time of birth infants are more sensitive to very high and very low frequencies than adults. They are also less insensitive to middle-frequency. The sound, localization is an important ability of pinpointing the direction of sound. It become difficult for the infant initially to point out the correct direction of the sound. However, by one year this ability is well developed among them.

v) Smell and taste perception:

Early in their infancy infants learn to identify smell. They respond differently to the variations in the smell. It is observed that infants could identify their mothers by their smell. In context of taste also infants are found to be as sensitive as adults. They smile when sweeter liquid is placed on their tongue and show disgust when they find the taste bad. Smell and taste are sensitive because it has evolutionarily survival value.

vi) Touch and pain perception:

Experiencing pain in infants is well developed. Infants do communicate through the expression of pain to any discomfort. It is observed that infant changes their tone and intensity of crying to express pain. As the nervous system is in development process the reaction to pain is also seen to be little late. The information processing is very slow during infancy hence the response to pain is little late.

vi) Multimodal perception:

Multimodal perception suggests integration and coordination of stimuli from various sensory modalities. There exist two views on this issue. One suggests that infant's sensations are integrated and another view suggests that initially infant's sensations are separate and latter became sophisticated with the overall development. However, this multimodal perception is dependent on the development of the concept of affordance, which is a characteristic of the situation or stimuli; for example, walking on the steep slope has affordance value of falling down while walking on it.

4.5 LET'S SUM UP

Infancy which is the first phase of development, is characterised by accelerated development in the area of cognitive and emotional development as well as physical development. Physical development is very obvious measure of development of the infant for parents and the people around the infant. This phase of physical development is dependent on the development of the brain. Physical growth in this phase is governed by some principles of development. Motor developments like sitting, walking, gross and fine motor skills are the major milestones which helps infants to explore the world around. Along with motor development, sensory systems and perceptual organisation make the experiences of interactions with world richer.

4.6 QUESTIONS

Q 1. Explain the physical development during infancy.

Q. 2. Write a detail note on development of senses during infancy.

Q. 3. Explain the development of brain and nervous system during infancy.

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5

Topic – 4

Cognitive Development In Infancy

Unit Structure

5.0 OBJECTIVES

After reading this unit you will be able to

1. Describe and explain the concept of cognitive development.
2. Explain classical and newer approaches to cognitive development.
3. Explain Piaget's theory of cognitive development and differentiate between the stages of cognitive development.
4. Evaluate the Piaget's ideas of cognitive development in infancy.
5. Describe information processing model of cognitive development.
6. Explain memory and intellectual processes in infancy.

7. Describe and explain development of language in infancy.

5.1 INTRODUCTION

We observe that very young kids find it difficult to remember, or also find it very difficult to express their thoughts due to limited ability of language. Within first couple of years of life they make remarkable progress in using cognitive abilities. When they are born, they do not know about the world, language, etc., but within short period they start dealing with the problems of real world quite effectively. This astonishing change is also reflected in the ways in which infants use their cognitions. This chapter will focus on How infants develop the cognition? How they start using memory? How do they recognize people? How they learn about various objects in the world? These and many other questions bother developmental psychologists. We will try to learn about the answers to these few questions.

Considerable theoretical developments has taken place during last 30 years regarding human cognitive development. Many theorists believe that infancy is the most critical period of life when it comes to cognitive development. The theorization about cognitive development has started with the pioneering efforts of Jean Piaget and though today we do not consider most of his ideas correct, his work is valuable. We shall also understand the information processing approach to cognitive development.

5.2 PIAGET'S APPROACH TO COGNITIVE DEVELOPMENT

Jean Piaget (1896-1980), a Swiss psychologist, theorized cognitive development of infants assuming that they carry out experiments with environment to learn. According to Piaget's infants knowledge is equal to their actions. He argued that knowledge is obtained through motor behavior carried out by infants. Piaget's theory has been challenged by post-Piagetians and nativistic theorists like modular approach to mind. Nevertheless, Piaget's theory is an important approach to learn.

1a. Key Elements of Piaget's Theory:

Piaget's theory of cognitive development follows stage approach to cognitive development. Stage approach believes that, from birth through adolescence, children pass through a series of four stages in the same order. They are

sensorimotor stage (From birth to two years), preoperational (From two to seven years), concrete operational (From seven to eleven years), and formal operational (From eleven onwards). The change from one stage to another occurs as a result of maturational processes and availability of environmental stimulation.

The important concepts in Piaget's theory are schema, accommodation, assimilation and equilibrium.

Schema:

The infants have organized sensory-motor patterns. In addition to sucking, chewing, they try to reach out for an object, hold them, drop them, etc. These are simple skills, but they direct the ways in which the infant explore their environment. These schemas determine how infants gain more information of the world.

Piaget argued that assimilation and accommodation are two important principles underlying cognitive development.

Assimilation:

Refers to assimilating new information into an existing schema. They understand new experience in the present structure of cognitive development. They use current cognitive system to make sense of the stimulus. For example, the children have a schema of how to hold new object and mouth it. So, if it sees a new object say a new toy, the child will grab it and try to chew it.

Accommodation:

As opposed to assimilation, accommodation refers to the schema changes for the new object. The thinking or understanding changes as a result of confronting a new stimulus is accommodation. The kids starting distinguishing between the objects they can mouth and do not chew everything.

Equilibrium:

It is an ideal state of balance required for making sense of the world. The accommodation and assimilation takes place in order to maintain the state of equilibrium. Equilibrium maintained by making sense of world in terms of existing schemas is assimilation. When assimilation cannot

explain the world then the equilibrium is maintained by the process of accommodation. A state of mind is brought to a level of congruence with the external world.

The sensorymotor stage, the first Piagetan stage of development, spans over first two years of life. So in this unit we shall review the sensorymotor stage in detail.

1(b) The Sensorymotor Stage:

Piaget argued that the sensorymotor stage is the initial stage of development. He divided this stage into following six sub-stages.

Substage 1:

Simple Reflexes (First month): This is the first substage of sensorymotor stage and first substage of life. Simple reflexes encompass the first month of life. Infant's physical and cognitive systems contain only inborn reflexes such as sucking, chewing, upward movement of hands and legs, etc. These reflexes are decisive in the child's interactions with environment. One should note that some reflexes start accommodating as a result of their interactions with environment. Example they may change the style of sucking for breast feeding and bottle feeding.

Substage 2: First habits and primary circular reactions (1_{st} to 4_{th} month):

This is the second substage of the sensorimotor period. This three month long substage begins after 1_{st} month and lasts till 4_{th} month of life. Separate motor movements begin to coordinate during this phase. The infant shows circular reactions in terms of doing two motor activities together repeatedly since they are enjoyable. Initially the coordination of motor activities might happen randomly, but later on the schema for these activities develop. For example, the child may hold the milk-bottle and suck the nipple at the same time.

Substage 3: Secondary Circular Reactions (4^{th} to 8^{th} Months):

This is a third stage of sensorymotor stage lasting occurs from 4 to 8 months of age. The secondary circular reactions are more stronger than the primary circular reactions. The infant try various versions of these pleasurable activities. Then identifies the acts that are more

pleasurable and starts repeating those activities. These actions are not random or by chance activities, but they are deliberate activities carried out by the infant. It shows that infant is acting upon the surrounding.

Substage 4: Coordination of Secondary Circular Reactions (8th to 12 Months):

This is the fourth stage of sensorimotor stage occurs between 8 month and 12 months. In this substage the infant starts solving problem by adding information from different schema. This shows attempt towards goal-directed behavior. The infant make attempts to get the toys in spite of difficulties. They have an ability to define the goal and the means to attain them. They develop the Object Permanence. Till the age of 8 years, they do not have a concept of object permanence. Let us understand this concept: Suppose you are playing with 4-5 month old infant. If you take a toy away from this infant, she will not search for it. But if you do the same with 9 month old infant, then they will try to search for it. The younger infant believes that if something is not visible then it does not exist. As they grow up, they realize that if something is taken away from them, still it will exist, and hence, they will search for it. This concept holds true for individuals as well.

Substage 5: Tertiary Circular Reactions. Substage (12 to 18 Months):

This is a fifth substage of sensorimotor stage. The duration of this stage is from first year (twelve months) to 18th month. In the earlier substage they use to repeat the enjoyable activities. In this substage, they make small modifications in their actions and study the consequences of those modifications. These are called as tertiary circular reactions. These activities are similar to systematic experimental investigations of the world.

Substage 6: Beginnings of Thought (18 to 24 Months):

This is a 6th and last substage of sensorimotor stage. This stage occurs between the ages of 18 months to 24 month. The infant develops a symbolic representation of the events related to memory, thoughts, ideas, that can be called as symbolic thought. Indeed they can have mental representation of imaginary objects as well. This gets reflected in their behavior.

1(c) Support and criticism of Piaget's theory:

Piaget's theory of cognitive development is among the very early attempts to understand cognitive development. Most of Piaget's observations about the development of infant have been upheld by many researchers. Evidence has supported his predictions about the sensorimotor stage. But the overall theory of cognitive development and the stage approach to the cognitive development has been criticized by many researchers on following grounds:.

(i) One criticism is about the stage approach adopted by Piaget. We have already learned that Piaget theorized the development in terms of discrete stages. Though, Piaget accepts that the transition from one stage to another is gradual and not sudden, most researchers (e.g., Siegler) have shown that the process of development is fairly continuous. They have shown that the development does not occur in stages.

(ii) Second criticism is about the motor focus of Piaget's theory. The critiques argue that Piaget ignored the vital role played by sensory and perceptual abilities. They further claim that the focus on motor component in the first two years has actually underestimated infants true abilities to perform and attain important developmental milestones and erroneously kept the milestones at higher age. For example, some researchers have shown that object permanence can be achieved as early as by the 3rd month of life, if the age appropriate task are devised.

(iii) Third criticism is about cultural stability of the Piaget's theory. Some researchers have shown that various substages achieved during sensorimotor stage differ across cultures.

(iv) The fourth criticism and perhaps most important one is about the origin of knowledge. Piaget claim that infant's learn the skills and obtain knowledge by interacting with the environment. The critiques who follow modular approach (e.g., Fodor) argue that the knowledge is innate, that the child is born with the knowledge. Recent representational redescription (RR) approach tries to reconcile these two positions.

5.3 INFORMATION PROCESSING APPROACHE TO COGNITIVE DEVELOPMENT

The information processing approach scrutinizes the input, use and recall of the information. It seeks to identify all the steps in processing the information by the infant. The speed, manipulation, organization of information becomes the focus of this approach.

2(a) Encoding storage and retrieval:

Encoding, Storage and retrieval are important aspects of the information processing approach. Encoding refers to initial recording of the information. Large amount of information is available to the infant. So the input to which infant pays attention is encoded. The attended information is then stored in the memory. Finally, if this information is required, then it is recalled, a process called as retrieval.

In some cases these activities does not require conscious attention. Because of practice, these activities attain a level of competence that they become automatic. For example, activities like, walking, or even typing on mobile phone, do not require much attention. This helps children to free their attention resources for other activities and higher skills are learned.

2b. Memory during Infancy:

Infants show remarkable increase in their ability for storing information. Studying memory among the infants has some methodological issues.

Memory Capacities: Infants distinguish between old and new stimulus. Rovee-Collier has shown that 6 month older infant remember for 3 weeks as compared to 2 month old infants who can store information for few days. In other experiments, evidence was found for almost two-weeks of memory among young infants.

Duration of Memories:

It is known that older infants recall memories faster than younger once. But as they grow up, their ability to recall events occurred during infancy vanishes. This is called as infantile amnesia. Infantile amnesia refers to the inability of individuals to recall events that have occurred before the age of three years. Though there is some disagreement about this age, it is commonly agreed that the memories of early

life are not available to us. Even the most significant events like birth of sibling cannot be recalled.

Cognitive Neuroscience:

The long term memory has two important components: Implicit memory and explicit memory. Implicit memory can be seen in terms of motor performance, habits, etc. Explicit is storage from where you can consciously and intentionally recall. For example, if somebody asks you the email id, the memory store from where you will recall is explicit long term memory. Now there is evidence that infants first develop implicit memory and later on develops explicit memory. Implicit memory involves cerebellum and brain stem whereas explicit memory involves various areas of the cortex.

2.(c) Individual Differences in Intelligence:

Infants show individual differences in their behaviors. But it is difficult to use this information for inferring about their intelligence. In this section we shall try to understand the differences in infants' intellectual abilities.

Intelligence during infancy can be conceptualized in different ways. Development quotients, Bayley scales of infant development, visual-recognition memory measurement are some of the ways to measure memory during infancy.

Developmental Scales and Measures:

Arnold Gesell formulated first scale to measure the infant development. This differentiates between normal and atypically developing babies. He developed this scale by examining hundreds of babies of different age and their behaviors. He calculated something called as developmental quotient (DQ). This is overall score, indicating development that captures performance in following four areas: motor skills, language use, adaptive behavior, and personal-social behavior.

Other researchers took lead from the work of Gesell and developed their own scales. Nancy Bayley is one of them. She developed Bayley Scales of Infant Development (BSID). It captures two areas; motor skills and mental abilities. It measure infant's development from 2nd month of life to 42nd month. This measure makes use of developmental play-tasks and takes between 45 - 60

minutes for administration. Mental scales consist of various areas. They are sensory/perceptual activities, discriminations, and response; acquisition of object constancy; memory learning and problem solving; vocalization and beginning of verbal communication; basis of abstract thinking; habituation; mental mapping; complex language; and mathematical concept formation. Motor skills involve degree of body control, large muscle coordination, finer manipulatory skills of the hands and fingers, dynamic movement, postural imitation, and the ability to recognize objects by sense of touch (stereognosis). The DIQ can then be calculated. BSID III is the present version of the scale. The scale is based on the development of US infants, so care need to be taken while interpreting the results in Indian context.

Information Processing Approach to Intelligence:

The speed with which information is processed is the key aspect of information processing theory of intelligence.

Habituation test is commonly used to assess the speed of information processing. It is based on a logic that if infant is processing information faster, then the stimuli would be learned faster. Visual-recognition memory is another way to assess the intelligence of infants. It is memory and recognition of a stimulus that has been seen earlier. IQ measured later in life and information processing relates positively and moderately. This suggests that IQ is not completely assessed from the information processing abilities in the early childhood.

Piaget's and information processing approach differ in some ways. Information processing focuses more on quantitative, gradual changes that occur during infancy. Whereas Piaget approach focuses on qualitative changes and comparatively sudden change in cognition. Therefore, information processing theorists have developed more and more specific measures of intelligence and development. To conclude, both the approaches contribute to the understanding of development. Recent advances in biological sciences have provided additional insight in this matter.

5.4 ROOTS OF LANGUAGE

(a) Fundametals of Language:

Language is a systematic means of communicating by meaningful arrangement of sounds or conventional

symbols. It helps us to think and facilitates understanding of the world. Language has several characteristics. Child has to master them so as to make efficient use of language. Phoneme, morphemes, and semantics are important aspects of language.

Phoneme is the smallest set of speech sounds that are distinguished by the speakers of a particular language. The phoneme “a” in ‘Rate’ is different than the “a” in ‘Cat’. Different languages have different number of phonemes.

Morpheme is a minimal meaningful language unit. It cannot be divided into smaller meaningful unit. Some morphemes are complete words themselves. Others are required for interpreting a word.

Semantics are the rules that provide meaning of words, phrases, and sentences. Children are able to use the language effectively as their understanding of the rules of constructing sentences increases.

Language comprehension and language production are two aspects of language use. Language comprehension occurs early. Then follow the production.

Early Sounds and Communication:

Pre-linguistic communication is communication occurs before the use of language. It is typically through sounds, facial expressions, gestures, imitation, and other nonlinguistic means. When the mom talk to the kid by “haa” then the kid also says “haa”. This is not carrying any meaning but a pure repetition. Infants learn to use sounds though these usage of language.

Babbling is most prominent prelinguistic communication. Babbling refers to making speech-like but meaningless sounds. Infants start babbling from the 2nd or 3rd month of life and it continues till the first year of life. They repeat interesting sounds. As infants reach 5th month of life, the babbling becomes more and more systematic. Infants from all the cultures show this stage of linguistic development. Interestingly, they produce sounds that can be found in all languages in the world. Production of simple words starts after babbling and progresses to more complex words. By the age of 6 month, the babbling contains sounds from the language to which infant is exposed to.

First words are spoken between the ages of 10 to 14 months. In some children it can occur earlier. By the age of 15 month they remember at least 10 words. The vocabulary progresses rapidly from this point onwards. By the age of two years the child has a vocabulary of about 400 words. The first words are holophrases. The holophrase is one word that is used to represent the entire sentence. For example, child saying “pa” “pa” might want to say “I want water”.

The first sentence occurs about the age of 18 months. They communicate a thought by combining words. The words connected to represent a mental representation is a significant linguistic achievement. While doing so children also try to follow the order in which the words come in sentences. They may omit one or two words in between, but they rarely go wrong with the ordering of the words. Instead of saying “I want a teddy bear” they may say “I want” or “I teddy”. This is called as a telegraphic speech. It is similar to the way we write a telegram. The children also use the words in a restrictive sense that is called as under extension. They may call their own teddy bear as “teddy” but do not call other teddy bears as teddy. As they grow, they show opposite phenomenon, over extensions, a tendency to over generalize the meaning of the word. Referential and expressive are two common individual differences seen in the use of language. Some infants use words to label the objects is called as referential style. When the words are used to indicate feelings and needs to others then it is called expressive style.

(b) Origins of Language Development:

How infants and children learn the language is a very complex question. Many theories have been proposed to understand the linguistic development.

Learning Theory:

The learning theory proposes that the language is a learned skilled. Skinner argue that the language is learned via the laws of conditioning, reinforcement and punishment. For instance, use of a particular word like “pa pa” is reinforced by praise of parents, and hence, repeats it and language develops. There are problems with this understanding. The reinforcement is at times provided for correct and incorrect use of language, and still kids learn the correct usage. Children also use language creatively. The children have the inborn knowledge to use the language is another criticism on learning approach.

Nativist Theories:

Noam Chomsky proposed that children have innate, inborn ability for language. He criticized Skinnerian behavioral (learning) theory of language development. This approach is called as nativism or nativistic approach to development because it believes that knowledge of language is innate.

Chomsky argued that all the languages in the world share common grammatical structure. He called this as Universal Grammar. The child has an inborn ability to learn any human natural language. This indicates that the grammatical structure of the language is hardwired. This hardwired system is called as Language Acquisition Device (LAD). The LAD has the rules that permits the child to understand the structure of language it is exposed to. It also enable them to learn the characteristics of language they are exposed to. This position clearly states that human language is a genetic predisposition to what a language can and cannot take. He also argued for distinction between surface structure and deep structure grammar. Surface structure is responsible for structural analysis whereas deep structure is responsible for semantic analysis of language. Click studies, and phoneme detection paradigm have supported this distinction. Support is obtained from recent findings about specific gene related to speech production.

Interactionist View:

The interactionist approach to language development tries to synthesize the views of learning theory and nativist approach when it comes to language acquisition and development. This viewpoint argues that there exists a genetic predisposition for learning language which is strengthened by principles of conditioning. This position tries to reconcile the nativist and learning viewpoints.

c. Speaking to Children:

The kind of speech that is used while talking to infants is called as infant-directed-speech. Usually, the infant-directed-speech is characterized by simple and sort sentences where words are repeated. The pitch is high. Intonation is varied. The range of frequencies increase. At times, nonword sounds are used. Infant directed speech plays an important role in infant’s learning of human language. Infant directed speech is found across the cultures.

5.5 LET US SUM UP

In this unit we have learned about the cognitive development of infants. We have examined Piaget's theory of cognitive development during infancy in detail. While doing so, we have learned about the basic elements of Piaget's theory, and various substages of sensorymotor stage of cognitive development. While evaluating the Piaget's theory, we have realized that post Piagetan psychologist have proved various arguments of Piaget wrong and lowered the age of development. We have also reviewed the information processing approach with special reference to memory and individual differences in intelligence. Lastly, we have studied important aspects of the cognitive development and that is language acquisition and production in infancy. We have discussed the contradiction between learning theory and nativist approach. Finally, we concluded by understanding the role of infant-directed-speech in language development.

5.6 QUESTIONS

Q1. Explain Jean Piaget's theory of cognitive development during infancy.

Q2. Explain the information processing approach to cognitive development in infancy.

Q3. Write a note on language development during infancy.

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6

Topic – 5

SOCIAL AND PERSONALITY DEVELOPMENT IN INFANCY

Unit Structure

6.0 OBJECTIVES

Dear students! In the previous units you have studied about the field of developmental psychology and how the new born infant and its physical and cognitive development through infancy takes place. In this unit you will be studying about the social and personality development of the infant. Social development means the ways in which a person's interactions and relationships with others change as that person grows older, leading to the personality development which is the emergence of distinctive styles of thought, feeling, and behavior.

After the completion of this unit you will be able to:

1. Understand the concept of socio-emotional development.
2. Define the concept of temperament and the three types of temperament.
3. Discuss the process of attachment between the infant and primary caregiver.

4. Describe the role of the caregiver in the development of the infant.
6. Identify the key factors that affect the quality of the relationship between the infant and caregiver.
7. Describe and explain the development of stranger anxiety and separation anxiety.
8. Explain Erikson's idea of personality development during infancy.

6.1 INTRODUCTION

The infancy stage is the first year of life. It occurs from one month to the end of the first year. This period is characterized by very rapid physical, psychological, and social growth and development. A new born child develops not only physically and intellectually but also socially. Infants begin to form social relations from the day they are born. They come to be recognized by their unique characteristics, modes of interaction, emotions and values. The specific personality qualities of an individual, which lead to individual differences between people, are not based much on evolution. However, it is a product of many developmental factors. A person's social and personality development is a result of a potpourri of experiences that are influenced by his inherited characteristics, interpersonal relationships and the opportunities and demands of the socio cultural milieu in which the person grows up. Experiences and behavior patterns developed in infancy are crucial to life-long development.

During infancy the relationship and interaction between the caregiver and the infant is the most important developmental process. Socio-emotional development is affected by adult-infant interaction. The primary caregiver, who is invariably the mother, is the most vital base of attachment for the infant. Developmentally, it is during this stage that the infant begins to establish self-awareness. Rudimentary social interaction is developed as the infant begins to explore the physical world. This period of life witnesses the establishment of foundations of future emotional stability and intellectual development.

One cannot recall infancy experiences although no part of life experience will be as solidly incorporated in the individual as infancy. The developmental tasks of infancy have been identified as: learning to walk, beginning to talk and communicate with others, beginning to have emotional

relationships with primary caregivers, learning to eat solid foods and developing stable sleep and eating periods.

The major elements of early social development are infants' growing self-awareness, their increased awareness of others and their interest in the human face.

6.2 SOCIO EMOTIONAL DEVELOPMENT AND RECIPROCAL SOCIALIZATION

Emotions serve important function in relationships, and social relationships provide the setting for the development of a rich variety of emotions. The infancy stage is characterized by rapid growth and development, most particularly in the socio-emotional aspect. The early socialization skills that are developed in infancy serve as the basis for all social development for the rest of the person's life.

Emotional development involves not only the expression of feelings, but also the ability to interact with others, especially the primary caregivers or parents, in a reciprocal way that is referred to as attachment and bonding. An emotionally competent infant quickly develops a repertoire of behaviors that engage parents to respond with nurturing, care giving behaviors. In turn, the infant responds to parents' behaviors. These reciprocal behaviors build upon each other and make up the attachment relationship. Healthy attachment is vital for socio-emotional development of a child.

From the start, infants eagerly explore their world and that includes themselves and other people. They spend considerable amount of time getting to know their own bodies. They suck their own fingers and observe their own hands. As socio emotional beings, infants show a strong interest in the social world and are motivated to understand it.

Infants are interested in other people and learn to recognize primary caregivers. Young infants stare intently at faces and pay attention to the sounds of human voices. By 2- to 3-months of age, infants respond differently to people than objects, showing more positive emotion to people than inanimate objects. Infants also learn about the social world through face-to-face play with a caregiver.

Before infants acquire speech, parents and infants communicate through emotion. Face-to-face interactions

between infant and adults are bidirectional and mutually regulated. Crying is the infant's most important mechanism for communication.

Babies have at least three types of cries: The basic cry is a rhythmic pattern that usually consists of a cry, followed by a briefer silence, then a shorter inspiratory whistle that is somewhat higher in pitch than the main cry, then another brief rest before the next cry.

The anger cry is a variation of the basic cry, however, there is more excess air forced through the vocal cords.

The pain cry, which is stimulated by high-intensity stimuli, differs from the other types of cries. A sudden appearance of loud crying without preliminary moaning and a long initial cry followed by an extended period of breath holding characterize the pain cry. Most parents and adults in general, can distinguish between the anger and pain cry. Parents can distinguish the cries of their own infant better than a strange baby.

Smiling is another important communicative affective behavior. Two types of smiles can be distinguished in babies: A reflexive smile appears during the first month, usually during sleep. Between six and ten weeks, a social smile emerges, usually accompanied by other pleasure-indicative actions and sounds, including cooing and mouthing. This social smile occurs in response to an external stimulus like face, adult smiles and interactions. It derives its name from the unique process by which the infant engages a person in a social act, doing so by expressing pleasure (a smile), which consequently elicits a positive response. This cycle brings about a mutually reinforcing pattern in which both the infant and the other person gain pleasure from the social interaction. As infants become more aware of their environment, smiling occurs in a wider variety of contexts. They may smile when they see a toy they have previously enjoyed. They may smile when receiving praise for accomplishing a difficult task. Smiles such as these, like the social smile, are considered to serve a developmental function.

Around 3 to 6 months of age, infants are more likely to initiate social interaction. They begin to play peek-a-boo, pay attention to own name and smile spontaneously and laugh loudly. Laughter, which begins at around three or four months, requires a level of cognitive development because it demonstrates that the child can recognize incongruity. That

is, laughter is usually elicited by actions that deviate from the norm, such as being kissed on the abdomen or a caregiver playing peek-a-boo. As it fosters reciprocal interactions with others, laughter promotes social development.

During the last half of the first year, infants begin expressing fear, disgust, and anger because of the maturation of cognitive abilities. Anger, often expressed by crying, is a frequent emotion expressed by infants. As is the case with all emotional expressions, anger serves an adaptive function, signalling to caregivers of the infant's discomfort or displeasure, letting them know that something needs to be changed or altered. Although some infants respond to distressing events with sadness, anger is more common.

Fear typically appears at about 6 months of age and peaks at about 18 months. The most frequent expression of fear involves stranger anxiety, in which an infant shows a fear and wariness of strangers. Stranger anxiety first appears usually by the second half of the first year; by age 9 months, the fear of strangers is often more intense. In addition to stranger anxiety, infants experience fear of being separated from their caregivers.

As they near age one, imitation and self-regulation gain importance. Most babies can feed themselves finger foods, hold a cup with two hands and drink with assistance. They can hold out arms and legs while being dressed and mimic simple actions.

The ability to recognize and interpret the emotions of others is another important social cognitive accomplishment during infancy. **Social referencing** refers to the process of using emotional cues in others to help determine how to act in a particular situation; infants become better at social referencing in the second year of their life. They look to their mother to see what emotion she is displaying.

Emotional regulation consists of effectively managing emotional arousal. Infants gradually develop the ability to inhibit, or minimize, the intensity and duration of emotional reactions.

As infants develop the ability to crawl, walk, and run, they are able to explore and expand their social world and to independently initiate social interactions.

Reciprocal socialisation is a socialisation process that is bidirectional; children socialise parents just as parents socialise children. The interaction of mothers and their infants is mutually synchronized, or it can be reciprocal. Reciprocal socialisation impacts the developing attachment relationship as an infant's behavior invites a response from caregivers and a caregiver's behavior invites a response from the child. The behavioral adjustments involving actions and reactions of parent and child influence the nature of the attachment relationship. When reciprocal socialisation has been investigated in infancy, mutual gaze or eye contact has been found to play an important role in early social interaction. Also, a healthy parent-child relationship helps in better social competence of the child. One example of parental response to children's behavior is the elicitation of scaffolding behavior, which in turn affects the level of behavior children show in the future. Scaffolding refers to parental behavior that serves to support children's efforts, allowing them to be more skillful than they would if they relied only on their own abilities.

Check Your Progress:

1.FILL IN THE BLANKS:

a. When a baby responds to another person with a smile, that smile is referred to as ———.

b. When experiencing stressful circumstances, infants show a preference for being soothed by their ———.

2. What is meant by reciprocal socialisation?

6.3 CONCEPT OF TEMPERAMENT AND ITS TYPES

Individual differences in human motivation and emotion that appear early in life, are usually thought to be biological in origin. Temperament is sometimes considered the biological or physiological component of personality, which refers to the sum total of the physical, emotional, mental, spiritual, and social dimensions of an individual. Temperamental traits are enduring personality characteristics. From the time of birth, every individual is

biologically predisposed to approach the world with his or her own personal style. Studies of infants suggest that some variability in human behavior may result directly or indirectly from genetic differences. Developmental psychologists term these differences as dimensions of temperament. Based on chemical, biological, experiential, interpersonal, and social factors, different dimensions of temperament manifest themselves over time and across different situations. Psychologists Buss and Plomin have proposed the existence of four basic temperament dimensions present in human beings.

1. Emotionality is the tendency to express negative emotions such as anger and fear frequently and vigorously.
2. Activity is the degree of physical movement that a person characteristically shows.
3. Impulsivity is the degree to which a person acts quickly without deliberation, moves from one activity to the next, and finds it difficult to practice self-control.
4. Sociability is the tendency to be outgoing and friendly and to enjoy the company of others.

According to this theory, persons are inherently born with tendencies to develop these four temperaments to different levels. These dimensions are present in infancy and continue to grow throughout childhood and adulthood. The social environment reacts to these tendencies, modifying and shaping them in different ways. Such modifications are the results of interpersonal relationships that begin to form during early life. The development of a unique interpersonal style is a function of temperament. Temperament as the biological dimension of personality is a predisposition that allows two individuals to experience the same objective event very differently within the range of normal behavior and development.

Infants who are just a few weeks old, display differences between each other in how active they are, how responsive they are to change, and how irritable they are. Some infants cry constantly while others seem happy and stay fairly quiet. Researchers on child development have identified nine temperamental traits that may contribute to a child's personality development being challenging or difficult:

1. Activity level (how active the child is generally).
2. Distractibility (degree of concentration and paying attention when the child is not particularly interested).

3. Intensity (how loud the child is).
4. Regularity (the predictability of biological functions like appetite and sleep).
6. Sensory threshold (how sensitive the child is to physical stimuli: touch, taste, smell, sound, light).
6. Approach/ withdrawal (characteristic responses of a child to a new situation or to strangers).
7. Adaptability (how easily the child adapts to transitions and changes such as switching to a new activity).
8. Persistence (stubbornness, inability to give up).
9. Mood (tendency to react to the world primarily in a positive or negative way).

All infants have their own temperaments. Some infants are very loud, while others are quiet. Some are very happy, while others can be hard to please. Psychiatrists Alexander Chase and Stella Thomas have developed three classifications of temperament in children. They are:

- **The easy child:** The easy child has a very positive attitude and is very adaptable to change.
- **The difficult child:** The difficult child tends to react more negatively and is not very adaptable to changes.
- **The slow-to-warm-up child:** A child with this temperament reacts negatively to change, but after awhile, he or she will adapt.

6.4 FORMING RELATIONSHIP ATTACHMENT THEORY

Attachment is a close emotional bonding between infant and caregiver. Attachment implies developing an emotional and physical relationship with primary care giver during first year of life.

Attachment theory, developed by John Bowlby, focuses on the close, intimate, emotionally meaningful relationship that develops between infants and their mothers or primary caregivers. This “attachment” is described as a biological system that evolved to ensure the survival of the infant. Attachment behavior is evoked whenever the person is threatened or stressed and involves actions to move toward the person(s) who create a sense of physical, emotional, and psychological safety for the individual.

Infants securely attached to their parents or a parent are later found to be more curious, have better problem-solving ability, are socially competent in preschool and are generally more resilient.

Unfortunately, there are situations that inhibit a child from forming attachments. Some babies are raised without the stimulation and attention of a regular caregiver, or locked away under conditions of abuse or extreme neglect. The possible short-term effects of this deprivation are anger, despair, detachment, and temporary delay in intellectual development. Long-term effects include increased aggression, clinging behavior, detachment, psychosomatic disorders, and an increased risk of depression as an adult.

Attachment is the close bond between infants and their caregivers. Researchers used to think that infants attach to people who feed them and keep them warm. However, researchers Margaret and Harry Harlow showed that attachment could not occur without contact comfort. **Contact comfort** is comfort derived from physical closeness with a caregiver.

The Harlows' Baby Monkeys:

The Harlows raised orphaned baby rhesus monkeys and studied their behavior. In place of its real mother, each baby monkey had two substitute or surrogate mothers. One "mother" had a head attached to a wire frame, warming lights, and a feeding bottle. The other "mother" had the same construction except that foam rubber and terry cloth covered its wire frame. The Harlows found that although both mothers provided milk and warmth, the baby monkeys greatly preferred the cloth mother. They clung to the cloth mother even between feedings and went to it for comfort when they felt afraid. This demonstrated the role of contact comfort in the development of attachment bonds and also laid the foundation for understanding the specific functions of attachments in young primates.

Bowlby - Also developed a theory of human attachment. He found that:

a) Attached children exhibit less distress when the object of their attachment leaves, especially if they are in an unfamiliar environment,

b) Attached children exhibit pleasure when reunited with that person,

c) Attached children exhibit displeasure when approached by a stranger unless comforted by the object of their attachment,

d) Attached children are more likely to explore an unfamiliar environment if the object of their attachment is present.

Psychologist **Mary Ainsworth** and her colleagues found that attachment happens through a complex set of interactions between mothers and infants. The infants of sensitive, responsive mothers have stronger attachments than the infants of insensitive mothers or mothers who respond inconsistently to their infants' needs. However, an infant's temperament also plays a role in attachment. Difficult infants who fuss, refuse to eat, and sleep irregularly tax their mothers, which makes it hard for the mothers to be properly responsive.

Attachment Styles:

Ainsworth devised an experiment called the **Strange Situation** in order to study attachment behavior. She asked each mother in the sample to bring her infant to an unfamiliar room that contained various toys. After the mother and infant had spent some time in the room, a stranger entered the room and tried to play with the infant. A short while later, the mother left the room, leaving the infant with the stranger. Then the mother returned to the room, and the stranger left. A little later, the mother left the room again, briefly leaving the infant alone. Finally, the mother returned to the room.

Based on her observations of infants' behavior in the Strange Situation, Ainsworth described three types of attachment patterns:

1. Secure attachment: Most infants in the sample had a secure attachment to their mothers. These infants expressed unhappiness when their mothers left but still played with the stranger. When their mothers returned, the infants looked happy. The infants displayed greater attachment to their mothers than to the stranger.

2. Anxious-ambivalent attachment: Some infants showed a type of insecure attachment called an anxious-ambivalent attachment. These infants became upset when their mothers left but resisted contact with their mothers when they returned.

3. Avoidant attachment: Other infants showed a type of insecure attachment called an avoidant attachment. These infants didn't seem upset when their mothers left and

avoided their mothers when they returned. Researchers did not see a significant difference in the way these infants treated their mothers and the stranger.

Culture and Attachment Style:

Culture can influence attachment style because different cultures have different child-rearing practices. Ainsworth's research in the United States showed that most of her white, middle-class sample of infants had a secure attachment to their mothers. However, in Germany, where parents encourage independence from an early age, a much higher proportion of infants display an avoidant attachment, according to Ainsworth's classification. In Japan, where infants rarely separate from their mothers, the avoidant style is non-existent, although a higher proportion of anxious-ambivalent attachments occurred than in the United States.

Whether they are securely attached or not, most babies do experience separation anxiety. **Separation anxiety** is the emotional distress infants show when they separate from people to whom they are attached. Separation anxiety typically begins at about six to eight months of age and reaches peak intensity when an infant is about fourteen to eighteen months old.

For some children, early attachments seem to foreshadow later functioning, though for some children, there is little continuity. Some developmentalists believe that too much emphasis is placed on the importance of the attachment bond in infancy. Another criticism is that it ignores the diversity of socialising agents and contexts that exists in an infant's world like family which can be thought of as a constellation of subsystems defined in terms of generation, gender.

Check Your Progress:

1. Fill in the blanks:

a. **————————-** is the emotional distress infants show when they are taken away from people to whom they are attached.

b. The Harlows' Baby Monkeys clung to the ————————- for comfort when they felt afraid.

2. Name the types of attachment styles.

_____

_____

6.5 RELATIONSHIP BETWEEN INFANT AND CARE GIVER

A caregiver's role is to provide comfort or close bodily contact, be responsive to infant's needs for food, comfort and be socially and emotionally responsive to infant's attempts to interact. Men and women are equally capable care givers. The responsiveness and sensitivity of care givers depends on attitude and competence, not on gender.

High quality caregiver-child interactions are vital to healthy emotional and social development and to successful socialisation. Reciprocal socialisation is socialisation that is bidirectional. Children and parents socialise each other; in infancy, mutual gaze or eye contact plays an important role in early social interaction. Scaffolding is parental behavior that supports children's efforts through positive reciprocal frameworks. Maternal sensitivity in parenting may be linked with secure attachment. Securely attached babies, for example, tend to have caregivers who are sensitive to their signals and are consistently available to respond to their infants' needs, while caregivers of insecure avoidant babies tend to respond less frequently to infants' communicative gestures.

In most cultures, mothers tend to be more involved in caring for their infants than fathers. Mothers do more family work than fathers, but observations of fathers with their infants suggest that fathers have the ability to act sensitively and responsively with their infants. The typical father, however, behaves differently toward an infant than the typical mother, with paternal interactions more likely to include activities such as rough- and-tumble play.

6.6 ERIKSON'S THEORY OF PSYCHO SOCIAL DEVELOPMENT

Individual differences in personality are universal in that they are found in all human populations. The specific personality qualities of an individual, which lead to individual differences between people, are the product of many developmental factors.

Our personality traits come in opposites. We think of ourselves as optimistic or pessimistic, independent or dependent, emotional or unemotional, adventurous or cautious, leader or follower, aggressive or passive. Many of these are inborn temperament traits, but other characteristics, such as feeling either competent or inferior, appear to be learned, based on the challenges and support we receive in growing up.

The man who did a great deal to explore this concept is Erik Erikson. Although he was influenced by Freud, he believed that the ego exists from birth and that behavior is not totally defensive. Based in part on his study of Sioux Indians on a reservation, Erikson became aware of the massive influence of culture on behavior and placed more emphasis on the external world, such as depression and wars. He felt the course of development is determined by the interaction of the body (genetic biological programming), mind (psychological), and cultural (ethos) influences.

Erikson's view is that the social environment combined with biological maturation provides each individual with a set of "crises" that must be resolved. The individual is provided with a "sensitive period" in which to successfully resolve each crisis before a new crisis is presented. The results of the resolution, whether successful or not, are carried forward to the next crisis and provide the foundation for its resolution. This is different from other theories such as Piaget's theory of cognitive development or Maslow's theory of human needs where the level must be satisfactorily addressed before one can move on to the next level.

He organised life into eight stages that extend from birth to death (many developmental theories only cover childhood).

Infancy Trust vs. Mistrust:

Erikson's first critical developmental stage is the crisis of trust vs mistrust in infancy.

He referred to infancy as the Oral Sensory Stage (as anyone might who watches a baby put everything in her mouth) where the major emphasis is on the mother's positive and loving care for the child, with a big emphasis on visual contact and touch. If we pass successfully through this period of life, we will learn to **trust** that life is basically okay and have basic confidence in the future. If we fail to experience trust and are constantly frustrated because our

needs are not met, we may end up with a deep-seated feeling of worthlessness and a **mistrust** of the world in general.

Incidentally, many studies of suicides and suicide attempts point to the importance of the early years in developing the basic belief that the world is trustworthy and that every individual has a right to be here. Not surprisingly, the most significant relationship is with the maternal parent, or whoever is our most significant and constant caregiver. According to Erikson responsive, sensitive parenting contributes to infants' sense of trust.

6.7 LET US SUM UP

From the time they are born, infants experiment with and learn from the environment around them. Beyond physical, thinking, and language tasks, babies are learning about social and emotional tasks.

Infants can feel, distress, disgust, and happiness from birth, and can communicate these through facial expressions and body posture. Infants begin showing a spontaneous "social smile" around age 2 to 3 months, and begin to laugh spontaneously around age 4 months. In addition, between ages 2 and 6 months, infants express other feelings such as anger, sadness, surprise, and fear. Between ages 5 and 6 months, babies begin to exhibit stranger anxiety. Around age 4 months, infants learn to distinguish between the different emotional expressions of others. Later, around age 6 months, babies begin to mimic the emotions and expressions they see in others.

By nine months of age, babies have learned how to express a wide variety of emotions. This becomes readily apparent between ages 9 to 10 months, as babies become highly emotional. They go from intense happiness to intense sadness/frustration/anger quickly. Infants' understanding of others' emotions grows as well. Around age 12 months, babies become aware of not only other peoples' expressions but also their actual emotional states, especially distress. It's interesting to note some babies begin to exhibit jealousy at the end of this first year, around age 12 months.

Infants show distinct personalities. Personality development is influenced by interaction of child's temperament with experiences in the environment, especially quality of interaction with caregivers.

Temperament, the rudiments of personality, is largely inborn, but also affected by the environment.

Infants also develop attachment to their care givers. Attachment is described as a biological system or powerful survival impulse that evolved to ensure the survival of the infant. Attachment theory, originally developed by John Bowlby, focuses on close, intimate, emotionally meaningful relationships**.** Bowlby claimed that infants use the caregiver as a secure base from which to explore the environment. Work with monkeys indicates proximity and comfort rather than food are key components of secure attachment. A child who is threatened or stressed will move toward caregivers who create a sense of physical, emotional and psychological safety for the individual. Attachment styles vary with children according to Ainsworth. To study individual differences in attachment, Mary Ainsworth created the Strange Situation, an observational measure of infant attachment that requires the infant to move through a series of introductions, separations, and reunions with caregiver. Responses to the Strange Situation determine an infant's attachment classification as secure, anxious and avoidant.

Erikson's psychosocial theory states that people experience eight 'psychosocial crisis or stages' which significantly affect each person's development and personality. Successfully passing through each crisis involves 'achieving' a healthy ratio or balance between the two opposing dispositions that represent each crisis. For example a healthy balance at crisis stage one (Trust v Mistrust) might be described as experiencing and growing through the crisis 'Trust' (of people, life and one's future development) and also experiencing and growing a suitable capacity for 'Mistrust' where appropriate, so as not to be hopelessly unrealistic or gullible, nor to be mistrustful of everything. Infants need sensitive, consistent care giving parents to develop trust.

The socialisation of the child is facilitated not only by the parents, but also within the family context, which may include relatives and friends who support the parents and children, and further reinforce cultural values.

6.8 QUESTIONS

1 Describe the process of socio-emotional development during infancy.

2. What is meant by temperament? Name the various dimensions of temperament.

3. Explain Ainsworth strange situation experiment.

4. What is the role of the care giver in the process of socialisation during infancy?

5. Write a note on attachment theory.

6. Discuss Erikson's theory of psycho social development during infancy.

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7

Topic 6
PHYSICAL, SOCIAL AND PERSONALITY DEVELOPMENT IN THE PRESCHOOL YEARS

Unit Structure

7.0 OBJECTIVES

After studying this unit you should:

a) Understand the physical changes that occur during the preschool years.

b) Understand how a preschooler grows physically as well as what changes occur in the brain areas.

c) Comprehend the motor developments that take place during preschool years.

d) Know the various types of social and personality development that takes place during the preschool years.

e) Learn about the friends and family life of the preschooler, how parenting influences child development, the different types of play that child indulge in, child abuse and psychological maltreatment, moral development and aggression among preschoolers.

7.0 INTRODUCTION

Children of 3 to 6 years move about with great confidence. They can move about quiet efficiently, with developed physical abilities. At this stage of development parents are inquired to be more careful in order to prevent

injuries to young ones. Parents must concern themselves with the nutrition and diet of children, so that child gets right kind of food to eat. Parents need to insists on the bedtime, that gives child an adequate rest.

7.2 PHYSICAL DEVELOPMENT IN THE PRESCHOOL YEARS

7.2.1. The Growing Body:

In this section we will discuss the various aspects of physical development during preschool years. We will discuss about changes in body, shape and structure, nutrition, health and illness.

During the preschool years, children experience rapid advances in their physical abilities. There is a dramatic change in their size, shape and physical abilities.

By the age of 02 years the average child is around 25 to 30 pounds and close to 36 inches tall. By the time the child reaches 06 years of age, they weigh about 46 pounds and stand 46 inches tall. Average difference between boys and girls increase during preschool years. At the age of 02 years the difference is relatively small, during preschool years. On an average, boys start becoming taller and heavier as compared to girls.

Economic factors considerably influence one's physical development. Better nutrition and health care, especially in the developed countries lead to better and healthier physical development. For e.g., average 04 years old in Sweden is as tall as average 06 year old in Bangladesh. Children with incomes below poverty level are more likely to be short than children raised in more affluent homes.

Changes in Body Shape and Structure:

The body shape and structure of preschooler also changes considerably. The bodies of two year old and six year old vary not only in height and weight but also in shape. During preschool years boys and girls become less round and more slender. Their arms and legs strengthen and the size of relationship between head and the rest of the body becomes more adult like. Some other internal physical changes include:

- Increase in muscle size.
- Bones become stronger.
- Sense organs continue to develop.
- Eustachian tube in the ear changes its orientation so radically that it results in earaches among preschoolers.

7.2.2 Nutrition:

Preschoolers need less food as compared to infancy years because their rate of growth is slower as compared to infancy. During this period if parents encourage children to eat more than they need, may result in development of obesity, which is defined as 20% more body weight than the average weight for a person of a given age and height. During the last 20 years obesity among the preschoolers have increased considerably.

Parents should be cautious and careful about the nutritional requirements of the preschooler. They should provide their children with:

- Low fat, high nutrition foods.
- Food having high iron contents. Iron deficiency leads to anemia resulting in constant fatigue.

7.2.3 Health and Illness:

Children during this period are generally healthy, though they frequently suffer from colds and other minor respiratory illnesses. Preschoolers suffer more from accidents rather than nutritional problems or illnesses. During preschool years, children are twice as likely to die from accidents rather than illnesses. The danger of injuries due to accident is largely due to high levels of physical activity, coupled with curiosity and lack of judgment. Some preschoolers are more likely to indulge in risky ventures as compared to others and hence likely to get injured. Boys are more likely to suffer from injuries due to the fact that they are more active than girls and more likely to take risks.

Children staying in more poverty stricken neighborhoods such as slums are likely to encounter more hazards as compared to those raised in affluent areas. Children living in slums are more likely to die of injuries as compared to children living in affluent areas.

Parents and caregivers can take considerable precautions so that injuries are minimised or avoided. Some important precautions that parents can take include:

- Putting window grills in the balcony so that children do not fall.
- Covering electrical outlets, cabinets, etc.
- Teaching children to use car seat belts.
- Taking precautions while handling, glass, knifes, crossing streets, etc.

Another major cause of child accident involves lead poisoning which is found in gasoline, ceramics, lead-soldered pipes, automobiles, truck exhaust, etc. It is also found in dust and water. Lead poisoning is a severe health threat to children under age six. Lead exposure leads to number of health hazards, such as:

- Low intelligence.
- Problems in verbal and auditory processing.
- Hyperactivity and distractibility.
- Higher levels of antisocial behaviour including aggression and delinquency among school age children.
- It also results in illness and death.

7.3 THE GROWING BRAIN

During the developing years the brain grows at a faster rate than any other part of the body. Two year old children have a brain that is 75 % the size and weight of adult brain. By the age of 05 years, children's brain is 90 % of the average adult brain weight. Brain grows faster during developing years, especially preschool years because there is an increase in number of interconnections among cells. The interconnection cells support more complex communication between neurons and permits rapid growth of cognitive skills. During preschool years Myelin - i.e., the protective insulation that covers part of neurons – increases leading to speed in transmission of electrical impulses across brain cells.

7.3.1 Brain Growth and Cognitive Development:

Neuroscientists have attempted to understand how brain growth is related to cognitive development. It has been observed that during childhood brain shows unnatural growth spurts which are linked to development of cognitive abilities. Research studies have revealed that preschoolers

growing cognitive capabilities are linked to increase in Myelin in the brain. It has also been observed that by the age of five years Myelination of the reticular formation, an area of brain associated with attention and concentration is completed. Myelination also leads to improvement in memory during preschool years. It is also completed in the hippocampus during preschool years.

There is also a significant growth in the nerves connecting cerebellum to the cerebral cortex. Cerebellum is a part of the brain that controls balance and movement. Cereberal cortex is a structure that is responsible for sophisticated information processing. Growth of nerve cells in these structures leads to significant advances in motor skills and cognitive processing during the preschool years.

7.3.2 Brain Lateralization:

Another structure that develops during the end of preschool years is Corpus Callosum which is a bundle of nerve fibers that connects the two hemispheres of the brain. Corpus Callosum becomes thicker developing roughly 800 million individual fibers which help coordinate brain functioning between two hemispheres. During late preschool years Lateralisation of Brain is complete. Lateralization is a process in which certain functions are located more in one hemisphere than the other. For majority of the people left hemisphere is primarily involved with tasks that are concerned with verbal competence – such as reading, speaking, thinking and reasoning.

Right hemisphere is proficient in non-verbal areas such as spatial relationships, recognition of patterns and drawings, music and emotional expressions. Left hemisphere processes data sequentially, one piece at a time. Right hemisphere processes information in a global manner. The two hemisphere acts in tandem and are interdependent. Each hemisphere can perform most of the tasks of the other. There are individual, gender and cultural differences in lateralisation.

7.4 MOTOR DEVELOPMENT

7.4.1 Gross Motor Skills:

By the age of three years children have mastered variety of skills such as jumping, hopping on one foot, skipping and running. By the age of four or five their skills become more refined as they gain increasing control over

their muscles. Some important skills they manifest during preschool years include:

- Throwing a ball with enough accuracy.
- Tossing a ring and have it land on a peg five feet away.
- Riding a bike.
- Climbing ladders.
- Skiing down hill.

All the above activities require considerable coordination.

Girls and boys differ with regard to certain aspects of gross motor coordination due to differences in muscle strength.

- Boys can typically throw a ball better and jump higher.
- Boys overall activity level is greater than that of girls.
- Girls surpass boys in tasks that involve limb coordination.
- One important aspect of muscular skill is the bowel and bladder control.

7.4.2 Fine Motor Skills:

These skills also develop during preschool years and include delicate, smaller body movements such as use of fork and spoon, cutting with scissors, tying shoelaces and playing with a piano. Skills involved with fine motor movements require considerable practice. Fine motor movements develop gradually from three years onwards.

- At the age of three, children can draw a circle and square with a crayon, they can also undo their clothes and go to bathroom. They can put simple jigsaw puzzle together. They can also fit blocks of different shapes in to matching holes.
- By the age of four, their fine motor skills are refined. They can draw a person that looks like a person. They can also fold paper in to triangular designs.
- By the age of five years they can manipulate a thin pencil properly.
- By the end of preschool years children show handedness, i.e., preference for using one hand over another. 90 % children are right handed and about 10% are left handed. More boys as compared to girls are left handed.

7.5 SOCIAL AND PERSONALITY DEVELOPMENT IN THE PRESCHOOL YEARS

7.5.1 Feeling his Mother's Pain:

During preschool years children develop the ability to understand other's emotions. During this period children also develop a sense of self including their self-concept as well as concept of gender.

7.5.2 Forming a Sense of Self:

During preschool years children question "who am I?", which leads to developments of self.

Psychosocial Development:

Resolving Conflicts: Preschoolers sense of self leads to psychosocial development which includes changes in individual's understanding of themselves and of other's behaviour. Erik Erikson developed a theory of psychosocial development in which he viewed people passing through eight distinct stages of development. Each stage of development is characterized by a crisis or conflict that the person must resolve. The experiences that we gain in resolving these conflicts lead us to develop ideas about ourselves that can last for the rest of our lives. The eight stages of psychosocial development are as follows:

- Trust v/s mistrust
- Autonomy v/s shame and doubt
- Initiative v/s guilt
- Industry v/s inferiority
- Identity v/s role diffusion
- Intimacy v/s isolation
- Generativity v/s stagnation
- Ego integrity v/s despair

In the early part of preschool period, children are at the end of autonomy v/s shame and doubt stage. They then begin to enter Initiative v/s guilt stage which lasts from about 03 to 06 years. During this period children face conflict between the desire to act independently of their parents and the guilt that comes if they do not succeed. During this

period they come to view themselves as persons in their own right and they begin to make decisions on their own.

Parents play an important role in helping children resolve opposing feelings experienced during this stage of psychosocial development.

Parents by providing children with opportunities to act self-reliantly, while still giving them direction and guidance can support their initiative. Parents who discourage children from acting independently may contribute to a sense of guilt that persists throughout their lives and affects their self - concept.

7.5.3 Self-concept in the Preschool Years:

Self-concept can be defined as thinking about self. It refers to their identity or their set of beliefs about what they are like as individuals. Self-concept during preschool years is not accurate. Preschool children typically overestimate their skills and knowledge across all domains of expertise. They generally have rosy pictures about themselves, are optimistic and they expect to do well in the future even when they have experienced failure.

Preschooler's view of themselves reflects their cultural beliefs. Children coming from collectivist culture tend to regard themselves as parts of a larger social network in which they are interconnected with and responsible to others. Where as children coming from individualistic orientation emphasise personal identity and uniqueness. They view themselves as self-contained and autonomous.

Preschooler's cultural attitudes towards various racial and ethnic groups considerably influence their self-concept. One's racial and ethnic identity also impact their self-concept.

7.5.4 Gender Identity:

Gender refers to the sense of being male or female. By the time a child reaches preschool years his/her gender identity is established. By the age of 02 years children are able to label people as male or female.

Gender is reflected in one's play. Preschool children spend more time than girls in rough-and-tumble play. Girls spend more time in organised games and role playing. During preschool years boys begin to play more with boys

and girls with girls. Girls begin to prefer same-sex playmates a little earlier than boys.

Preschool age children often have very strict ideas about how boys and girls are supposed to act. Preschooler's expectations about gender appropriate behaviours are even more gender stereotyped than those of adults. Beliefs in gender stereotyped become increasingly pronounced by the age of 05 years. However, by the age of 07 years, it becomes less rigid but do not disappear. Gender stereotypes held by the Preschooler resemble those held by traditional adults in society.

Preschoolers expect that males are more likely to show traits of competence, independence, forcefulness and competitiveness. Similarly, Preschoolers believe that women have warmth, expressiveness, nurturance and submissiveness.

Following are important viewpoints put forward to explain as to why gender plays a powerful role during preschool years.

i) Biological Perspectives:

Biological characteristics associated with sex lead to gender differences. Hormones have been found to effect gender based behaviours. Girls who are exposed to unusually high levels of androgens (male hormones) prenatally are more likely to display male behaviours and characteristics as compared to their sisters who were not exposed to androgens. Girls who are exposed to androgens prefer boys as playmates, spend more time as compared with, other girls, with toys associated with male roles such as trucks and cars, etc. Similarly, boys who are prenatally exposed to high levels of female hormones are likely to display behaviours that are stereotypically female.

According to evolutionary psychologists gender differences have adaptive and survival value. Males with stereotypically masculine qualities, such as forcefulness and competitiveness helped them to attract females who gave them hardy offsprings. Similarly, females who displayed stereotypically feminine tasks, such as nurturing were valued, because it helped them to nurture their children and take care of them.

ii) Social Learning Approaches:

Social learning approach held the view that children learn gender-related behaviour and expectations by observing others, including parents, teachers, siblings and even peers. Parents reinforce gender-appropriate behaviour by praising or rewarding the child for displaying such behaviors.

Gender-related behaviour is also perpetuated by books and media, especially television and videogames. Analysis of most popular television shows reveal that:

- Male characters out number female characters by two to one.
- Females are more apt to appear with males.
- Female-Female relationships are relatively uncommon.
- Television tends to present men and women in traditional gender roles.
- Females are more likely to appear as victims.
- Females are less likely to be presented as productive or as decision makers.
- Females are more likely to be portrayed as characters interested in romance, their homes and their families.

The above depiction of gender behaviour has a powerful influence on preschooler's definition of appropriate behavior.

Gender appropriate behaviour is also learned by preschoolers through direct experience. Parents may directly teach a preschooler boy to act as a man and mother may tell her daughter to act like a girl. Such direct training strongly inculcates gender appropriate behaviour among preschoolers.

iii) Cognitive Approaches:

Cognitive Approaches states that gender identity is established through gender schema which is a cognitive framework that organises information relevant to gender. Gender schema acts as a lens through which Preschoolers view the world, encompassing "rules" about what is appropriate and inappropriate for males/females. It was Lawrence Kohlberg who developed the cognitive-developmental theory to explain gender differences. According to him by the age of 4-5 years children develop an understanding of gender constancy, which is defined as the

awareness that people are permanently males or females depending upon fixed unchangeable biological factors.

One way in which you can avoid children developing gender schema is by making them androgynous, a concept developed by Sandra Bem (1987) in which children develop gender schema of both sexes together. An androgynous individual has characteristics of both the sexes. Parents and caregivers can encourage children to be androgynous. They can encourage preschool children to see males as assertive but at the same time warm and tender. Similarly, girls might be encouraged to see the female role as empathetic and tender as well as competitive, assertive and independent.

7.6 FRIENDS AND FAMILY: PRESCHOOLER'S SOCIAL LIVES

The Development of Friendship:

Before the age of three, children's social interaction is very minimal. As they grow, children develop real friendships. Peers are viewed as having special qualities and rewards. Preschooler's relationship with adults is based on care, protection and direction. Whereas, their relationship with their peers are based more on the desire for companionship, play and fun. Preschoolers view friendship as a continuing state that offers not just immediate pleasure but promise of future activities. Younger Preschoolers, those around 03 years focus more on enjoyment, doing things together and playing jointly. Older preschoolers pay more attention to trust, support and shared interests. Throughout preschool years play is an important part of friendship.

7.6.1 Playing by the Rules:

The work of Play: Play among preschoolers has functional value. It is something more than passing time. Play helps preschoolers to develop socially, cognitively and physically.

Types of Play: There are many different types of play which will be briefly discussed.

i) Functional Play: It refers to play that involves simple repetitive activities typical of three year old child. Activities which are a part of this play include:

- Pushing cars on the floor.
- Skipping.

- Jumping, etc.

Functional play involves doing something to be active rather than to create something new.

ii) Constructive Play: By the age of 04 years children become involved in a more sophisticated form of play called as constructive play. In this type of play children manipulate objects to produce or build something. Building a house of blocks is one type of constructive play. Constructive play gives children a chance to practice their physical and cognitive skills and fine muscle movements. Through constructive play children gain experience in solving problems about the ways and the sequences in which things fit together, they also learn to cooperate with others.

Social Aspects of Play: Play has social and interaction aspects. Considerable research in this area has been done by Mildred Parten (1932). With respect to social aspects play can be divided in to following types:

a) Parallel Play: It is a type of play in which children play with similar toys, in a similar manner, but do not interact with each other.

b) Onlooker Play: It is one type of highly passive play in which children simply watch others at play, but do not actually participate themselves.

c) Associative Play: This form of play involves interaction on the part of the children, in which children interact with one another by sharing or borrowing toys or materials.

d) Cooperative Play: In this form of play children genuinely play with one another, taking turns, playing games or devising contests.

e) Pretend Play: It is a make-believe play in which children may pretend to listen to a radio by using a plastic radio or by using a cardboard box. According to Lev Vygotsky Pretend Play is an important means for expanding preschool age children's cognitive skills. Through such types of play children are able to "practice" activities that are a part of their particular culture and broaden their understanding of the ways in which the world functions.

7.6.2 Preschooler's Theory of Mind:

Understanding What Others are Thinking:

Preschool children increasingly see the world from other's perspectives. Children as young as 02 years old are able to understand that others have emotions. By the age of three or four years they can imagine something that is not physically present, such as a dog. They can also pretend that something has happened and react as if it really has occurred, a skill that becomes a part of imaginative play.

Preschool children also develop insight about other's motives and behavior. They begin to understand that their mother is angry. By the age of 04 years children develop an understanding that people can be fooled by magic tricks. This helps them to become socially skilled and gain insight in to other's thoughts.

7.6.3 Preschooler's Family Lives:

Preschool period is also a time for children to face harsh realities of life. Many preschoolers have witnessed a family conflict, parent's divorce, and custody battles between parents. Some children have also been victims of child abuse from parents and caregivers.

7.6.4 Effective Parenting:

Diana Baumrind has done considerable research with respect to parenting style. She identified four different types of parenting styles as follows:

- Authoritarian parents
- Permissive parents
- Authoritative parents
- Uninvolved parents

We would discuss each of these briefly.

i) Authoritarian parents: These parents are highly controlling and punish their children. They are rigid and cold. Their world is law. They prefer strict, unquestioning obedience. They are opposed to disagreement. They want that their children should listen to their dictates and not argue with them or disagree with them. Children of authoritarian parents tend to be withdrawn, lack sociability and are not friendly. Boys are hostile and girls dependent on their parents.

ii) Permissive parents: Children of permissive parents are dependent and moody. They are low in social skills and self-control.

iii) Authoritative parents: They are firm. They set clear and consistent limits on their children. Though they are strict, they are at the same time loving and emotionally supportive. They reason with their children and explain to them as to why they should behave in particular ways. They give rationale for punishing their child. These parents encourage their children to be independent. Children of Authoritative parents perform better; they are independent, friendly, self assertive and cooperative. They are achievement oriented, successful and likeable. They can regulate their emotions and behaviour appropriately.

iv) Uninvolved parents: These parents show no interest in their children. They often display indifferent, rejecting behaviour. They are often detached emotionally and consider their role as only of feeding, clothing and providing shelter to the child. Uninvolved parents often neglect their children.

Children of uninvolved parents perform poorly in all areas of life. They display disrupted emotional development. They are emotionally detached. Their physical and cognitive development is often impaired.

v) Cultural factors in child rearing practices: Child rearing practices discussed above are considerably influenced by one's cultural practices. The style of parenting that is most successful generally depends upon norms of a particular culture. No single parenting pattern or style is universally appropriate. Child rearing practices reflect cultural perspectives on the nature of children as well as on the appropriate role of parents.

7.6.5 Child Abuse and Psychological Maltreatment:

Child abuse is a very common phenomenon in almost all societies including India. Child abuse takes several forms ranging from actual physical abuse to psychological maltreatment. Some important forms of child abuse include:

- Neglected child
- Physically abused
- Sexually abused
- Psychological maltreatment

- Medically neglected

i) Physical Abuse: Physical Abuse is more common among families living in stressful environments which is generally associated with:

- Poverty.
- Single parenthood.
- Higher than average level of marital conflict.
- Step fathers/mothers are more likely to abuse a child as compared to biological parents. Child abuse is also more likely to occur where there is history of violence between spouses.

Abused children have adjustment problems. They are likely to be fussy, resistant to control and fear adults or caregivers. Abused children have more headaches and stomaches, experience more bedwetting and are generally anxious. They also show developmental delays.

ii) Reasons for Physical Abuse:

One of the main reasons for child abuse is the vague demarcation between permissible and impermissible forms of physical violence.

Privacy is another factor that leads to child abuse. In many western countries children are raised in private isolated households where child abuse, if it starts, is difficult to check by other members of the family. In many cultures child rearing is the joint responsibility of several people and even society as a whole and hence, an incident of child abuse is often short and checked by others.

iii) The Cycle of Violence Hypothesis:

This hypothesis state that abusive children had abusive parents. It further states that abuse and neglect that children suffer predispose them as adults to abuse and neglect their own children.

Victims of abuse have learned from their childhood experiences that violence is an appropriate and acceptable form of discipline and that they have failed to learn the skills needed to solve problems and instill discipline without violence.

iv) Psychological Maltreatment:

It is a term that is used to refer to abuse that occurs when parents or other caregivers harm children's behavioural, cognitive, emotional or physical functioning. Psychological maltreatment may be a result of overt behaviour or neglect.

It occurs when abusive parents frighten, belittle or humiliate their children making them appear to be a failure. Parents can also maltreat their child when they say that the child should not have been born. Some children may be threatened with abandonment or even death.

Parents can also maltreat their children by making them work for long hours and take away their earnings.

Most psychological maltreatment takes the form of neglect. Parents may behave in an emotionally unresponsive manner or may give them unrealistic responsibilities or they may leave them to fend for themselves. Psychological maltreatment leads to:

- Low self-esteem
- Lying
- Misbehavior
- Underachievement in school
- Depression and suicide

In extreme cases it can result in criminal behaviour, aggression or murder. It has also been observed that psychological maltreatment permanently alters limbic system, which is composed of hippocampus and amygdala. The stress, fear and terror which is associated with abuse over stimulates the limbic system and results in changes in the brain.

v) Resilience: Overcoming the odds:

It is the ability to overcome high-risk circumstances and difficulties such as extreme poverty, prenatal stress, violence at home, etc.

Resilient children tend to have temperaments that evoke positive responses. They tend to be affectionate, easy going, good natured. Resilient children have the power to attract others, they make their own environment by drawing

out behaviors in others that they often need for their development.

Resilience can be developed among vulnerable children when they are provided competent and caring adult models that teach children problem solving skills and help them to communicate their needs to those who are in a position to help.

7.7 MORAL DEVELOPMENT AND AGGRESSION

Moral development occupies a place of central importance in the upbringing of children. Teaching children the right way to behave is an important element of growth during the preschool years.

Developing Morality: Moral development refers to change in people's sense of justice. It is concerned with what is right and wrong. Moral development among children has been studied with respect to:

- Children's reasoning about morality.
- Attitudes towards moral lapses.
- Behaviour with respect to moral issues.

7.7.1 Approaches to Moral Development:

Three important approaches to moral development include:

- Piaget's view of Moral Development
- Social Learning Approach to Morality
- Empathy and Moral Development.

We would discuss each of these briefly.

1) Piaget's view of Moral Development: Piaget was one of the first psychologists to study moral development among children. According to Piaget moral development, like cognitive development proceeds in stages. The three important stages identified by Piaget are as follows:

i) **Heteronomous Morality:** This is the earliest stage, which lasts from 04 to 07 years, in which rules are seen as invariant and unchangeable. During this stage children play games rigidly, assuming that there is one, and only one, way to play.

ii) **Incipient Cooperation:** This stage lasts from 07 t0 10 Years. During this period their games become more social and they learn the actual rules and play according to this shared

knowledge. During this stage also rules are still seen as largely unchangeable.

iii) **Autonomous Cooperation:** This stage begins about age 10. During this period children learn that formal game rules can be modified if players agree. During this stage children develop an understanding that rules of law are created by people and are subject to change according to the will of the people.

2) Social Learning Approaches to Morality: Social Learning Approach emphasizes on how environment in which the preschooler operates brings about changes in their moral development. One important aspect of moral behaviour studied by Social Learning theory is prosocial behaviour – a helping behaviour that benefits others.

According to Social Learning approach some types of prosocial beahviour arises form situations in which they have received positive reinforcement for acting in a moral way. Children are more likely to indulge in sharing behaviour in the future if they have been rewarded for the same.

Children also learn prosocial behaviour indirectly by observing the behaviour of others (also called as models). Children imitate those models whose behaviour has been rewarded. Children also learn to behave selfishly if they have recently observed a model behaving selfishly and have been rewarded for it.

Children not only simply mimic behaviour that they have seen as being rewarded but they also recollect society's norms about the importance of moral behaviour communicated to them by parents, teachers and authority figure in the past.

According to Social Learning theory modeling paves the way for development of more general rules and principles in a process called as abstract modeling in which a preschooler does not model specific behaviours that they observe but by observing repeated instances, children infer and learn general principles of moral conduct.

3) Empathy and Moral Behaviour: Empathy which refers to the ability to feel what other individuals are feeling is at the root of many kinds of moral behavior. Empathy grows as children's ability to monitor and regulate their emotional and cognitive responses increases. According to some experts increasing the empathy among children help them to behave morally. Moral behaviour can also be promoted by generation of negative emotions such as anger and shame.

7.7.2 Aggression and Violence in Preschoolers:

Aggression can be defined as intentional injury or harm to another person. Children demonstrate true aggression by the time they reach pre-school age.

In most children the amount of aggression decline as they move from preschool years. Decline in aggression is facilitated by child's personality and social development.

One important aspect of control of aggression is emotional self regulation which is defined as the capability to adjust emotions to a desired state and level of intensity. Aggression can be overcome through:

- Talking about one's feelings and developing strategies to regulate their feelings.
- Learning to cope with one's negative emotions.
- Developing social skills by using language to express their wishes and to negotiate with others.

Aggression is relatively stable among children. The most aggressive preschooler also tends to be most aggressive during school age years.

Instrumental and Relational Aggression: There are two different forms of aggression.

Instrumental Aggression: This form of aggression is shown by boys. It is motivated by the desire to obtain a concrete goal, such as playing with a desirable toy that another child is playing with.

Relational Aggression: Girls generally practice this form of aggression which is defined as non-physical aggression that is intended to hurt another person's feelings. Such aggression may manifest itself as:

- Name calling
- Withholding friendship
- Simply saying mean, hurtful things that make the recipient feel bad.

7.7.3 Explanation for Aggression among Preschoolers:

Many different forms of explanation or theories of aggression among Preschoolers have been developed, some of which include:

- Instinct Explanation of Aggression
- Social Learning Approaches to Aggression
- Cognitive Approaches to Aggression

We would discuss each of these briefly.

a) Instinct Explanation of Aggression: According to some experts aggression, even among preschoolers is instinctive in nature. According to Freud human begins are motivated by sexual and aggressive instincts. According to Konrad Lorenz, aggression among humans as well as animal species is instinctive. According to him human beings share a fighting instinct with animals which largely stem from:

- Primitive urges to preserve territory.
- Maintain a steady supply of food.
- Weed out weaker organisms.

There is little experimental support for instinctive explanation of aggression. They fail to take in to account sophisticated cognitive abilities that human beings develop as they grow older. Instinctive theories do not provide explanation as to when and how children and adults would become aggressive.

b) Social Learning Approaches to Aggression: According to social learning theory, aggression is largely a learned behaviour and based on children's observation and prior learning. According to this view, social and environmental conditions teach children to be aggressive. Reinforcement to act in an aggressive way can come directly or indirectly. Research suggests that exposure to aggressive models lead to increased aggression, particularly if the observers are themselves angered, insulted or frustrated. Bandura's classic studies using "Bobo doll" demonstrated that preschool children modeled the behavior of adults. Those who had seen the aggressive model playing with the Bobo doll were considerably more aggressive than those who had watched the calm, non aggressive model playing with non-aggressive dolls.

Viewing Violence on TV: Large majority of preschool children are exposed to aggressive behaviour. Majority of the children's television program contain higher levels of violence (69%) than other types of programs (57%). In an average hour children's program contain more than twice as many violent incidents as other types of programs. One of the most important questions that have been hotly debated

is does televised violence leads to aggression among children. Large number of research studies has concluded that observation of television aggression does lead to subsequent aggression. Longitudinal studies have found that children's preferences for viewing violence on television at the age of 08 years is correlated with the seriousness of criminal convictions by the age of 30. Anderson et al (2003) and others have observed that exposure to media violence can lead to:

- Greater readiness to act aggressively.
- Bullying.
- Insensitivity to the suffering of victims of violence.

Not only television but videogames also contain highly aggressive elements. Research studies have further revealed that playing violent videogames is associated with behaving aggressively.

Just as exposure to violence leads to aggression, similarly, exposure to non-aggressive models can reduce aggression.

c) Cognitive Approaches to Aggression: According to cognitive approach how we perceive and interpret a given event determines the amount of aggression one displays. When we do not pay attention to appropriate cues in the environment and interpret the behaviours in the situation erroneously, assuming that what is happening is unfair, unjust, insulting, humiliating, etc., then in such a situation we are likely to act aggressively.

Cognitive Approach fails to explain why certain children perceive the situations inaccurately and why they so readily respond to aggression. However, cognitive approach can help us to reduce aggression among preschoolers by helping them to interpret situations more accurately and to view other's behaviour not motivated by hostile intentions but by some other factors.

7.8 QUESTIONS

Q1. Discuss the various physical changes that take place in body shape and structure during preschool years.

Q2. Write a note on nutrition, health and illness among preschoolers.

Q3 Write short notes on the following:

a) Brain growth and cognitive development.

b) Brain Lateralization.

Q4. Discuss Gross and fine motor skills that develop during preschool years.

Q5. Discuss Social and personality development in Preschool years

Q6. Discuss psychosocial development in preschool years.

Q7. Write short notes on the following:

a) Self-concept in the preschool

b) Types of play

c) Effective parenting

d) Child abuse and psychological maltreatment

Q8. Explain in detail moral development and aggression among preschoolers.

8

TOPIC- 7

COGNITIVE DEVELOPMENT IN PRE-SCHOOL YEARS

Unit Structure

8.0 OBJECTIVE

In this unit we will discuss

- Piaget's Theory of cognitive development.
- Vygotsky theory of Socio-Cultural Development and
- Development of Language and Learning.

8.1 INTRODUCTION

By the age of two, the child starts using language, shows maturation with reference to the ability to use logic, numbers, count, get help from others in this regards, and demonstrates physical maturation. This period is marked with tremendous growth and change in the cognitive abilities, physical as well as social and personal development. In this section, we shall attempt to understand the reasons for the changes that happens during this period. Piaget is the pioneer in this field. Other theorists have also explained their views with respect to cognitive development.

8.2 PIAGET'S THEORY

The theory of Jean Piaget has been discussed in the previous units. In this unit, we shall discuss the development in the pre-school years. You know that the Piaget is a stage

theorist. He has proposed four distinct stages of development. These stages are sensory-motor, preoperational, concrete operational and formal operational. The preschool years are covered under preoperational stage of development.

Piaget's Stage of Preoperational Thinking:

The preschool children develop symbolic thinking. They begin to do mental reasoning. They also start using the concepts. The child does not depend just on sensory motor activities. They carry out processing on the mental representation. Piaget considers this as an important aspect of the preschool years. The preoperational thought is characterized by symbolic function. At this stage of development Still they are unable to do logical reasoning.

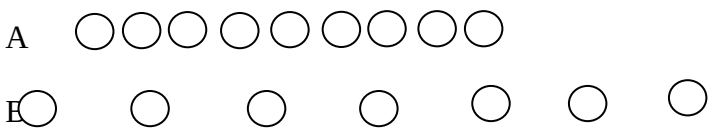
Language and Thought:

The major difference between the sensory-motor stage and pre-operation stage is availability of language. Because of the rapid development of linguistic skills the representational thought is more sophisticated. They develop fantasies and start day dreaming. Preschoolers can talk about past and future.

Centration:

According to Piaget, preschools thinking is characterized by centration. Centration refers to focusing (meaning 'centering') on one or imitated aspect of the information. In this process, they tend not to consider other aspects of the situation. For example, they may believe that boys and girls differ only by wearing different clothing. Look at the figure 1. It shows the preferences of the preschoolers. The preschooler would prefer to choose B as more number of circles. They believe that B are spread over so look more than A, whereas A are actually more than B.

Figure 1. Preschoolers choice:



Conservation:

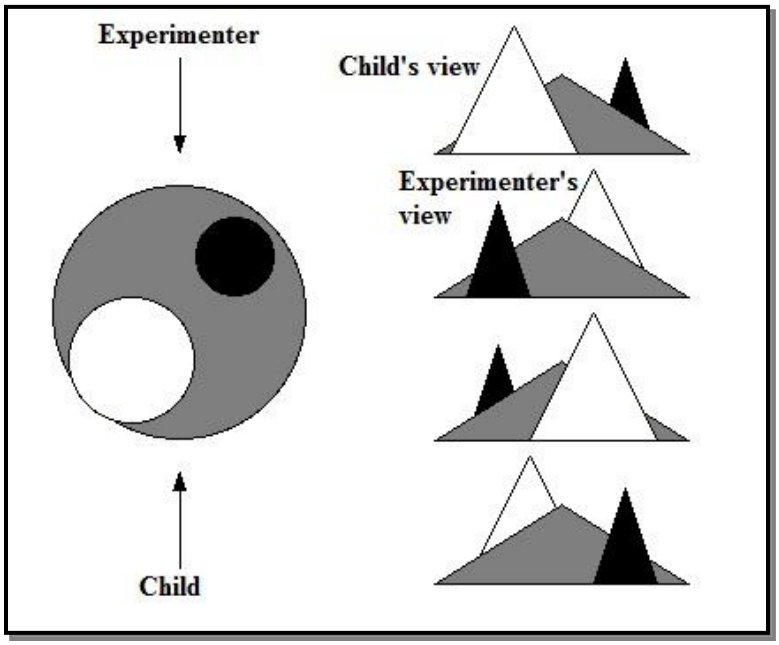
Conservation is the understanding that quantity is not related to the arrangement and physical appearance of objects. For example, if one litre water is in the two transparent vessels: vertical long vessel and a horizontal flat vessel. The preschoolers would believe that long vessel has more water than horizontal flat vessel since it looks longer. This is because of the conservation of the quantity.

Egocentrism:

One of the problems of the preschoolers is their inability to understand other people's viewpoint. It means the inclination to perceive, and interpret the world in terms of the self. Kids often view the picture by holding it in front of them and believe that others can see it because they are seeing it which means that their reasoning is egocentric. Piaget investigated egocentrism by famous experiment called the three mountains problem See figure 2. The children were put in front of a simple plaster mountain range containing three mountains and then asked them to pick from four pictures the view that experimenter would see. Preschool children choose the picture of the view they themselves see. Hence, Piaget concluded that they lack the ability to understand a viewpoint different than theirs. So he says that the preschool reasoning is egocentric. This is also referred to as lack of ability of perspective-taking.

Figure 2. Three mountain problem:

The problem and the four solution of the problem. Children typically choose the first solution that fits to their own view than the view of others.



Understanding of Transformation:

Piaget defines transformation as the process in which one state is changed into another. He further argues that the changes that are required for the transformation are poorly understood by the child. During the preschool years the child fails to carry out the activity of transformation correctly. This lead to failure in transforming the information from one set of experience to another set of experience. The example could be the child believes that the crow he sees around the house is the same to the one he had seen in the garden. The child will not understand that the garden crow would not fly to the house. The thinking during these years is also characterised by beginning of intuitive thinking. Intuitive thinking refers to use of primitive reasoning by the pre-operational children and ability of obtaining the knowledge about the world. This is seen in term of the typical curious questions asked by the children about the world. The children ask the question “why?” often to the parents indicate the beginning of the curiosity.

Piaget’s approach to cognitive development has been considered as a pioneering approach to the cognitive development. His works provides excellent observational data about the preschoolers.

Since, Piaget has carried out research on very small number of subjects, the generality of his finding were always questioned. The later experimental work involving large number of subjects, and modifying the experimental task showed that Piaget underestimated the ability of the

preschoolers. For example, Gelman argues that children have an innate ability to count. They might not be able to use specific language in order to express their computing ability. The modularity theorists have also launched similar criticism to the Piagetan theory.

Another criticism on the Piaget's theory is on the stage approach he took. Many theorists argue that the cognitive development is continuous and not fashioned in stage-wise pattern.

8.3 INFORMATION PROCESSING APPROACH TO COGNITIVE DEVELOPMENT

Information processing approach has a focus on the information as cognitive structure that develops over the years. As the child grows up this cognitive structures changes and becomes more sophisticated. One of the example is schema.

Numbers:

When it comes to understanding and processing numbers, preschoolers show very refined ability. They can count in a systematic and consistent manner. They can carry out simple mathematical operations on the small set of numbers. According to Gelman, preschoolers follow set principles for counting.

Memory:

As was discussed in previous units, infants do not have memory for the first two years of life. This is called as infantile amnesia. The child then develops memory called as autobiographical memory. Autobiographical memory is memory for the event in one's own life. These memories may not last for longer duration or might loose the vividness of these memories. The accuracy of the preschoolers autobiographical memory is low. The memory is organised into cognitive structure called as scripts. This also means that caution has to be observed when child eyewitness testimony is used.

The information processing approach focuses on steady and progressive development of child's cognitive ability. Children's ability to process store and retrieve information develops gradually. The preschoolers have limited attention span and hence are not able to attend

stimuli and so will not be able to carry out certain operations like conservation or reversibility.

8.4 VYGOTSKY SOCIO-CULTURAL DEVELOPMENT

Soviet Psychologist, Lev Vygotsky as opposed to the dominant view held by the cognitive developmental researchers that the social and cultural factors influences cognitive development. The role of parents is critically important. During the gradual development, at every stage the parents and societal expectations guide the child in the cognitive activity and provides suitable cognitive activities at the particular age through play and other tasks. He proposed an idea of Zone of Proximal Development (ZPD). It is the difference between what a learner can do without assistance from others and what he or she can do with the assistance from others, particularly parents. In his famous book “Mind and Society”, Vygotsky states “the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers” plays an important role in cognitive development. The concept of scaffolding is associated with the ZPD in the Vygotsky’s theory. Scaffolding is a process through which parents, teacher or competent others provide assistance to the preschooler during the ZPD. This assistance is taken off as the child become independent in performing the task and the support becomes unnecessary. It is like the scaffold is provided during building construction and removed from a building after construction. Often the task designed by society (parents, teachers, etc.) are such that the child may not be able to carry them out without aid but can do them with the aid.

Unfortunately, Vygotsky’s contribution was recognized long after his death at the age of 37 in 1934. The translations of his work became available to western world only after his death. He takes in interactionists constructivists approach to cognitive development. He conceptualises the interaction of the internal endowed abilities and culture.

8.5 DEVELOPMENT OF LANGUAGE AND LEARNING

Language develops very rapidly from 2^{nd} year onwards to the 4^{th} year of the life. The vocabulary increases. The preschoolers learn to use the syntax. Syntax are the

principles and rules for constructing sentences in natural language. By the age of 2 years the vocabulary is more than 200 words, and by the age of 6, the child has vocabulary of around 14000 words. This indicates the rapid increase in the vocabulary. This is called as fast mapping since a new word is associated with the meaning with a brief encounter. They also learn to use the grammar effectively and also learn the rule of grammer. For example, some words will have a specific past tense (e.g., go, run, put, sit, etc.) whereas others will have past tense by adding suffix – 'ed' (e.g., walk). The preschoolers learn to differentiate and use them properly.

The distinction is made between private speech and social speech. Private speech is spoken by the children which is directed to themselves. Social speech is directed to others. Private speech is as a guide to the behaviors. The practical skills and social rules of speaking are called as pragmatics. They are useful in talking with others. These skills improve during preschool years. Preschoolers also learn to use the social speech effectively. The learning is greatly aided from the media and other information medium like internet.

Now a days, the pre-school age has no longer remained pre-school. The age range of 2 to 6 typically used to introduce school structure to the children. The nursery, kinder garden, day care are all the parallel school structures in preschool years.

8.6 QUESTIONS

Q1. Explain the Jean Pigets approaches to cognitive development during preschool years.

Q2. Discuss information processing approach to cognitive development during preschool years.

Q3 Write short notes on the following:

a) Vyogotsky view of cognitive development.

b) Language and Learning Preschool years.

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9

Topic 8
PHYSICAL AND COGNITIVE DEVELOPMENT IN MIDDLE CHILDHOOD

Unit Structure

9.0 OBJECTIVES

By the end of this unit you will be able to:

a) Understand the physical and cognitive development during middle childhood.

b) Understand how our body grows and develops and how culture influences it.

c) Gain knowledge about motor skills, nutrition, obesity and health in middle childhood.

d) Comprehend the needs of the special children especially those having Sensory Difficulties, Learning Disabilities and Attention Deficit Hyperactivity Disorder.

e) Know the different aspects of Cognitive development in middle childhood, especially the intellectual and language development, schooling, types of intelligence as well as mental retardation and gifted children.

9.1 INTRODUCTION

Children enter during middle childhood (6 to12 years). The physical, social and intellectual development is enhanced by classroom settings. Some children require special therapist or even reading therapist. The topic discusses the patterns of growth that are features of this stage of development.

The intellectual and conceptual skills are the landmarks of development during middle childhood. This unit discusses development of intelligence and cognitive abilities during middle childhood.

9.2 PHYSICAL DEVELOPMENT IN MIDDLE CHILDHOOD

9.2.1 The Growing Body:

With respect to physical development middle childhood is a period of relatively tranquil as compared to swift growth in early childhood as well as remarkable growth spurt during adolescent years. During middle childhood physical growth continues but at a more stable space.

i) Height and Weight Changes:

During middle childhood the average height for the girls at 11 years is 04 feet and 10 inches, while boys average 04 feet and 9 ½ inches. This is the only period in life when girls tend to be taller than boys. Physical development among girls is generally rapid. Weight gain too, follows a pattern similar to that of height. Boys and girls both gain about 5 to 7 pounds a year. Baby fat in the body disappears and children's bodies become more muscular and their strength increases.

ii) Cultural Patterns of Growth:

Most children during middle childhood receive insufficient nutrients to grow to their full potential. However, in certain regions/countries nutrition and disease take the toll on children. Poor children in cities such as Calcutta, Hong Kong, Rio de Janeiro are smaller than the affluent children in some cities.

Genetic factors related to racial and ethnic background considerably influences development during middle childhood. Asian and Oceanic Pacific children tend to be shorter than those of the Northern and Central European ancestry. The rate of growth is generally more rapid for black children than for the white.

9.2.2 Nutrition:

Nutrition considerably influences size of an individual. Nutrition is also related to social and emotional functioning at school age. Children who receive more nutrients are more involved with their peers, show more positive emotions and

have less anxiety than children with less adequate nutrition. Nutrition is also linked to cognitive performance. Research studies (McDonald et al, 1994) have revealed that malnutrition may influence cognitive development by lowering children's curiosity, responsiveness and motivation to learn. In one study on Kenya children it was observed that children who were well nourished performed better on tests of verbal abilities and other cognitive measures. Not only malnutrition but even over nutrition, i.e., intake of too many calories leads to problems.

9.2.3 Childhood Obesity:

Childhood Obesity is rising in most developed and developing countries including India. Obesity is defined as the body weight that is more than 20% above the average for a given age and height. 15 % of the US children suffer from obesity.

The consequence of obesity in childhood lasts lifetime. Obese children are more likely to be over-weight as adults and have greater risks of heart diseases, diabetes and other diseases. Obesity is influenced by:

- Genetic factors.
- Social characteristics.
- Diet.
- Lack of Exercise.
- Parental Control.

Inherited genes predispose certain children to be over weight. Adoptive children's weight tends to reflect those of their biological parents.

Parents who are controlling and directive about their children's eating may produce children who lack internal locus of control to regulate their own food intake.

Poor diet contributes to obesity. Less fruits and vegetables and more fats and sweets contribute to obesity. Between the ages of 6-18 years boys decrease their physical activity by 24% and girls by 36%. One reason as to why during middle childhood exercise is low is due to the increased time devoted to watching television and playing videogames and computer. When a child is involved in such activities he not only lacks exercise but he/she also tends to consume high calorie snacks.

9.2.4 Motor Development and Safety:

During middle childhood children's gross and fine motor skills develop substantially.

Gross Motor Skills:

Gross motor skills develop during middle childhood years. One important activity that makes use of gross motor skills is muscle coordination. Some activities involving gross motor skill include:

- Learning to ride a bike
- Ice skate
- Swimming
- Skipping a rope, etc.

Gender differences in gross motor skills become increasingly pronounced during these years with boys outperforming girls.

Fine Motor Skills:

Many fine motor skills are also practiced with increasing frequency during middle childhood. Some of the most common fine motor skills include:

- Typing at a computer keyboard.
- Writing in cursive with pen and pencil.
- Drawing detailed pictures.

Six and seven year old children are able to tie their shoes, fasten buttons, etc.

By the age of eight years children use each hand independently. By 11 and 12 years they can manipulate objects almost as capably as adults.

One reason as to why fine motor skills improve is due to the increase of myelin in the brain as a result of which there is an increase in the speed at which electrical impulses travel between the neurons. Message reaches muscles more rapidly and controls them better. Myelin also provides protective insulation that surrounds parts of the nerve cells.

9.2.5 Health during Middle Childhood:

Middle Childhood is generally a period of robust health. The ailments that children contact are mild and brief. Routine immunization has helped to overcome disabling and lifethreatening disorders during this age which was common some 50 to 60 years ago.

Though most children during middle childhood have short term illness, about one in nine has a chronic, persistent condition such as repeated migraine headaches.

Accidents:

The rate of accidents and injury between the ages of 05 and 14 years increases due to greater independence and mobility. Boys are more likely to get injured as compared to girls because their overall physical activity is greater. Accidents are common due to following factors:

- Children who walk alone to school are likely to be hit by cars, trucks or are likely to fall from the train, buses, etc.
- Due to lack of experience they can misjudge how far they are from an oncoming vehicle.
- Bicycle accidents, drowning, falling from balcony, building, staircase, etc., is common occurrence during this age.
- Automobile accidents are common during this period.
- Some other accidents include gun shots, fires and burns, etc.

Children need to be taught safety precautions such as wearing car seat belts and protective cycling gears. Bicycle helmets have significantly reduced head injuries. Knee and elbo pads have proven to reduce injuries from roller blading and skate boarding.

9.2.6 Safety in Cyberspace:

The internet and World Wide Web (WWW) also poses danger to young children. They become victims of child pornography. Though computer software developers have designed programs that will block particular computer site, most experts are of the view that parental supervision provides reliable safeguards. Parents should warn their children never to provide personal information, such as home address or telephone numbers to people whom they meet online, especially on bulletin boards and in chat rooms.

Children should also not hold face-to-face meetings with people they meet via computer, all alone. They should see that at least a parent is present.

9.2.7 Psychological Disorders:

During middle childhood few children suffer from psychological disorders which can produce some degree of impairment. Psychological disorder can be of any type and may range in severity. Some common psychological disorders include:

- Depression
- Anxiety Disorders
- Suicide

Children should be treated, largely by psychotherapy and the use of drugs, especially antidepressants should not be given frequently and for prolonged period of time.

9.2.8 Children with Special Needs:

Children with special needs pose major challenges for care providers and teachers. Three important categories of special needs affecting children of normal intelligence include:

1) Sensory Difficulties: Visual, Auditory and Speech Problems.
2) Learning Disabilities.
3) Attention Deficit Hyperactivity Disorder.

We would discuss each of these briefly.

1) Sensory Difficulties: Visual, Auditory and Speech Problems: Sensory impairment/difficulties is one of the major challenging problems encountered during middle childhood years which can influence academic performance.

i) Visual Impairment: It has two types of meaning one is legal and another is educational. Legal impairment definition of blindness refers to visual acuity below 20/200 after correction, meaning the inability to see at 20 feet what is typically seen at 200 feet. Partial sightedness is visual acuity of less than 20/70 after correction.

Visual impairment seriously affects school work. The legal definition does not take in to consideration abilities in the perception of colour, depth and light. It is estimated that one student in a thousand requires special education service

due to visual impairment. Visual impairment can often be accurately detected when there is:

- Eye irritation (redness, sties or infection).
- Continual blinking and facial contortions when reading.
- Holding reading material usually close to the face.
- Difficulty in writing.
- Frequent headaches, dizziness or burning eyes.

ii) Auditory Impairment: It results in social and academic problems as children indulge in informal conversation with peers. Hearing loss affects about 1% to 2% of the school going children. Some children have hearing impairment only at certain frequencies and pitches. Severe and early loss can impair abstract thinking.

iii) Speech Impairment: It not only makes child self conscious and influences his/herself esteem but it interferes with communication and may lead to maladjustment among children. Speech impairment occurs in about 3% to 5 % of the school age children.

iv) Stuttering: It is one common form of speech impairment. It provides substantial disruption in the rhythm and fluency of speech. No specific course for stuttering has been identified. Occasional stuttering is nothing to be worried among young children, but chronic stuttering can pose a severe problem. Stuttering may lead to:

- Stress and embarrassment among children.
- They may suffer from social phobia and may avoid people.
- Their self-esteem can be damaged.
- They may also have communication difficulties.

Parents and teachers can help a child suffering from stuttering by:

- Not drawing attention to the issue.
- Giving them sufficient time to finish what they are saying.

2) Learning Disabilities:

It can be defined as difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning or mathematical abilities. Learning Disability interferes with children's abilities in above areas. Learning Disability is generally diagnosed when children's academic performance

differs from their potential to learn. One common type of Learning Disability is dyslexia, a reading disability which can result in the visual misperception of letters, unusual difficulty in spelling or sounding out letters and left-right confusion.

Causes of Learning Disability: Learning Disability is attributed to following factors:

- Brain dysfunction due to genetic factors.
- Environmental causes such as early nutrition or allergies.

3) Attention Deficit Hyperactivity Disorder (ADHD):

It can be defined as a learning disability marked by inattention, impulsiveness, a low tolerance for frustration and generally a great deal of inappropriate activity. These characteristics present in the ADHD child interferes with their home and school functioning.

Symptoms of ADHD: Some common symptoms of ADHD are as follows:

- Difficulty in finishing a given task or following instructions.
- Difficulty in organizing work.
- Fidgeting, squirming, inability to watch the entire television program.
- Frequent interruption of others or excessive talking.
- Tendency to jump in to a task before hearing all the instructions.
- Difficulty in waiting or remaining seated.

It is estimated that ADHD affects 3 % to 7 % of those under the age of 18.

Treatment of ADHD is not an easy task. Physicians routinely prescribe drugs such as Ritalin or Dexadrine (Which paradoxically are stimulants) as they reduce activity in hyperactive children. Such drugs can increase attention span and compliance. Its side effects include:

- Irritability
- Reduce appetite and
- Depression

Besides drug, behaviour therapy is often used to treat ADHD. Parents and teachers are taught techniques that primarily use rewards (such as verbal praise) to improve behaviour.

Increasing the structure of classroom activities also help improve performance of children with ADHD. Children with ADHD find unstructured tasks to be difficult.

9.3 COGNITIVE DEVELOPMENT IN MIDDLE CHILDHOOD

Middle childhood is often referred to as the "school years" because it marks the beginning of formal education for most children. During middle childhood children blossom with ideas and plans. They develop language to express them orally and in writing. The following important topics are covered under cognitive development in middle childhood.

- Intellectual and Language Development.
- Schooling: The Three Rs (and More) of Middle Childhood.
- Intelligence: Determining Individual Strengths.

We would discuss each of these briefly.

9.3.1 Intellectual and Language Development:

During middle childhood, cognitive abilities broaden; children increasingly understand and master complex skills. However, their thinking is not yet fully matured.

9.3.2 Perspectives on Cognitive advances and limitations of middle childhood:

The three important perspectives on cognitive development include:

- Piagetian Approach to Cognitive Development.
- Information Processing in Middle Childhood.
- Vygotsky's Approach to Cognitive Development.

We would discuss each of these briefly.

i) Piagetian Approach to Cognitive Development:

According to Piaget middle school years is a period of concrete operational stage. Children during this stage use mental operations which are formal, logical and organised. This stage occurs between the ages of 7-12 years. This stage is characterized by active and appropriate use of logic. It applies logical operations to concrete problems.

During this stage children are less egocentric and they can consider multiple aspects of a situation. During this period they develop the ability known as decentring, i.e., the ability to take multiple aspects of a situation in to account.

Once children develop the stage of concrete operations they make several concrete leaps such as the concept of reversibility, i.e., the transformations to a stimulus can be reversed, For e.g., during this stage children realise that a ball of clay can be squeezed in to a long, thin rope can become a ball again.

Stage of concrete operations also permits children to group such concepts as the relationship between time and speed. However, during this stage children have the following limitations:

They cannot understand truly abstract or hypothetical questions, especially one's involving formal logic, such as the concepts of free will and determinism.

Limitations of Piaget's Work:

Piaget's work had some limitations. He based his theories on the basis of mini-experiments he conducted. Its generalization to larger data is questionable.

Increasing evidence suggests that children's cognitive abilities emerge earlier than Piaget envisioned.

ii) Information Processing in Middle Childhood:

According to this approach children can handle information with increasing sophistication. They are like computers, who can process more data as the size of their memories increases and the 'programs' (i.e., brains) they use to do this becomes more complex.

Memory is an important concept in the Information Processing Approach, it is the ability to encode, store and retrieve information.

During middle childhood short term memory (also referred to as working memory) capacity greatly increases. During this stage children are increasingly able to hear a string of digits (4, 3, 6, 5, 2) and then repeat them in a reverse order (2,5,6,3,4). During middle childhood, children also use more sophisticated strategies for recalling information, which can be improved by training.

Meta memory, which refers to an understanding about the processes that underlie memory, emerges and improves during middle childhood. At the start of middle childhood, i.e., about 06 years or so their theory of mind becomes more sophisticated. Children at this stage have a general notion of what memory is. They understand that some people have better memories as compared to others. At this stage they start using control strategies, i.e., tactics to improve cognitive processing. During this stage they come to understand that rehearsal, i.e., repetition of information, improves memory and they increasingly makes use of this strategy. They also progress in organizing material in to coherent patterns. This helps them to improve recall.

iii) Vygotsky's Approach to Cognitive Development:

Lev Vygotsky proposed the concept of ZPD (Zone of Proximal Devlopment). Vygotsky's Approach encouraged the development of classroom practices that promote children's active participation in their learning. Vygotsky viewed classroom as places where children should experiment and try out new activities.

Vygotsky emphasized that education should focus on activities that involve interaction with others. He further emphasised that both child-adult and child-child interaction can promote cognitive growth. The interaction must be carefully structured to fall within each child's ZPD.

Vygotsky's work has influenced many innovations, one such being the concept of "cooperative learning", where children work in groups to achieve a common goal. Some advantage of cooperative learning includes:

- Students working in cooperative groups benefit from the insight of others.
- A wrong turn by one child may be corrected by others in the group.
- Individual children benefit most when some of the group members are more competent at the task and can act as experts.

The second innovation include, reciprocal teaching, a technique to teach reading, comprehension strategies. In this form of learning students:

- Learn to skim the contents of a passage.
- Ask questions about its meaning.
- Summarise.

- Predict what will happen next.

The reciprocal nature of this technique gives student a chance to adopt the role of a teacher. Teachers initially lead students through comprehension strategies. Gradually students progress through their Zones of Proximal Development, taking increasing control of the strategies, until they assume the teaching role. This method has helped to raise comprehension levels, particularly for students with reading difficulties, until they assume the teaching role. This method has helped to raise comprehension levels, particularly for students with reading difficulties.

9.3.3 Language Development:

Language Development during early middle childhood is similar to that of adults, but still it needs refining. Some important topics related to language development during middle childhood include:

a) Mastering the mechanics of language.

b) Meta linguistic awareness.

c) How language promotes self control.

d) Bilingualism.

We would discuss each of these briefly.

a) Mastering the mechanics of language:

During middle childhood, vocabulary continues to increase rapidly by about 5000 words form 06 years to 10 years. There is also an improvement in the mastery of grammar. During middle childhood, the use of passive voice and conditional sentences increases. There is also enhanced increase in children's understanding of syntax, the rules governing how words and phrases can be combined to form sentences.

During early middle childhood, i.e., about 06 years or so, though children pronounce words quite accurately, the use of certain phonemes, the unit of sound, remain troublesome. For example the ability to pronounce j, v, th and zh develops a little later.

Children during middle childhood have trouble decoding sentences. Children's conversational skills also develop as they become more competent in using the pragmatics, rules governing the use of language to communicate in social settings.

b) Meta linguistic awareness:

It can be defined as an understanding of one's own use of language. Meta linguistic awareness helps children's comprehension when information is fuzzy or incomplete.

c) How language promotes self control:

Language sophistication during middle childhood helps children control and regulate their behaviour. Research studies have revealed that as children's self control grow their linguistic capabilities increases.

d) Bilingualism:

It means the use of more than one language. Most children in India learn to be bilingual. Bilingual children are first taught their own native language as well as English or their state language. Psychological research has revealed that being bilingual offers considerable cognitive advantages. Speakers of two languages show greater cognitive flexibility. They solve problems with greater creativity and versatility. Learning in one's native language also leads to higher self-esteem, at least among native children. Bilingual students often have greater meta linguistic awareness, understanding the rules of language more explicitly. Some research have also shown that they show higher scores on intelligence tests (Lambert and Peal, 1972, Crutchley, 2003, etc).

9.3.4 Schooling:

The Three Rs (and More) of Middle Childhood:

Education has become a fundamental right in India and all children are required to be compulsorily educated at least till the age of 14 years. However, the picture is not so bright in other parts of the world. More than 160 million of the world's children do not even receive a primary education and about a billion individuals (including 2/3rd of them as women) do not receive any education and are illiterate. In many developing countries fewer females than males receive formal education.

9.3.5 Reading:

Reading is one of the most fundamental tasks to learning. It means to decipher the meaning behind words. Reading involves number of skills. It includes:

- Lower level cognitive skills (identification of single letters and letter-sound association).
- Higher level skills involving matching written words with meanings stored in memory and
- Using context and prior knowledge to determine sentence's meaning.

Reading Stages:

Reading occurs in many overlapping stages. The following are some important stages of reading.

Stage 0: This stage lasts from birth to grade 1. During this stage children learn the prerequisites for reading including letter identification, recognition of familiar words and writing their name.

Stage 1: This stage lasts from grade 1 to two. Children during this stage are introduced to reading. During this stage reading largely involves phonological reading skills. During this stage children also learn sounds of words by blending the letters together.

Stage 2: This stage lasts from grade two to three. During this stage children learn to read aloud with fluency.

Stage 3: This stage lasts from grade four to eight. During this stage reading becomes a means to an end. During this stage children read to learn about the word/s.

Stage 4: This is the final stage of reading. During these stage children can read and process information that reflects multiple viewpoints. This ability permits children to gain a more sophisticated understanding of the material.

How Reading should be taught?:

Educationist disagrees with respect to how reading should be taught. Their disagreement originates with respect to their view as to how information is processed during reading. There are two views:

- Code-based approaches to reading
- Whole language approach

According to advocates of Code-based approach to reading, teachers should focus on the basic skills that underlie reading. Code-based approaches emphasise the components of reading such as letter sounds and combinations – phonics and how letter and sounds combine to make words. They suggest that reading consists of processing the components of words, combining them in to words and using these to derive the meaning of sentences and passages.

Those who advocate the whole language approach, view reading as a natural process, similar to the acquisition of oral language. According to this view, children learn to read through authentic writing, such as sentences, stories, poems, lists and charts. Rather than sounding out words, children make guesses about the meaning of words based on the context. Children become proficient readers leading whole words and phrases through the process of trail and error.

Research studies have revealed that code based approach is far superior to the whole language approach.

9.3.6 Education Trends:

Beyond the Three Rs:

The traditional three Rs of educations were reading, writing and Arithmetic. However, Schooling in the 21st Century is not limited to including only three Rs among children. It also emphasis Children's social well-being and allowing students to choose form their own study topics instead of following a set curriculum.

Individual accountability is also emphasized today by most elementary schools. In some countries students and teachers are required to periodically take state and national tests to assess their competence. Schools are also paying increasing attention towards student diversity issues and multiculturalism.

Cultural Assimilation or Pluralistic Society?

Cultural Assimilation model aimed at Assimilating individuals in to the unique Unified National Culture, For Example, American Culture. In this model non English speakers were discouraged from using their native language. They were totally immersed in English. However, in 1970s educators and minority groups proposed a

pluralistic society model which held the view that American society is made up of diverse, coequal cultural groups that should preserve their individual cultural features. The pluralistic model held the view that teachers who emphasised the dominant culture and discouraged non-native English speakers from using their native tongues in effect devalued sub-cultural heritages and lowered those students's self-esteem.

Fostering Bicultural Identity:

Most schools today agree that minority children should develop a bicultural identity which can be defined as maintaining one's original cultural identity while integrating oneself into the dominant culture. Bicultural identity helps the individual to live as a member of two cultures with two cultural identities, without having to choose one over the other.

Contemporary bicultural approaches encourage children to maintain membership in more than one culture. Most experts favour development of bicultural identity. However, general public does not always agree with this approach.

9.3.7 Intelligence:

Determining Individual Strengths:

Understanding intelligence and distinguishing intelligent from unintelligent behaviour has been the greatest task of researcher. Wechsler (1975) defined intelligence as the capacity to understand the world, think with rationality and use resources effectively when faced with challenges.

Intelligence: Differentiating the intelligent from unintelligent:

Psychologist Alfred Binet devised one of the first intelligence test to distinguish between children who can study in a normal school and one that would require special education. Some of the important contributions of Binet were as follows:

i) He developed pragmatic approaches to test construction. He did not hold any preconception as to what intelligence was. He used the trial and error approach to measuring intelligence.

ii) Binet linked intelligence to school success. According to him intelligence tests helped to predict school performance. These tests do not provide useful information for other attributes such as social skills or personality traits.

iii) Binet linked intelligence test scores with mental age, which indicated as to how students are performing relative to their peers. Mental age along with chronological age was used to compute IQ. Today, IQ scores are calculated in a sophisticated manner known as deviation IQ.

9.3.8 Present Day Approaches to Measuring IQ:

There are many different tests available to measure IQ, some of which are as follows:

1)The Stanford-Binet Intelligence Scale, 05th Edition (SB5):

It began as an American Revision of Binet's original test. The test consists of age appropriate item. Older children are asked to explain proverbs, solve analogies and describe similarities between words. Test takers are given progressively more difficult problems until they are unable to proceed.

2) Wechsler Intelligence Scale for Children, 04th Edition (WISC – IV):

This is another measure of intelligence which is grouped in to verbal and performance score.

3) Kaufman Assessment Battery for Children 02nd Edition (KABC – II):

It tests children's ability to integrate different kinds of stimuli simultaneously and to use sequential thinking. KABC – II's greatest merit is its flexibility which it allows test giver. It permits the test giver to use alternative wordings or gestures or even pose questions in different language in order to maximize performance. This makes testing more practically oriented and valid as well as equitable for those children whose second language is English.

IQ scores have its own limitations. They are no doubt, reasonable predictions of school performance, but they are not able to predict performance of an individual outside school. Difficulties with traditional IQ scores have led researchers to consider alternative approaches to assessment.

9.3.9 Types of Intelligence:

Many theorists disagree with respect to the view that intelligence is uni-dimensional in nature. They view intelligence as consisting of many different dimensions.

Fluid v/s Crystallised Intelligence: Catell, (1987) has divided intelligence in to two types.

Fluid Intelligence: It reflects information processing capabilities, reasoning and memory.

Crystallised Intelligence: It refers to the cumulative information, skills and strategies people have learned and can apply in solving problems.

9.3.10 Multiple Intelligence (or Eight types of Intelligence) by Howard Gardner (2000):

Gardner suggested that we have at least eight distinct intelligences, each relatively independent. He also suggested that these intelligences operate together, depending on the activity we engage in. The eight different types of intelligence are as follows:

i) Linguistic Intelligence: Children with this kind of intelligence enjoy writing, reading, telling stories or doing crossword puzzles.

Linguistic intelligence involves aptitude with speech and language and is exemplified by poet T. S. Eliot.

ii) Logical-Mathematical Intelligence: Children with lots of logical intelligence are interested in patterns, categories and relationships. They are drawn to arithmetic problems, strategy games and experiments. Physicist Albert Einstein is a good example of this intelligence.

iii) Spatial Intelligence: It is used to perceive visual and spatial information and to conceptualize the world in tasks like navigation and in art. Painter Pablo Picasso represents a person of high spatial intelligence.

iv) Musical intelligence: It is the ability to perform and appreciate music, as represented by composer A. R. Rahman and Rahul Dev Burman (R.D. Burman).

v) Bodily-kinesthetic intelligence: It is the ability to use one's body or portions of it in various activities, such as dancing, athletics, acting, surgery, and magic. Martha Graham, the

famous dancer and choreographer, is a good example of bodily-kinesthetic intelligence.

vi) Interpersonal intelligence: It involves understanding others and acting on that understanding and is exemplified by psychiatrist Sigmund Freud.

vii) Intrapersonal intelligence: It is the ability to understand one's self and is typified by the leader Mohandas Gandhi. In the late 1990s Gardner added an eighth intelligence to his theory.

viii) Naturalist Intelligence: The ability to recognize and classify plants, animals, and minerals. Naturalist Charles Darwin is an example of this intelligence.

9.3.11 Lev Vygotsky on Intelligence:

According to Vygotsky in the assessment of Intelligence we not only evaluate fully developed cognitive processes but also those which are currently under process. According to him assessment of intelligence task should involve cooperative interaction between the assessed individual and the assessor – a process which we call dynamic assessment. Vygotsky viewed intelligence as reflecting both, how children perform on their own and how they perform when they are helped by adults.

9.3.12 Intelligence as Information Processing:

Sternberg's Triarchic Theory of Intelligence:

Robert Sternberg (2003) viewed Intelligence as information processing ability. According to this view most precise concept of intelligence is provided by how people store material in memory and later uses it to solve intellectual task. Information processing approach is not interested in the structure of intelligence, it is rather concerned with processes underlying intelligence.

Intelligent people differ from non-intelligent persons with respect to nature and speed of problem solving process. People with high IQ scores spend more time on the initial stage of problem solving and retrieving irrelevant information from memory.

According to Sternberg the process used in solving problems reflect important differences in memory.

Sternberg has developed Triarchic Theory of Intelligence. According to this Theory intelligence has three components.

a) The Componential Aspect: It reflects how efficiently people process and analyse information. Efficiency in these areas allow people:

- To infer relationships among different parts of a problem.
- Solve the problem.
- Evaluate their solution.

Individuals with strong componential aspect score highest on traditional tests of intelligence.

b) The Experiential Aspect: The experiential aspect of intelligence refers to insightful component of intelligence. Those who have a strong experiential aspect can easily compare new material with what they know. They can also combine and relate known facts to novel and creative ways.

c) The Contextual Aspect: The contextual aspect of intelligence deals with practical aspects of intelligence. It deals with everyday demands.

Individuals vary in the degree to which they possess each of these elements. Success in any given task depends upon the fit between the demands of the task and our strengths in each of these components.

9.3.13 Group Differences in IQ:

Groups differ in intelligence. For example urban individuals, rural people, certain races and ethnic groups, etc., differ with respect to intelligence. Differences in intelligence between these groups reflect prior experiences, cultural backgrounds that can influence test scores.

9.3.14 Racial Differences in IQ:

Research studies have revealed that certain racial group's IQ scores are consistently lower, on an average, than those of other groups. For example the mean score of African Americans tend to be about 15 points below the mean score of whites.

One of the debatable issues with respect to race and intelligence is whether racial differences in intelligence reflect differences in intelligence or biases in intelligence tests. This brings us to another debate as to what degree is

intelligence determined by heredity or by environment. The answer to this debate is still inconclusive.

9.3.15 The Bell Curve Controversy:

Herrnstein and Murray (1994) published a controversial book titled “The Bell Curve”. Herrnstein and Murray have argued that the average 15 point IQ difference between whites and African Americans is due primarily to heredity. They also argue that this difference accounts for higher rates of poverty, lower employment and higher use of welfare among minority groups. However, as opposed to this majority of the developmental psychologists argued that racial differences in measured IQ can be explained by environmental differences. In fact the mean IQ scores of whites and black children are quite similar when various economic and social factors are statistically taken in to account simultaneously.

Critics also argue that there is hardly any evidence that IQ causes poverty and other social ills. Some researchers including Sternberg (1995) have suggested that IQ scores were unrelated to later success in life. It has also been opined that:

- Members of cultural and social minority groups score lower than those in the majority groups due to biases of the tests.
- Traditional IQ tests are also found to discriminate against minority groups who lack exposure to the environment that majority group members have experienced.
- The questions asked in the psychological (intelligence) tests may have cultural loading and may favour the majority group.
- Most experts are not convinced by the contention of the Bell Curve that genetic factors largely determine differences in group IQ scores. Today, IQ is seen as a product, both of nature and nurture interacting in complex manner.

9.3.16 Below and Above Intelligence Norms: Intellectual Disabilities and Intellectual Giftedness:

Children who are slow learners are also called as children having special needs. Some children have very low level of intelligence who cannot study in normal school. Such children experience what is called as intellectual disabilities. There are still other group of children who have above normal level of intelligence. They are called as exceptional children or intellectually gifted children.

One approach to special education is called as mainstreaming, which refers to an educational approach in which exceptional children are integrated to the extent possible in to traditional educational system and are provided with a broad range of educational alternatives.

Another approach to special education is called as full inclusion. It refers to the integration of all students, even the most severely disabled in to regular classes, thereby doing away with special education programs.

Mental Retardation (Intellectual Disability):

Mental Retardation or Intellectual Disability represents those individuals who have intelligence below the norm. Roughly about 1-3% of the school going individuals has mental retardation which is characterized by significant limitations in intellectual functioning and in adaptive behaviour involving conceptual, social and practical skills. Today, experts are increasingly using the term intellectual disability rather than mental retardation. Mental Retardation can be divided in to two broad groups:

1. Familial retardation
2. Retardation having biological causes

The most common type of retardation having biological causes includes:

i) Fetal Alcohol Syndrome

ii) Down's Syndrome

iii) Retardation due to birth complications such as temporary lack of oxygen, etc.

Cognitive limitations among intellectually disabled children can be assessed by using IQ tests. However, it is difficult to gauge limitations in other areas. There is enough variability among people categorised as having mental retardation. There are those who can be taught to work and function with special attention and there are those who are virtually un trainable and who never develop speech or basic motor skills such as crawling and walking.

Categories of Mental Retardation: There are four broad categories of Mental Retardation as follows:

- Mild Mental Retardation
- Moderate Mental Retardation
- Severe Mental Retardation

- Profound Mental Retardation

We would discuss each of these briefly.

i) Mild Mental Retardation: 90% of the mentally retarded individuals have Mild Mental Retardation. They score in the range of 50 or 55 to 70 on IQ test. Their retardation may not be identified before they reach school. Their early development is often slower than average. With appropriate training these children can reach third to sixth grade level. They cannot do complex intellectual tasks but they can hold jobs and function independently and successfully.

ii) Moderate Mental Retardation: 05 % to 10 % of the children suffer from Moderate Mental Retardation. They are slow to develop language and motor skills. Children having Moderate Mental Retardation cannot study in normal schools. They generally cannot progress beyond a 02nd grade level. They can learn occupational and social skills. They can also learn to travel independently to familiar places. They require moderate levels of supervision.

iii) Severe Mental Retardation: Their IQs range between 20 to 25 to 35 or 40.

iv) Profound Mental Retardation: Their IQ is below 20 to 25.

The Gifted or Talented:

Children who are categorized as gifted talented have intelligence which is above the norm. About 3% to 5% of the children with respect to intellectual capacity are classified as gifted or talented. Gifted child is defined as one who show evidence of high performance capability in such areas as intellectual, creative, artistic, leadership capacity or specific academic fields and who require services or activities not ordinarily provided by the school in order to fully develop such capabilities. Research studies have revealed that gifted children tend to be outgoing, well-adjusted and popular.

Terman and Oden (1959) study of gifted children which began in 1920s found that gifted children were healthier, better coordinated and psychologically better adjusted than their less intelligent class mates. Gifted children also received more awards and distinctions, earned more money and made many more contributions in art and literature than the average person. By the time they reached the age of 40 they had collectively produced more than 90 books, 375 plays and short stories and 2000 articles and they had registered more than 200 patents. These

individuals also reported greater satisfaction with their lives than the non-gifted.

- Being gifted is no guarantee that one will do well in the school. This is due to the following reasons:
- Their verbal abilities may not be appropriately and practically applied.
- Teachers may misinterpret their humor, novelty and creativity.
- Their intellectual endeavour may be misconstrued as disruptive or inappropriate.
- Peers may not be encouraging.

Educating the Gifted or Talented:

Two approaches have been devised to teach the gifted and talented:

- Acceleration
- Enrichment.

Acceleration:

It allows gifted students to move ahead at their own pace, even if this means skipping grade levels. The materials in acceleration programs are not always different. They may simply be provided at a faster pace than for average student.

Enrichment:

In this program individuals are kept in the same class (i.e., grade level but are enrolled in special programs and given individual activities to allow greater depth of study. In enrichment, the material differs not only in the timing of its presentation, but in its sophistication as well. Enrichment materials are designed to provide an intellectual challenge to the gifted student, encouraging higher order thinking.

9.4 LET US SUM UP

In this unit we have discussed the physical and cognitive development in middle childhood. The physical development discussed about growing body, nutrition, childhood obesity, motor development, health etc. Cognitive development include various perspectives on development, language, schooling, reading, intelligence, its measurement and types, intellectual disabilities, mental retardation etc.

9.5 QUESTIONS

Q1. Discuss the different aspects of physical development in preschool years.

Q2. Write short notes on the following topics:

a)Health during Middle Childhood.

b)Nutrition and Middle Childhood.

c)Childhood Obesity in Middle Childhood.

d)Motor Development in Middle Childhood.

e)Safety in Cyberspace.

Q3. Discuss the different categories of children with special needs.

Q4. Discuss the various perspectives on cognitive development during middle childhood.

Q5. Discuss the issue of language development in middle childhood.

Q6. Write short notes on the following:

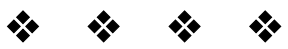
a)Reading.

b)Present Day Approaches to Measuring IQ.

c)The Bell Curve Controversy.

Q7. Discuss the different categories of Mental Retardation.

Q8. Write a note on The Gifted or Talented and educating them.



10

TOPIC- 9

SOCIAL AND PERSONALITY DEVELOPMENT IN MIDDLE CHILDHOOD

Unit Structure

10.0 INTRODUCTION

Middle Childhood years include ages from 6 years to 12 years. Very often this age is referred to as the school age years. It is said that one has to enjoy middle childhood. Many would pick these years as the best years of their lives. Physical development, cognitive skills, psychological development and greater independence from adults care are noticed in this period. During this period, children grow at a slow consistent rate before reaching a large growth spurt during adolescence. In reading there is diversity of interest reflected among boys and girls in middle childhood. As far as communication media, girls of middle childhood use internet for e- mail forms of communication and boys for games. A study of middle childhood period helps to guide the child in various interactions, happening during this period.

10.A PLAY TIME: THE DEVELOPING SELF

Play is important to the optimum development of children during their middle childhood years. Playtime is an excellent opportunity to build the relationship with child. Children like to play both cooperative and competitive game.

It create a bond between child and family members or between child and his peer group. Play time help children in various ways, some of which are;

- physical development.
- developing high self esteem.
- developing confidence.
- for emotional cognitive social and physical development and creativity.
- help parents to be behind their children.
- help in developing natural self esteem.
- help in developing self regulation, the second core strength child needs to be humane and protect himself from violence.
- help to be self reliant, to work through problems and re-charge.

Research studies show that middle childlhood is marked by the fear of diminished playtime and play space.

Encourage children to collect things like shells, stamps, coins flowers, etc., as learning experience, which should be done as part of playtime work. Also running, hopping, skipping climbing and dancing are also enjoyed by these middle childhood. While playing together children should be encouraged to talk about their feelings. When young adults are asked to recall their most salient play experiences, they give joyous experience of their play during 8 to 12 years. (Bergen and Williams 2008). These young adults believed that their middle childhood play helped them learn social skills, ‘hobbies’ and often ‘career decisions’ that influenced their adult experiences later.

In middle childhood the play interest of boys and girls grow in different directions. Boys prefer vigorous competitive games like foot ball, running and jumping. Girls prefer indoor games. They cannot sit still. Running is more than walking during this period. They are always wanting to do something. Always engaged in large variety of activities and various games. In late middle childhood children prefer gangs in play groups. They show loyalty to their gangs. On their road to self-reliance and independence, they need a helping hand to develop from adults.

Average weight during middle childhood increases 3 kg a year. Average height increases 2 to 3 inches. Muscle mass increases. Legs become longer. Strength increases due to heredity and exercise. Boys are found to be stronger than girls. During this period, coordinated motor skills are much developed as they are able to master running skipping, bicycle riding and skating.

Eric Erickson characterised middle childhood as the stage when children are most challenged by the issues of mastery and competence . This time of life coincides with the child's increasing experience in the social arena. Middle childhood is marked by the transition from the world of the family to the world of peers and school. With children's increased exposure to others, they encounter new comparisons and judgments. This combination of factors leads to the development of a critical self with self esteem. Family and experience shape certain values and attitude.

In many ways middle childhood is an age of enlightenment.

CHECK YOUR PROGRESS:

1. In a school day the only outdoor time is 10 to 15 minutes with rules such as "no running allowed", Comment, keeping in view middle childhood.

2. How can playtime help in developing self?

10. B. RELATIONSHIP: BUILDING FRIENDSHIP IN MIDDLE CHILDHOOD

Healthy friendships are very important to child's development. The likelihood that children's close friendships are with members of the same sex rises to near certainty during middle childhood. This period also brings about

marked changes in the understanding of friendship. Children's concept of friendship also becomes more complex and psychologically based. Making friends is one of the most important missions of middle childhood between 5 to 12 years. This forms a social skill that will endure throughout out their life. These children share pleasure and frustration of life.

In middle childhood, children have more select group of friends and a smaller number of "best" friends. Although best friends are from same sex, boys and girls are certainly not segregated altogether during middle childhood years. Contact in schools and neighborhoods may often be in groups of same sex friends.

Middle Childhood (9-11 years):

Child's growing independence from the family and interest in friends might be obvious by now. Peer pressure can be strong during this time. Children who feel good about themselves are more able to resist negative peer pressure. They make better friendship choices. Children gain sense of responsibility along with growing independence. During this period child might:-

- Form stronger, more complex friendships and peer relations. It is emotionally important to have friends, especially of the same sex.
- Experience more peer pressure.
- Become more independent from the family.
- Become more aware of his or her body as puberty approaches.
- Face more academic challenges at school.

In middle childhood 30% of child's social interactions involve peers. Children's behaviour in the peer group was proven to be a stable indicator of their social competence. In school these children construct understanding of others. They interact competently with their peers and sustain friendship over a time. Children's concern about acceptance in the peer group often rise during middle childhood. By ages 10 to 11 years, most children demonstrate "normative" friendship. During this period they recognise that friends are supposed to be loyal to each other. Research studies have shown that boys after conflicts renew the friendship in one day, but girls took two weeks. to get back with their friends.

Choosing friends:

Many factors are involved in selecting friends. If a child is loved and respected within family, he is more likely to make good choices of friends. If the child has caring and supportive relationships with his brothers and sisters, he would have seen and experienced positive examples of how people can relate. This impression he may transfer it to his own friendships. On the other hand if the family experiences have not been supportive and confidence boosting, he is likely to select out peers who have similar troubles. Parents have to take time and help child understand the need for choosing. A healthy friendship is one in which both children are on an equal footing. Neither child will dominate.They should share and make an effort to please each other. There approach should be that of problem solving. Language skills are essential for solidifying good friendship relation. In middle childhood, some children concentrate on their social activity on a single friend.

Negative peer influence:

Dealing with negative peer influence is a challenge. There are solutions. Some parents demand their child to stop spending time with 'bad influence'. Instead of demanding it is better to reinforce positive friendships with other children whose behaviour and values meet yours. Encourage these children to come home and spent time with your children, to build up a healthy relationship. This approach will help your child to think logically.

Friendship and Social Development:

Friendships are important for social development. Friendship processes are linked to social developmental outcomes also called social provisions. In the interpersonal theory of psychiatry developed by Harry Stack Sullivan argued that friends fulfill social needs called communal needs. This includes companions acceptance and intimacy (Buhrmester 1996). This formulation is similar to Maslow's need for belonging. Friendship relationship satisfies following needs.

1) Communal needs — Interpersonal needs for affection, nurturance, enjoyment, support, companionship, intimacy.
2) Survival needs – physical needs for safety, food, shelter, and health.
3) Agentic needs – Individual needs for competency achievement, status, power, identity and self esteem.

The social concerns of school age children focus on communal needs of acceptance by peers and avoidance of rejection. Shyness and adjustment problems matters in the relationships of friends during middle childhood.

CHECK YOUR PROGRESS

1 Making friends is one of the most important missions of middle child hood – Discuss.

2. Discuss some characteristic features of middle childhood ages ranging from 9 to 11 years.

3. Write note on “healthy friendship” in middle childhood.

10. C FAMILY LIFE IN MIDDLE CHILDHOOD

Family life play a major role in middle childhood, as many changes are brought during this time in a child’s life. Children experience many different types of stress from family during the middle childhood. One of the major stressors children have to cope with is the separation from

parents or guardian. Children attend day care facility or with a caretaker after school hours because of working parents. Family with separated parents cause financial and economical strain in child's life. Family life has a great role in children's well being during middle childhood. It has been observed that:-

- Children have a role to play in decisions that affect their life at home.
- Children benefit from what they see as fair treatment from parents. Value judgement follow pattern laid down by parents.
- Sibling relationships develop a potential to teach each other socially appropriate behaviour.
- They can solve their own problems.

In middle childhood years, the child's understanding of the world become more concrete. He starts operating and interacting with the environment in a more concrete form. Jean Piaget called this middle childhood period as the concrete operational stage. The process of abstract thinking is an emerging concept among middle school children. In middle childhood years, child begin to learn to reason in a logical process. That is reasoning from general rules to particular instances (deductive and reasoning from particular facts to formulate general (inductive reasonings).

Seven and eight year old children need adults who care about them. They talk and play with them these are exciting years for children and for their parents. Parents can help them prepare to be healthy teens and adults. Family members, who understand this stage in child's development will help them to plan activities to help children be more independent and have fun. Parents as providers help children to be successful. They must provide atmosphere to enjoy middle childhood.

MIDDLE CHILDHOOD – POSITIVE PARENTING TIPS:

Discover or rediscover positive ways that you can help your child learn and develop. Middle childhood brings many changes to a child's life. Child's needs change at this time. Parents need to discover and rediscover positive ways to help the development of their child.

During this period, children learn to dress themselves, catch a ball more easily with only their hands, tie-their shoes etc. Developing independence from family becomes more important at this stage. Going to school bring children into regular contact with a larger world. Friendships become

more and more important. Physical social and mental skills develop rapidly during this period. This is a crucial time for children to develop confidence in all areas of life.

Positive parenting Tips

- Show affection
- Recognize
- Help to develop responsibility especially house hold responsibilities.
- Talk with the child about school, friends and other things of childs interest.
- Teach children to respect others.
- Encourage them to help the needy.
- Help to set goals.
- Set clear rules to which child can follow.
- Teach patience.
- Teach to think before he acts.
- Do fun and outings as a family.
- Get involved with child's school.
- Read with the child and converse with him/her.
- Train to be disciplined.
- Avoid punishments.

Between 9 – 11 years of middle childhood.

- Independence from family.
- Interest in friends.
- See that friendship is healthy.
- Help to resist negative peer pressure, as peer pressure will be strong during this period.
- Train to take up responsibilities.
- Help to develop self confidence.
- Encourage to join school and community group.
- Guide to avoid risky habits.

In addition, family members give additional information about safety, maltreatments, injuries, etc.

Practical ways parents can provide children

- Love and nurturance for healthy development.
- Atmosphere to develop self esteem.
- Information on nutrition sleeping hygiene and appearance, health and medical issues, safety education, discipline and guidance, puberty.

CHECK YOUR PROGRESS:

1) State the role of family in children's well being during middle childhood.

2) Middle childhood period is called as Concrete Operational Stage by Piaget – Why?

3) Mention the characteristic features of middle childhood.

4) State positive parenting tips in middle childhood.

5) Write a paragraph on your middle childhood experiences.

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11

TOPIC – 10

ADOLESCENCE: PHYSICAL AND COGNITIVE DEVELOPMENT

Unit structure

11.0 OBJECTIVES

After studying this chapter you will be able to

1. Explain physical development and factors influencing cognitive development.
2. Explain how identity is formed and relationships developed during adolescence.

Adolescence:

Adolescence is the stage of transition between childhood and adulthood. It is the most difficult stage of human life. The term adolescence comes from the Latin word adolescere, meaning "to grow" or "to grow to maturity".

11.1 PHYSICAL DEVELOPMENT IN ADOLESCENCE

This unit will discuss the:

- Physical development that adolescents go through.
- Consequences of early and late maturation.
- Nutritional needs and concerns of adolescents.
- Threats to the well being of adolescents.
- Dangers that adolescent sexual practices present and how these can be avoided.

11.1.1 Physical Maturation:

Adolescence is considered as a period of 'storm and stress' – a period of heightened emotional tension resulting from rapid physical changes. This phase lasts for about a decade, from the age of 12 or 13 until the late teens to early twenties.

Growth during Adolescence: The Rapid Pace of Physical and Sexual Maturation:

Adolescence is considered to begin with puberty, the process that leads to sexual maturity or fertility – the ability to reproduce. The adolescent growth spurt, a rapid increase in height and weight, generally begins in girls around age 10 and in boys around age 12. The growth spurt typically lasts for about 2 years and thus girls tend to be taller than boys in this 2-year period.

Puberty: The Start of Sexual Maturation:

Puberty begins at the age of 11 or 12 for girls and 13 or 14 for boys (like the growth spurt), with the hormone signals from the brain to gonads (the ovaries and the testes). The pituitary gland sends a message to the gonads to begin producing the sex hormones, androgens (male hormones) or estrogens (female hormones). Males and females produce both types of hormones but males have higher levels of androgens while females have higher levels of estrogens. The hormone leptin is thought to play a key role in the onset of puberty. The pituitary gland also signals the body to produce more growth hormones. The interaction between the growth hormones and the sex hormones causes the growth spurt and puberty.

Puberty in Girls:

In females, menarche, the onset of menstruation, a monthly shedding of the lining of the uterus, is the principal sign of sexual maturity. Environmental and cultural factors play a role in determining when puberty begins. In developing (poorer) countries, menstruation begins later as compared to developed countries. Also, girls who are nourished and healthy tend to start menstruating earlier than those suffering from malnourishment or chronic illness. Some studies have shown that the amount of body fat may play an important role in the onset of menstruation. For instance, in United States, athletes with low proportion of

body fat may start menstruating later, while obesity, which increases the secretion of leptin, is associated with early puberty (Vizmanos & Marti-Henneberg, 2000; Woelfle et al., 2007). Other factors such as environmental stress from parental divorce or family conflicts can lead to an early onset (Hulanicka, 1999; Kim & Smith, 1999). Over the past century, the age of onset of puberty has dropped (from 14 or 15 in the 19th century to 11 or 12 in today's times) in most cultures probably because of improved nourishment and reduced disease.

Menstruation is one of the signs of puberty related to the development of primary and secondary sexual characteristics. The primary sexual characteristics are the organs necessary for reproduction. In girls, the sex organs are the ovaries, the uterus and the vagina. Secondary sexual characteristics are the physiological signs of sexual maturation that do not directly involve the sex organs. This includes the development of breasts, pubic and armpit hair. The breasts begin to grow around the age of 10. Pubic hair appears at about age 11 while underarm hair about 2 years later. On an average, menarche occurs about 2 years after the breasts and uterus have begun to develop.

Puberty in Boys:

In males, the principal sign of sexual maturity is the production of sperm. A boy's first ejaculation, known as spermache usually occurs around the age of 13, about a year after the body begins producing sperm. The primary sexual characteristics include the growth of the penis, testes and scrotum (accelerates around age 12 and reaches adult size about 3 to 4 years later), prostrate gland and seminal vesicles, which produce semen (the fluid that carries semen).

Table 11.1 Primary Sex Characteristics: Sex Organs

Female	Male
• Ovaries • Fallopian tubes • Uterus • Vagina	• Testes • Penis • Scrotum • Seminal vesicles • Prostate gland

The secondary sexual characteristics include growth of pubic hair, which begins around age 12, followed by the growth of underarm and facial hair. In boys, the voice deepens because the vocal cords become longer and the larynx larger. Rapid mood swings are common among adolescents because of high hormones levels – boys tend to have feelings of anger and annoyance while girls experience depression and anger.

Table 11.2 Secondary Sex Characteristics

Female	Male
• Breasts • Pubic hair • Underarm hair • Changes in voice • Changes in skin • Increased width and depth of pelvis	• Pubic hair • Underarm hair • Muscular development • Facial hair • Changes in voice • Changes in skin • Broadening of shoulders

Body Image: Reactions to Physical Changes in Adolescence:

Infants also grow at a rapid pace, however unlike them, adolescents are aware of the changes in their body and they may react with joy or horror. Earlier girls used to be anxious about menarche because its negative aspects such as abdominal cramps and messiness were emphasized.

However, today it is viewed in positive light and as a result menarche is seen as enhancing the self esteem, status and provides greater self awareness to girls who see themselves as young adults (Johnson et al., 1999).

Girls usually share about the onset of menstruation with their mothers because the tampons or sanitary napkins are provided by them.

Boys are reluctant to speak about their first ejaculation to their parents or friends probably because it reflects sexual development (Stein & Reiser, 1994).

Although menstruation and ejaculation are private activities, the changes in the body shape and size are public. Girls are often unhappy with their new bodies because with puberty the amount of body fat increases and this is inconsistent with the current standards of beauty.

The Timing of Puberty: The Consequences of Early and Late Maturation:

Early maturation:

Early maturation is advantageous to the boys. Early-maturers tend to be successful athletes probably because of their larger size and are more popular among peers and elders, which enhances the self concept. However, on the downside, boys who mature early are more likely to face difficulties in school, and tend to get involved in delinquency and substance abuse. They seem to get along better with older boys and thus engage in age-inappropriate activities. Early maturing boys are conformists and lack humour, but turn out to be more responsible and cooperative in adulthood (Taga et al., 2006; Costello et al., 2007).

Early maturation comes at a very young age for girls because, in general, they mature earlier than boys. Changes in the body (such as development of breasts) may make them feel embarrassed and different from their peers. Less mature classmates may make fun of them (William & Curie, 2000). On the positive side, early maturing girls are often sought as dates and their popularity may enhance their self concept. However, early-maturers may not be socially ready for the one-on-one dating situation and may feel anxious, unhappy and depressed.

Cultural factors play a significant role in determining how early maturation will be perceived by girls. In the United States, an evident display of sexuality is likely to be seen negatively, while in more liberal countries like Germany, early maturers are likely to have better self - esteem.

Late Maturation:

Late maturation can be disadvantageous to boys – small and lighter boys are perceived as unattractive, they may be at a disadvantage in sports and may suffer socially as they are expected to be taller. This can negatively influence their self concept and its effect may extend into adulthood.

However, on the positive side, late maturers tend to grow up to be assertive, insightful and creatively playful as compared to early maturers (Kaltiala-Heino et al., 2003).

Late maturing girls have some advantages – they have fewer emotional difficulties and tend to fit into the society's ideal of 'slender' body type longer than their early maturing peers who look relatively heavier (Simmons & Blythe, 1987).

The reactions to early and late maturation are complex and are influenced by various factors like changes in peer group, family situation, school or other environmental factors more than the age of maturation or the impact of puberty in general (Dorn et al., 2003).

Nutrition, Food and Eating Disorders: Fueling the Growth of Adolescence:

Health problems are common among the adolescents especially girls because there is a need to fit into the societal ideal of slim. There is an increase in food consumption at this stage to fuel the growth spurt. The average calorie requirements of adolescent girls per day is about 2200 calories and that of boys 2800 calories.

To be nutritionally healthy a balanced diet is recommended for the adolescents – milk and vegetables providing calcium which is essential for the development of bones and prevention of osteoporosis, a condition that 25% of women suffer from in later life. Iron is important as iron deficiency anaemia is quite common during this age.

Two extreme forms of malnourishment faced by adolescents include obesity and eating disorders. Obesity is one of the greatest concerns of adolescence. Obesity refers to being 20% above the average body weight and 1 in 5 adolescents is obese. A major reason for obesity is the lack of exercise. The concerns over body image present several psychological consequences. Apart from this, the excess weight increases the risk of high blood pressure and diabetes. Obese adolescents are about 80% likely to become obese adults (Blaine et al., 2007).

Anorexia Nervosa and Bulimia: Anorexia is a disorder characterised by a distorted body image and starvation. It is a dangerous psychological disorder because about 15 to 20% of its victims starve themselves to death. Anorexia mostly affects females between the age of 12 and

40 years. The disorder is also found among boys with about 10% being its victims.

Bulimia is a type of eating disorder in which the individual engages in binge eating (consuming large amounts of foods in a short span of time) and this is followed by purging – getting rid of the excess food through vomiting or the use of laxatives.

Brain Development and Thought: Paving the Way for Cognitive Growth:

In adolescence, certain changes in the brain lead to advances in the cognitive abilities and this brings about greater independence among them. As the neural networks (connections between the cells of the nervous system) grow, the adolescent thought process becomes refined (Thompson & Nelson, 2001).

There is an increased supply of gray matter during this stage, which reduces later by 1 – 2 % each year. The transmission of neural messages also improves because of increase in myelination (insulation of neurons with fat cells). Both these factors are responsible for the enhanced cognitive abilities of adolescents (Sowell et al., 2003).

The prefrontal cortex, which regulates cognitive functioning – thinking, reasoning, problem solving, decision making, is not fully developed until the early 20s. It undergoes considerable changes during adolescence and this contributes to the intellectual achievements of this phase. It also effectively communicates with other parts of the brain, creating a sophisticated communication system, and thus allows rich processing of information (Scherf et al., 2006).

Another function performed by the prefrontal cortex is that of providing impulse control. A fully developed prefrontal cortex helps control the urge for immediate gratification and inhibits acting on emotions such as anger. Since it is not completely developed in this stage, adolescents tend to engage in risky and extreme behaviours (Weinberger, 2001; Sternberg & Scott, 2003).

The brain development influences dopamine production and sensitivity – due to this adolescents need larger amounts of alcohol to experience its effects, thus increasing alcohol consumption. Changes in the dopamine sensitivity

make them vulnerable to stress, further increasing the risk of alcohol intake.

Sleep deprivation: Due to increased academic and social activities, adolescents tend to sleep late and wake up early, leaving them sleep deprived. This disturbs the body clock. In the conflict between sleeping late and waking up early for classes, they get far less sleep than is needed. Studies show that sleep deprived adolescents have low grades, tend to feel depressed, show greater difficulty in regulating their moods and are more prone to auto accidents (Fredriksen et al.,2004).

11.1.2 Threats to Adolescents' Well-Being:

Some health hazards during adolescents include the consumption of drugs, alcohol and tobacco.

Illegal drugs:

The use of illegal drugs is common among adolescents. A survey on 50000 U.S. students revealed that about 50% of high school seniors and 20% of eight graders had used marijuana with the past year. There are several reasons for drug use during adolescents – some use drugs for the pleasure they provide, others resort to them in an attempt to temporarily escape the stresses of everyday life, some others try them for thrill of doing something illegal. The common use of drugs among well-known models may also be a motivating factor besides peer pressure (Urberg et al., 2003).

Consumption of illegal drugs poses several threats – some drugs are addictive and may lead to a physiological and psychological dependence.

Biological dependence is characterized by the presence of the drug in the body in such a manner that it cannot function without it. It also brings about actual physical changes in the nervous system. With time, the drug may not provide a "high" or pleasure but is needed to feel normal. With psychological dependence, the individual relies on the drug to cope with problems – as an escape from everyday issues. Stress leads to drug use and gradually becomes a chronic way of coping as it provides relief at least temporarily.

Alcohol: Use and Abuse:

Studies have shown there is high alcohol use among the adolescents with more than 75% of college students

having had an alcoholic drink in the last one month (Centre on Addiction and Substance Abuse, 1994). Binge drinking is common among adolescents. For men, binge drinking is defined as having five or more drinks in one sitting; for women it is defined as having 4 drinks in one sitting. It has been found that half of men and 40% of women were involved in binge drinking during the previous 2 weeks. Drinking affects heavy as well as light drinkers – sleep or studies of two thirds of light drinkers was disturbed by other drunken students, about one third had been humiliated or insulted and 25% women reported unwanted sexual advances by a drunken classmate (Wechsler et al., 2003).

There are several reasons for alcohol use among adolescents – male athletes tend to drink more than their peers to prove their competence, some others drink to manage self-consciousness and stress. Many adolescents drink because they believe everyone else is drinking heavily – this is called false consensus effect (Pavis et al., 1997; Nelson & Wechsler, 2003).

In some cases there is a difficulty to control the urge to drink. While some drink throughout the day, others indulge in binge drinking. They begin to depend on alcohol and with time tolerance develops, that is, they need to have increasing amounts of alcohol to create the desired effect.

Genetic factors are thought to play a role in the tendency to drink – alcoholism runs in families. In cases of a parent or family member being alcoholic, alcoholism may result from the need to deal with this stress (Bushman, 1993; Berenson, 2005).

However, irrespective of how alcoholism begins, an adolescent's drinking issues can be effectively addressed by parents, teachers or friends.

Some warning signs for early identification of drug/alcoholic tendencies are mentioned below:

Table 11.3 Warning signs for early identification of drug/alcoholic tendencies

Identification with the drug culture	**Significant changes in academic performance**:
• Drug related magazines. • Liking for clothes with drug-related slogans. • Conversations and jokes on drugs/ drinking. • Collection of beer cans or stuff related to it.	• Falling grades/ marks. • Incomplete assignments. • Increased absenteeism or tendency to postpone.
Signs of physical decline	**Behavioural changes**
• Difficulty concentrating on tasks, poor attention span or memory lapses. • Poor physical co-ordination, slowed or slurred speech. • Untidy appearance, indifference towards hygiene. • Bloodshot eyes, dilated pupils.	• Frequent dishonesty (lying, cheating, stealing); trouble with the police. • Changes in the friend circle, evasiveness about new ones. • Possession of large amounts of money. • Increased and inappropriate anger, irritability, hostility, secretiveness. • Reduced motivation, enthusiasm, self esteem and self-discipline.

Tobacco: The Dangers of Smoking:

Smoking is prevalent among adolescents despite the awareness of its hazards.

Recent studies show that smoking is overall declining among adolescents however it is on the rise among girls. Smoking becomes difficult because it is prohibited in several social places; inspite of this several adolescents still smoke.

Smoking advertisements in the media by popular stars tend to influence adolescents. As a result smoking in viewed as a ‘cool’ thing to do by some (Weiss et al., 2006; Sargent et al., 2007).

The active chemical ingredient in cigarettes – nicotine, is extremely addictive and quickly produces physiological and psychological dependence. Individuals who smoke about 10 cigarettes a day in early life stand a good chance of becoming habitual smokers.

Smoking is reinforced because it induces a pleasant emotional state. Seeing parents and friends smoke also contributes to that effect. Some adolescents also view smoking as a sign of growing up.

Sexually Transmitted Infections (STI):

These are illnesses that are transmitted between humans by means of human sexual behaviour, including vaginal intercourse, oral sex, and anal sex.

AIDS:

Acquired Immunodeficiency Syndrome is a leading cause of death among young people. It is classified as a STI as it spreads mainly through sexual contact. It had begun as a disease that primarily affected those with homosexual tendencies, but it rapidly spread among the heterosexuals and those using intravenous drugs. AIDS has no cure but recent medical advancement has improved life expectancy among those affected by the condition, and AIDS is no longer the sure death sentence it used to be.

Other sexually Transmitted Infections:

Even though AIDS is the most deadly, there are some other more common forms of STIs. It is suggested that about 2.5 million teenagers contract STIs every year. HPV – human papilloma virus is the most common STI. It can be transmitted through genital contact without intercourse. It often doesn't produce any symptoms but genital warts are common and in some cases lead to cervical cancer. However, a vaccine for HPV is now available and the U.S. Center for Disease Control and Prevention recommends that it be administered routinely to girls between 11 and 12 years.

Trichomoniasis is another common STI which involves an infection to the vagina or the penis through a parasite. It doesn't produce symptoms in the initial stages but can later lead to a painful discharge. Chlamydia is a bacterial infection which later causes burning urination and a discharge from

the penis or vagina. It can lead to pelvic inflammation and even to sterility. Antibiotics can be used to treat Chlamydia.

Genital herpes is a virus that produces sores. It begins with small blisters or sores around the genitals which may break open and become painful. The sores often heal after a few weeks but the problem recurs and the cycle continues. When the sores reappear, the infection is contagious.

Gonorrhea and Syphilis are the oldest STIs known. Both these infections were known to be deadly before antibiotics came.

STIs pose a problem not only during the adolescent period but for lifetime as some of them increase the probability of infertility and cancer.

Avoiding STIs:

Self-restraint is the only way to completely avoid STIs. Some of the safer sex practices mentioned in the table below can prove to be useful. Despite the awareness about safer sex practices, its actual use is rare. There is a widespread sense of personal vulnerability, that is, teenagers believe they are very unlikely to contract STIs. This is especially when they perceive their partners to be ‘safe’ – that is, someone they have known well for a relatively long period of time (Lefkowitz et al., 2000).

However unprotected sex remains a risk unless one knows a partner’s complete sexual history and STI status and this information is very difficult to obtain. One, it is embarrassing to ask and secondly, partners may not be precise in responding, due to embarrassment, ignorance, forgetfulness or a sense of privacy. Due to this, STIs continue to be a significant issue.

Table 11.4 Safer Sex Practices

Know your sexual partner – well. Its advisable to learn about one's partner's sexual history.
Use condoms – they are a relatively safe way of preventing STIs.
Avoid the exchange of bodily fluids – anal intercourse can be dangerous as the AIDS virus spread through the small tears in the rectum.
Stay sober - avoid using alcohol and drugs as they impair judgement and can lead to poor decisions.
Benefits of monogamy - People in monogamous relationships with partners who have been faithful are at lower risk of contracting STIs.

Check your progress

1. _____sexual characteristics are the physiological signs of sexual maturation that do not directly involve the sex organs.
2. Two extreme forms of malnourishment faced by adolescents include obesity and _____.
3. _____ Virus is the most common sexually transmitted infection.

11.2 COGNITIVE DEVELOPMENT IN ADOLESCENCE

After reading this unit you will be able to:

- Explain the process of cognitive development among adolescents.
- Discuss the aspects of cognitive development that causes difficulties for adolescents.
- Understand the factors that affect school performance.
- Describe how the college experience is different for men and women.

11.2.1 Cognitive Development:

The ability to think in terms of what might be or thinking beyond the current concrete situation distinguishes

adolescents from children. There are several explanations on cognitive development among adolescents.

Piagetian Approaches to cognitive Development: Using Formal Operations:

Piaget had devised a problem on the pendulum. In this problem one has to determine the speed at which a pendulum moves back and forth.
A 14 year old girl was given this problem to solve. She was also given a weight hanging from a string and told that she can vary several things: the length of the string, the weight of the object, the amount of force used to push the string, and the height to which the weight is raised before it is released.

This girl had no memory of being given the same problem at the age of 8 as a part of a longitudinal study. Back then she was in the concrete operational stage and her attempt was not very successful. Her approach was not systematic - for example, she tried to push the pendulum harder and at the same time shorten the length of the string and increase the weight of the object. Since she changed so many things simultaneously, there was no way determining which factor exactly led to the change in the pendulum's speed.

At 14 her approach was found to be more methodical. Instead of pushing and pulling the pendulum immediately, she stopped to think how to go about. She thought about which factor to consider first and formed a hypothesis. Then, very systematically she varied only factor at a time. As she tested scientifically only one variable at a time, she arrived at the correct answer: the length of the string determines the speed of the pendulum.

Using Formal Operations to Solve Problems:

In the above case, the shift seen in the approach to problem solving shows that she has moved into the formal operational stage of cognitive development. In the **formal operational stage** the ability to think abstractly develops**.** According to Piaget this begins at the age of around 12 years**.**

In this stage, adolescents begin to think in an abstract manner rather than concrete, with the help of principles of logic. In order to check their understanding, they are now able to form hunches, systematically conduct simple experiments to test them and observe their results.

Adolescents are now also able to reason well by beginning with some general theory about what causes a certain effect and then providing explanations for situations in which what outcome occurs. In the earlier stages, children's ability is limited to concrete concepts; what distinguishes the current thinking from the previous, is the ability to begin with abstract concepts and then move to concrete.

Adolescents are also capable of using propositional thought – the reasoning to use logic in the absence of concrete examples. This enables them to understand that if certain premises are true then conclusion must also be true.

For example, All men are mortal (premise)
Socrates is a man (premise)
Therefore, Socrates is mortal (conclusion).

They are also capable of using similar reasoning while dealing with abstract premises and conclusions.

For example, All As are B (premise)
C is an A (premise)
Therefore, C is a B (conclusion).

Piaget believed that the formal operational stages begin with the onset of adolescents and the complete cognitive capacities emerge gradually through a combination of physical maturation and environmental experiences. Adolescents settle into this age by the age of about 15.

Studies have shown that several individuals sharpen these skills at a later age and that many do not use them at all. Only about 40% to 60% of college students and adults are thought to achieve formal operational thinking completely, while some studies show the estimates to be as low as 25%. However, many adults who do not use formal operational thinking in every area are known to be quite proficient in atleast some aspects. (Keating & Clark, 1980; Sugarman, 1988).

Culture influences the way adolescents use formal operations. People with little formal education, who live in isolated areas far away from the sophisticated societies, are less likely to use formal operations as compared to the formally educated people from the technologically advanced societies.

Individuals from cultures using few formal operations are capable of attaining them. However, 'scientific reasoning' which characterizes formal operations tends to be less

valued in these societies. Since this type of thought process is not encouraged by the culture, it is less likely to be used when confronting problems. (Greenfield, 1976; Shea, 1985; Gauvian, 1998).

The Consequences of Adolescent's Use of Formal Operations:

The capacity to use formal operations, the ability to reason abstractly brings about a change in adolescent's everyday behaviour. Unlike earlier where they blindly accepted rules and regulations, their increased reasoning skills enable them to examine these rules and question their parents and other authority figures.

In general, adolescents tend to become argumentative. They take pleasure in using their reasoning abilities to challenge other's explanations and use their critical thinking to analyse the perceived shortcoming of their parents' and teachers'. For instance, if their own parents used drugs in adolescence without consequences, they may see the argument against using drugs as baseless. At the same time, adolescents can be indecisive as they are able to see the merits of multiple sides to issues (Elkind, 1996).

Dealing with these new found critical thinking abilities of adolescents can be a difficult task for their parents, teachers and other adults. However, this makes adolescents interesting as they try to actively understand the values and explanations they come across.

Evaluating Piaget's Approach:

Piaget suggests that the process of cognitive development is universal and it takes place in a series of stages. yet, when individuals across cultures are compared, it is found that there are significant differences in the cognitive abilities from person to person. It has also been found that individuals reach a certain level of thinking in some aspect but not the other. If Piaget's claims were correct, there should have been uniformity in the people's performance on reaching a certain stage.

Piaget's idea of development in stages implies that cognitive growth takes place rapidly, shifting from one stage to the next. Yet many developmentalists argue that cognitive growth is continues – that is, the growth is quantitative rather than qualitative. They also assert Piaget's theory explains behaviour at a particular stage better than why the shift to

the next stage take place. (Case, 1999; Birney & Sternberg, 2006).

In measuring cognitive abilities through certain tasks, Piaget has been criticised for underestimating the age at which certain cognitive abilities emerge. It is now widely accepted that infants' and children's abilities are far more refined than Piaget suggested (Siegler, 2007).

Some developmentalists argue that formal operations are not a sign of complete cognitive growth and that advanced abilities do not emerge till early adulthood. Giesela Labouvie-Vief (2006), a developmental psychologist suggests that a complex society demands not just thought based on pure logic but flexibility in thinking, which is postformal thinking.

In spite of these criticisms, Piaget's theory continues to inspire a number of studies on the development of cognitive capacities. His bold explanations of cognitive growth have given rise to new approaches, such as the information processing perspective.

Information Processing Perspectives:Gradual Transformations in Abilities:

According to the information processing approach, the adolescent's cognitive abilities grow in a gradual and continuous manner. While Piaget views cognitive growth as taking place in a rapid manner, shifting from one stage to the next, the information processing perspective views it as a gradual change in the capacity to take in, store and use information. Several changes occur in people's ability to think, deal with aspects of new situations, sort and manipulate information, memory capacities and perceptual skills (Wellman & Gelman, 1992; Pressley & Schneider, 1997; Wyner, 2004).

Adolescents' general intelligence remains stable but considerable advancements occur in specific abilities – verbal, mathematical and spatial skills develop. Memory improves and adolescents become proficient at multi-tasking, for example, they can study for a psychology test while listening to music.

As Piaget suggested, adolescents are able to understand problems better, grasp abstract concepts, think in a hypothetical manner and identify the possibilities inherent in situations.

Their knowledge about the world improves because of greater exposure and enhanced memory. Thus, the overall mental capacities show significant growth.

The information processing approach states that the major reason for such advancements in cognitive capacities is the growth of metacognition – the knowledge of one's own thought processes and the ability to monitor one's own cognition. Children also tend to use metacognitive strategies, but adolescents are much more proficient in understanding their mental processes. For example, since adolescents have a good understanding of their memory functions, they are better able to estimate how long it would take to memorize a given material. This improved ability helps them with academics. (Kuhn, 2000; Desoete, Roeyers, & De Clercq, 2003).

These newly acquired abilities also tend to make adolescents introspective and self-conscious.

Egocentrism in Thinking: Adolescent's Self-Absorption:

The newly developed metacognitive abilities in adolescents make them think that others are focussed on them and this leads them to imagine about others' thoughts. This tendency dominates the adolescent thought process.

Adolescent egocentrism refers to a state of self-absorption, in which one is the centre of one's world. This egocentrism makes it difficult for them to face criticism, causes them to be critical of authority figures and find faults in others (Elkind, 1985; Rycek et al., 1998; Greene, Krcmar, & Rubin, 2002).

Adolescents often have an **imaginary audience** – unreal observers who pay keen attention to every aspect of the adolescent just as they themselves do. For example, a student may be convinced that the teacher is paying close attention to her or a football player may believe that everyone in the audience is staring at the pimple on his chin.

Egocentrism also makes adolescents think that their experiences are unique. This makes them develop **personal fables**, the idea that what happens with them is exceptional and that it is shared by no one else. Teenagers who have experienced a break up in a romantic relationship may believe that no one has felt hurt like them, no one was ever treated so badly, and that no one can understand what they have been through.

They may also feel that they are not vulnerable to the risks that threaten others. Thus, according to adolescents, there is no need to use condoms during sex because in their personal fables, pregnancy and STIs happen only to other kinds of people, not them. They may also drink and drive because their personal fables suggest that they are careful drivers who are always in control.

11.2.2 School Performance:

An improvement in academic performance is seen as a result of the development of metacognition, reasoning and other cognitive capacities. Studies have shown that there is a relationship between the educational achievement and socioeconomic status (SES). Students from the middle and those from the high socioeconomic classes, earn higher grades and complete more years of school than students from the lower classes. This is because children from the lower SES lack facilities than those from middle and high SES enjoy. They may be malnourished, may not have access to schools, if they live in crowded conditions, there may not be enough space to study. Also, they may not have the books, computers and other material that the children from better homes have.

Their performance at school may not be upto the mark and the grades may deteriorate gradually as their foundation may be weak.

Differences in school achievement are also seen between children from diverse ethnic and racial groups. Studies have shown that African American and Hispanic students perform poorly and receive lower grades. However, Asian American students get higher grades. The socioeconomic factors play a role here - more African American and Hispanic families live in poverty and this may affect academic performance of their children.

John Ogbu (1988, 1992), an anthropologist, suggests that some minority groups lay less emphasis on education. They may believe that in any case they would face prejudice at the workplace and therefore achievement at school does not matter. Minority group members who voluntarily enter a new culture are more likely to succeed at school than those who are brought up in a new culture against their will. For example, the children of the voluntary Korean immigrants to the United States tend to be quite successful at school as compared to the Korean children in Japan, whose parents were forced to immigrate during the World War II.

Attribution also plays a role here – students from many Asian cultures tend to attribute success to internal factors such as effort. On the other hand, the African Americans attribute achievement to factors beyond their control such as luck or societal biases.

Adolescents' beliefs about the consequences of poor academic achievement also determine actual performance- Asian American students may believe that must do well in school to get a good job and be successful.

Cyberspace: Adolescent Online:

The internet serves several educational purposes. It enables students to access library catalogues, collect statistical data and surf through any other relevant information. Studies show that adolescents use the internet for a variety of activities such as emailing, online games, chat rooms, product research, shopping, etc. The internet provides students with an interesting and user friendly option to search for, select and integrate new information.

However, it does have some limitations – the cyber space makes a variety of material, objectionable to parents and adults, easily available to children. Internet gambling is prevalent, where children can use credit cards to bet on sports and games (Dowling et al., 2005; winters et al., 2005; Fleming et al., 2006; Mitchell et al., 2007).

The increasing use of internet has also led to the digital divide – adolescents from poor families and members of some minority groups have less access to the computers as compared to the rich.

Dropping Out of School:

Studies show that although most students complete high school, about half million children drop out before graduating. Its impact is that school dropouts earn 42% less than graduates and their unemployment rate is 50%.

Adolescents tend to drop out due to a variety of reasons – pregnancy, problems coping with the English language, economic reasons, etc.

Males are more likely to drop out than females. Hispanic and African American students are less likely to complete high school than non-Hispanic White students. However, Asians tend to have a low drop out rate (Stearns & Glennie, 2006).

Poverty is an important determinant of whether a student completes high school. Those from the lower income groups are three times more likely to drop out than those from middle and upper middle income groups.

Check your progress:

1. _____ refers to a state of self-absorption, in which one is the centre of one's world.
2. According to Piaget in the _____, adolescents begin to think in an abstract manner rather than concrete, with the help of principles of logic.
3. _____refers to the idea that what happens with them is exceptional and that it is shared by no one else.

11.3 QUESTIONS

1. Explain physical development during adolescence
2. Write short notes on

   1) Late and Early maturation.

   2) Eating disorders during adolescence.

   3) Use and Abuse of drugs during adolescence.
3. Explain the Jean and Piagets approach to cognitive development during adolescence.
4. Explain information processing approach to cognitive development during adolescence.

12

TOPIC – 10
ADOLESCENCE: SOCIAL AND PERSONALITY DEVELOPMENT

Unit Structure

12.0 OBJECTIVES

After reading this unit you will be able to:

- Understand how the self-concept, self-esteem and identity develop among adolescents.
- Discuss some of the psychological difficulties in adolescence.
- Describe how the quality of relationships with family and peers change during adolescence.
- Explain the characteristics and functions of dating and the development of sexuality in the adolescent years.

12.1 SOCIAL AND PERSONALITY DEVELOPMENT IN ADOLESCENCE

12.1.1 Identify: Asking “Who Am I?”:

“Who am I?”, “What is my role?”, “Where do I belong to?” are some fundamental questions for an adolescent. These issues come up primarily because the intellectual capacities of an adolescent to an extent match those of adults. They realize that they are an individual entity - different from everyone else around. In addition to the cognitive advancements, their bodies are growing rapidly

and others are responding to them in new ways. Thus, there is a drastic change in the self concept and self esteem of adolescents.

Self-concept: What Am I Like?:

In childhood, the one's views are not very different from those around. However, in adolescence, one describes who one is, by taking into account others' as well as one's own views (Harter, 1990; Cole et al., 2001; Updegraff et al., 2004).

This wider perspective of oneself is one aspect of the adolescents' growing sense of identity. As they can acknowledge several characteristics of their self simultaneously, their perception of themselves becomes more organized and consistent. They come to view themselves as psychological beings – as abstraction rather than concrete entities (Adams, Montemayor, & Gullotta, 1996). For example, unlike children, adolescents' are quite likely to describe themselves by their principles or ideology (I am an environmentalist) rather than in terms of physical features (I am the fastest runner in my class).

This broad multi-dimensional self-concept of adolescents' can create difficulties for them because of its complexity, especially in the early years. Younger adolescents' may want to be perceived in a certain way ("I am friendly and I like to be with people), and may worry because their actions contradict that view (sometimes I can't stand being with my friends and just want to be alone). However, by the end of adolescence, teenagers realize that behaviours and feelings change from situation to situation (Trzesniewski et al., 2003, Hitlin et al., 2006).

Self-Esteem: How Do I Like Myself?

Adolescents constantly seek to understand who they are (their self-concept) but do not necessarily like themselves (their self-esteem). They are able to view themselves fully due to an increasingly accurate self-concept. These perceptions of self determine their self-esteem. The cognitive advancements that enable them acknowledge several aspects of their self, also help them to assess those in various ways (Chan, 1997; Cohen,J., 1999). An adolescent may have high self-esteem in one area (for example, academics) but poor self-esteem in another (communication).

Gender differences in Self-Esteem:

Studies show that girls tend to have poor self-esteem and are more vulnerable, as compared to boys, especially in the initial years (Watkins et al., 1997; Byrne, 2000; Miyamoto et al., 2000; Ah-Kion, 2006).

Girls tend to be concerned about physical appearance, social success and academic achievement, more than boys. Boys do care about these but tend to be quite casual about the same. Boys tend to have higher self-esteem but gender stereotypes may make them believe that they should be thoroughly competent, confident and tough. Those facing difficulties like not being selected for a sport or being rejected for a date, may feel miserable about it and come to see oneself as incompetent males (Pollack, 1999; Pollack et al., 2001).

Socioeconomic Status (SES) and Race Differences in Self-esteem:

SES and race can affect self-esteem. Higher SES is associated with higher self-esteem among adolescents', especially in middle and later adolescence. Status symbols like expensive clothes or car, that influence self-esteem, become prominent in this stage (Savin-Williams & Demo, 1983; Van tassel-Baska et al., 1994).

Early studies have shown that minority status leads to lower self-esteem. African Americans and Hispanics had lower self-esteem because their self-concept's comprised of feelings of being disliked and rejected, due to society's prejudice. However, recent research has suggested that the self-esteem of African American and White adolescents doesn't differ much (Harter, 1990). This seems to be the effect of social movements within the African American community to boost racial pride. Studies show that strong racial identification is associated with better self-esteem among African American and Hispanics (Phinney et al., 1990; Grayy-Little & Hafdahl, 2000; Verkuyten, 2003).

The similarity in the self-esteem of adolescents across the different racial groups could also be because they focus their preferences and priorities on what they excel at. As a result, African American adolescents may concentrate on areas that they are good at and thus derive their self-esteem from the successes in those fields (Grayy-Little & Hafdahl, 2000; Yang & Blodgett, 2000; Phinney, 2005).

According to some developmentalists, race and gender simultaneously affect self-esteem and have coined the term gender to refer to their joint effect. One study that focussed on the combined effect of these factors found that African

American and Hispanic males and the highest self-esteem, while Asian and Native American females had the lowest levels (King, 2003; Saunders et al., 2004; Biro et al., 2006).

Identity Formation: Change or Crisis?

Erik Erikson (1963) suggested that during adolescence, a search for one's identity, leads to identity crisis in some – a state that involves tremendous psychological turmoil. During this stage, adolescents try to identify their exceptional and distinctive characteristics. The development of cognitive capacities helps them with this task.

They also attempt to determine their strengths and limitations and the roles that are appropriates for their future. This makes them try different roles and alternatives to assess if they match their capacities and perceptions of themselves. In this process of understanding who they are, adolescents make choices about their personal, occupational, sexual and political commitments – Erikson calls this the **identity-versus-identity-confusion stage.**

Table 12.1 Summary of Erikson's Stages

Stage	Approximate age	Positive Outcomes	Negative Outcomes
1. Trust versus mistrust	Birth – 1.5 years.	Feelings of trust from others' support.	Fear and concern regarding others.
2. Autonomy versus shame and doubt	1.5 – 3 years.	Self-sufficiency if exploration is encouraged	Doubts about self; lack of independence.
3.	3 – 6 years	Discovery of ways to initiate action.	Guilt from actions and thoughts

4. Industry versus inferiority	6 – 12 years.	Development of sense of competence.	Feelings of inferiority; little sense of mastery.
5. Identity versus identity confusion	Adolescence	Awareness of uniqueness of self; knowledge of roles.	Inability to identify appropriate roles in life.
6. Intimacy versus isolation	Early adulthood	Development of loving, sexual relationships and close friendships	Fear of relationships with others.
7.Generativity versus stagnation	Early adulthood	Development of loving, sexual relationships and close friendships.	Trivialization of one's activities.
8. Ego-integrity versus despair	Late adulthood	Sense of unity in life's accomplishments.	Regret over lost opportunities.

According to Erikson, adolescents who are not able to find a fitting identity may assume socially unacceptable roles to express what they do not want to be. They may not be able to form and maintain rewarding relationships. Thus, due to a failure to organise it into a coherent whole, their sense of identity becomes diffuse.

On the other hand, those who form a proper identity lay a sound foundation for future psychological growth. They develop a realistic view of their abilities, believe in them and have an accurate sense of self. Thus, they are prepared to make the best use of their strengths (Archer & Waterman, 1994; Allison & Shultz, 2001).

Societal Pressures and Reliance on Friends and Peers:

The adolescent experiences societal pressures during this stage. There is pressure from parents and friends to decide whether one will continue with studies or work after

high school is over and if one chooses to work, what will be the nature of the job. The societal expectations influence the educational lives of adolescents till the end of high school. After that one has to make the difficult choice of which path to take up (Kidwell et al., 1995). During this phase, adolescent depend less on adults and friends become an important source of information. This reliance on peers helps form close relationships and compare themselves with others to define one's own identity.

Erikson believed that this dependence on friends for clarifying one's identity and learning to form close relationships connects this stage to the next level of psychosocial development in Erikson's theory – intimacy versus isolation. Erikson suggested that there is a difference in the way males and females pass the identity-versus-identity-confusion period – males are more likely to follow the series of stages of psychosocial development mentioned in the table of summary of Erikson's stages, and form an established identity before forming intimate relationships. Females on the other hand tend to seek intimate relationships first and then develop a sense of identity through these relationships. However Erikson's views reflect the social scenario that was prevalent when he was writing, when females tended get married early rather than study after high school and have their own careers. In today's times, males and females more or less follow a similar pattern during the identity-versus-identity-confusion period.

Psychological Moratorium:

This refers to a period when adolescents take some time off to assess various roles and alternatives. According to Erikson, due to the pressures of the identity-versus-identity-confusion period, some adolescents may take a semester or a year off travel, work to explore some other option. Many adolescents can not afford a psychological moratorium to assess various identities. Some have to take up part-time jobs after school or immediately after high school for economic reasons, leaving them with little opportunity to explore. However, studying and doing a job simultaneously may provide the student with psychological benefits that the psychological moratorium doesn't.

Limitations to Erikson's Theory:

A major criticism against Erikson is that he has considered male identity development a standard against which to compare female identity formation. According to him, males entered intimate relationships after forming a

stable identity – critics rejected this for being a male-dominated view based on concepts of individuality and competitiveness. In contrast, Carol Gilligan, a psychologist, believed that the identity of a woman was formed while establishing a relationship and that the key to a woman's identity was the caring network between her and others.

Marcia's Approach to Identity Development: Updating Erikson:

Based on Erikson's theory, psychologist James Marcia, suggests that identity can be viewed in terms of whether one of the two characteristics – crisis or commitment- is present or absent. Crisis refers to a period in which a teenager consciously selects between available alternatives and makes decisions. Commitment implies a psychological investment in a course of action or ideology. Some adolescents may shift rapidly from one activity to the other in a matter of few days while some others may become totally immersed in volunteering for a task for days together.

On the basis on interviews with adolescents, Marcia put forth four kinds of identity as shown in the table below:

1. **Identity Achievement:** Adolescents in this category have correctly identified who they are and what they want to do. After a period of crisis in which these teenagers explore various options, they commit themselves to a specific identity. Adolescents who have reached this stage are psychologically healthier, their achievements are greater and their moral reasoning is better than the others.

2. **Identity Foreclosure:** This category comprises of adolescents who have not been through a period of crisis in which the alternatives are looked at. They accept others' decision of what is best suited for them. For example, a daughter wants to be doctor because her mother is one, or a son enters the family business because he is expected to. Foreclosures tend to be happy and satisfied but need social approval and are authoritarian.

3. **Moratorium:** Adolescents who have assessed few options but not committed to any fall in this group. They appear energetic and seek close relationships but tend to be quite anxious and go through lot of psychological turmoil. They develop an identity but only after a struggle.

4. **Identity Diffusion:** The adolescents in this group do not explore alternatives and neither do they commit to any tasks.

They rapidly shift from one thing to the other. According to Marcia, they appear carefree and their lack of commitment prevents them from forming close relationships. Thus they tend to be socially withdrawn.

Table 12.2 Marcia's four Categories of Adolescent Development

		Commitment	
		Present	**Absent**
Crisis / Exploration	Present	Identity Achievement "I love animals, I am going to be a vet."	Moratorium "I am going to work in the coffee shop till I figure out what to do next."
	Absent	Identity Foreclosure' "I am going to do law, just like mom."	Identity Diffusion "I don't know what to do, I have no clue."

At times, adolescents shift from among the four categories, for instance, moving between moratorium and identity achievement- this is called the MAMA cycle (moratorium-identity achievement-moratorium-identity achievement) or a foreclosure who had made a hasty decision about career may re-evaluate and make a different choice later. However, in most cases the identities shape up by late teens or early twenties (Kroger, 2000; Meerus, 1996, 2003).

Identity, Race and Ethnicity:

Development of an identity is a difficult task, especially for members of racial and ethnic groups that are discriminated. The contradictory values in our society suggest that race and ethnicity should not influence opportunities and achievement and everyone should be accepted. This is the traditional cultural assimilation model which suggests that individual cultural identities should be integrated into one. On the other hand, the pluralistic society model states that the society comprises of diverse groups and all cultural groups should preserve their individual features. A third views says that those from the minority groups can form a bicultural identity, by preserving their own

features and integrating into the dominant culture. According to this view, one can have two cultural identities. Adopting a bicultural identity is a common phenomenon. Thus, formation of a racial and ethnic identity is complex and takes time but it results in a rich, multi-dimensional identity (Roberts et al., 1999; Grantham & Ford, 2003; Nada, 2004; Umana-Taylor & Fine, 2004).

Depression and Suicide: Psychological Difficulties in Adolescence:

Most of the adolescents pass through the challenges of this phase – whether it is identity formation or others, without much trouble. However, some experience lot of psychological difficulties while some others suffer from severe psychological problems – depression and suicide being the most common.

Adolescent Depression:

Everyone experiences sad mood, including adolescents. Failure in an exam or an important task, break up in a relationship, loss of a loved one or object can produce feelings of unhappiness, loss and psychological pain. Depression is the typical consequence in such situations.

More than one-fourth adolescents report feeling sad or hopeless for two or more weeks in a row in which they stop day - to-day activities. About two-thirds of adolescents report having experienced similar feelings at some point while about 3% experience major depression –full blown psychological disorder that is severe and lasts for a long time (Grunbaum et al., 2001; Galambos et al., 2004).

Gender, racial and ethnic factors influence the depression rates. Adolescent girls experience depression more than adolescent boys. Some studies have shown that African American tend suffer from depression more than white adolescents. Native Americans also have higher rates of depression (Jacques & Mash, 2004; Hightower, 2005; Li, Digiuseppe & Froh, 2006).

Biological factors are involved in severe, long term depression. Some adolescents tend to be genetically vulnerable to depression – it runs in the families, but social and environmental factors such as significant changes in social lives, can also have an effect. For example, an adolescent who grows up with an alcoholic or depressed

parent, is at greater risk of depression. Other factors such as having fewer friends, being unpopular and rejection are also related to depression among adolescents (Goldsmith et al., 2002; Eley et al., 2004; Zalsman et al., 2006).

The reason for depression rates being greater among girls is not known and there isn't enough evidence suggesting the role of hormones or a particular gene. According to psychologists girls go through greater stress during adolescence due to role conflicts. For example, girls may worry that getting good marks would risk their popularity and not doing well at studies may upset parents (Nolen-Hoeksema, 2003; Gilbert, 2004).

Another reason for greater depression among girls could be coping – girls are more likely to deal with stress by blaming oneself resulting in feelings of helplessness and hopelessness. Boys on the other hand, tend to externalize stress, act more aggressively and impulsively resorting to alcohol and drugs (Hankin & Abraman, 2001; Winstead & Sanchez, 2005).

Adolescent Suicide:

The suicide rates among adolescents in the United States have tripled in the last 30 years. Suicide is the third most common cause of death among 15 to 24 year olds. It is suggested that one teenager commits suicide every 90 minutes. The reported rate may be understating the real rates as parents and medical personnel prefer to report a death as an accident rather than suicide to avoid complications.

However, among all age groups, the highest suicide rate is found in late adulthood (Grunbaum et al., 2002; Joe & Marcus, 2003; Conner & Goldston, 2007).

Although girls tend to attempt suicide more frequently, suicide rates are higher among boys. This is because boys are more likely to use violent means such as guns, while girls tend to rely on less violent means such as drug overdose. Some studies suggest that for every successful suicide, there are as many as 200 attempted suicides (Gelman, 1994; Joseph et al., 2003; Dervic et al., 2006).

The reasons for an increase in suicide among adolescents are not known but it is thought to be increased stress (Elkind, 1994). The suicide rates among other age groups remain fairly stable over time. Depression could be a

risk factor involved in adolescent suicide – most depressed individuals do not commit suicide but those who are depressed and feel hopeless are at a greater risk for suicide. Impulsiveness, social inhibition, perfectionism, excessive anxiety and stress are also associated with increased risk. Easy access to guns in the United States, also has a role to play in high suicide rates (Huff, 1999; Goldston, 2003).

In some cases, suicide may be related to family conflicts or difficulties in relationships or school. A history of abuse and neglect, drug and alcohol abuse may also have a role to play.

Some schools witness cluster suicide – one suicide leads others to attempt it. Due to this, many schools these days have counsellors to address the personal issues of students. Some of the warning signs of potential suicide are given below:

Warning signs to look out for:

- Directly or indirectly mentioning the desire to end one's life, such as "I wish I were dead" or "You wont have to worry about me anymore"
- Preoccupation with death in music, art or literature.
- Difficulties in school such as falling grades or poor attendance.
- Making arrangements like giving away one's prized possessions.
- Writing a will
- Loss of appetite/weight or excessive eating.
- Changes in sleep pattern, slowed movements and activities, withdrawn behaviour, less talkative than usual.
- Dramatic changes in behaviour such as a shy person suddenly becoming outgoing.

Table 12.3

12.1.2 Relationships: Family and Friends:
Family Ties: Changing Relations with Relations:

Adolescents have a wider social circle as compared to young children. Adolescents begin to value relationships outside the family and this changes their interactions with family members (Collins & Andrews, 2004).

The Quest for Autonomy:

Adolescents' behaviour often leaves parents angry and confused. This happens because children who once obliged and listened to every request, command and judgement of theirs' now begin to challenge and rebel against their views. One reason for this is the shift in the roles that adolescents and parents face during this period. Adolescents have a strong need for autonomy, independence and a sense of control over their lives. Most parents welcome this shift intellectually and see this need for independence as a sign of growth. However, the day-to-day behaviour of teenagers wanting to be self reliant may be very difficult for parents to bear. Appreciating this sense of autonomy in the teenagers and actually giving freedom are two different things – in a situation in which an adolescent is not permitted to attend an unsupervised party, one may interpret the parent's refusal as lack of trust. However, for the parent it may simply mean, "I trust you but not the others who'll be attending the party."

As autonomy grows, most adolescents begin to perceive their parents in a realistic manner – instead of viewing parents as nagging them for studies, teenagers understand that this reflects the parents regrets about not having done well themselves and a hope that their children will do better. This increased autonomy changes the parent-child relationship equation – in early adolescence parents have most power, by the end of adolescence, parents and teenagers share power and the relationship is more democratic although parents have a greater say in most matters.

Culture and Autonomy:

The degree of autonomy that adolescents enjoy depends on cultural factors. In the West, where individualism is valued, adolescents seek autonomy early. On the other hand, Asian cultures being more collectivistic, the welfare of the group is considered to be more important than the individual. As a result, the need for independence is less dominant (Kim et al., 1994 Raeff, 2004). The culture also determines the extent to which one feels a sense of duty towards the family. In collectivistic society, an individual feels greater obligation to show respect and provide assistance and financial support. In this culture the need for autonomy is weak and grows slowly (Fuligni & Zhang, 2004; Leung et al., 2006). However, this doesn't have any negative impact on the adolescents (Zimmer-Gembeck & Collins, 2005; Updegraff et al., 2006).

Gender also has a role to play – males are usually more independent at an early age as compared to females. This is consistent with the gender stereotype in the society and parents who value traditional views are less likely to encourage independence in their daughters (Bumpus et al.2001).

The Myth of the Generation Gap:

Many of the teen movies reflect a generation gap – a major difference in the attitudes, values, aspirations and world views of parents and adolescents. For example, a parent of an environmentalist might be shown as the owner of a polluting factory. This depiction is often funny because parents and adolescence do see things differently. However, in reality, whenever a generation gap exists, the divide is quite narrow – parents and adolescents' social, political and religious views tend to match to a large extent. For example, children of Sikhs share religious beliefs with their parents, teenagers concerned about the environment are quite likely to have parents who also worry about the same (Flor & Knap, 2001; knafo & Schwartz, 2003; Smetana, 2005).

Most adolescents get along well with their parents. Teenager do have a strong need for independence, nonetheless they have love, affection and respect for their parents, just as their parents have for them. There are some who have difficulties, but a majority of them share cordial relationships (Gavin & Furman, 1996; Resnick et al., 1997, Black, 2002). Also, the amount of time they spend alone with each parent remains stable throughout adolescence. There isn't enough evidence suggesting that there are more family difficulties during adolescents as compared to any other stage of development (Steinberg, 1993; Larson et al., 1996; Granic et al., 2003).

Conflicts with Parents:

Although parents and teenagers agree on most social and political issues, they differ in their opinions on personal tastes, such as music and clothing. Parents and children may get into conflict when children begin to assert their independence much before the parents think is right. Thus, difficulties are most common during the early stages (Arnett, 2000; Smetana et al., 2003).

Psychologist Judith Smetana suggests that conflicts are greater during the early stages of adolescence because of different definitions of appropriate and inappropriate

behaviours. For example, parents may not approve of piercing or a shabby look, but the adolescent may think it is a matter of personal choice or that it is 'cool'. The cognitive advancements in this stage make them assess parental rules in complex ways and simple arguments of childhood, such as "Do it because I am telling you" may not appeal to them.

Although the assertive and challenging tendencies of early adolescence increase the conflict between teenagers and parents, they are crucial in shaping the parent-child relationship. Parents may react initially in a defensive manner but they do realise that their children are growing up and that they need to be supported. As parents recognise that their teenagers are reasonable in their arguments, parents begin to trust them more thereby allowing and sometimes encouraging independence. This leads to a gradual decline in the conflicts. Although a majority of adolescents pass through this phase with relative ease, about 20% of them have a tough time (Dryfoos, 1990; Dmitrieva et al., 2004).

Cultural Differences in Parent-Child Conflicts During Adolescence:

Parent-teenager conflicts are less prevalent in the traditional, pre- industrial cultures. Adolescents in these cultures show fewer mood swings and risky behaviours as compared to the industrialised cultures (Arnett, 2000; Nelson et al., 2004). This is probably because teenagers in the pre-industrialised cultures expect less independence while those from the industrialised societies, value individualism and expect independence. Thus, parents and adolescents from the industrialised cultures get into arguments about how much independence and in which areas. (Dasen, 2002).

Relationships with Peers: The Importance of Belonging:

Communicating with friends is an obsessive need during adolescence and thus the cell phone and computer gain significance during this stage. As relationships with friends grow increasingly close, the number of hours spent with them increase. Peer relationships matter the most in this phase of life.

Social Comparison:

Friends gain significance for several reasons. Peers allow social comparison – the adolescent is able to compare

and assess one's thoughts, opinions, abilities and physical changes. They are able to better identify with peers, especially during early puberty when they go through some unique and drastic physical and cognitive changes, as they can share and contribute through their own experiences. In such a situation parents cannot provide social comparison. Also, parents are seen as inadequate sources of information because of the adolescent's tendency to challenge and question authority and the strong need for autonomy (Schultz et al., 2002, Rankin et al., 2004).

Reference Groups:

In an attempt to establish a sense of identity, adolescents try out new roles. Friends serve as reference groups – people with whom one compares oneself. They provide useful information about which roles and behaviours are acceptable. The reference groups provide a set norms or standards by which abilities, successes can be evaluated. One doesn't need to belong to a group for it to serve a reference. Adolescents who are unpopular, disliked or rejected by a popular group may still continue to see it as a reference group (Berndt, 1999).

Cliques and Crowds: Belonging to a Group:

The cognitive advancements of this phase enable adolescents to group others in several ways. They may not belong to their reference group but they are a part of some definite group. Unlike children who define people in concrete terms such as 'football players' or 'musicians', adolescents are likely to use abstract terms like 'jocks', 'skaters' or 'stoners' (Brown, 1990; Montemayor, Adams & Gulotta, 1994).

There are two types of groups' that adolescents form – cliques and crowds. Cliques refer to groups of 2 to 12 people who frequently interact with each other. Crowds of larger groups of people who have similar features but do not necessarily interact. 'Nerds' is an example of crowds found in college.

Whether one will be a member of a crowd or cliché is determined by degree of similarity. One important similarity is substance use – adolescents tend to make friends with those whose alcohol and drug use is similar to their own. Although not always true, in many cases friends reflect the academic success and behavioural patterns of adolescents. In early adolescence, peers who are aggressive may be

found to be more attractive than those who are well behaved (Bukowski et al., 2000; Farmer et al., 2003; Kupermidt & Dodge, 2004).

The ability to form cliques and crowds is indicative of the cognitive growth. Abstraction is required for labelling groups – one need to assess people that one rarely interacts and has little direct information. Adolescents develop the cognitive judgement to be able to make this distinction between cliques and crowds only by mid adolescence (Burgess & Rubin, 2000; Brown & Bradford, 2003).

Gender Relations:

Boys tend to hang out with boys while girls tend to hang with girls, when children enter adolescence. This tendency to have same sex friends or sex segregation is called sex cleavage. This situation changes with the onset on teenage. The pubertal changes cause the sexual organs to mature and the society too suggests that it is time for romantic involvement. This changes the manner in which a person of the opposite gender is seen. A typical 10 year old boy is likely to perceive all girls are 'irritating' but heterosexual teenage boys and girls are keenly interested in each others' personality and sexuality.

During early puberty, the previously separate boys' and girl's cliques, now begin to mix and come together. Boys continue to socialise more with boys and girls with girls, but adolescents start attending boy-girl dances, get-togethers or parties (Richards et al., 1998). Gradually adolescents start spending more time with the opposite sex and new cliques, comprising of both boys and girls, are formed. Everyone doesn't participate initially – the leaders or the ones with highest status, in the same-sex cliques, take the first step. With time, most teenagers are a part of mixed cliques. Towards the end of adolescence, cliques and crowds lose their significance as couples or pairs begin to emerge.

Popularity and Rejection:

Popularity is a dominant aspect of most adolescents' life. They tend to be preoccupied with who is popular and who is not. However, their social lives tend to be far more complex. Some adolescents are popular, that is, they are liked by most while some are controversial – they are liked by some and disliked by some others. Unpopular students can become controversial, rejected or neglected. A controversial adolescent may be very popular with a particular group, such as the string orchestra, but not so

popular among others. Rejected adolescents are ones who are uniformly disliked by most while neglected adolescents are those who are neither liked nor disliked – their status is so low that they are ignored by most.

In general, adolescents who are popular or controversial enjoy a higher status while neglected and rejected adolescents have a lower status. The popular and controversial students have more close friends and they tend to share more about themselves as compared to the less popular adolescents. They engage in lot of activities with friends as well as extracurricular school activities. They know about their popularity and are less likely to feel lonely (Englund et al., 2000; Farmer et al., 2003; Zettergren, 2004; Becker & Luthar, 2007).

On the other hand, the rejected and neglected adolescents tend to have fewer friends, engage in fewer social activities and are not so much in touch with the opposite sex. They correctly perceive themselves as unpopular and are more likely to feel lonely. Men and women differ in their ideas of what determines their status in high school – college men suggest that appearance is what makes a girl popular while college women believe that her intelligence and grades play a significant role (Suitor et al., 2001).

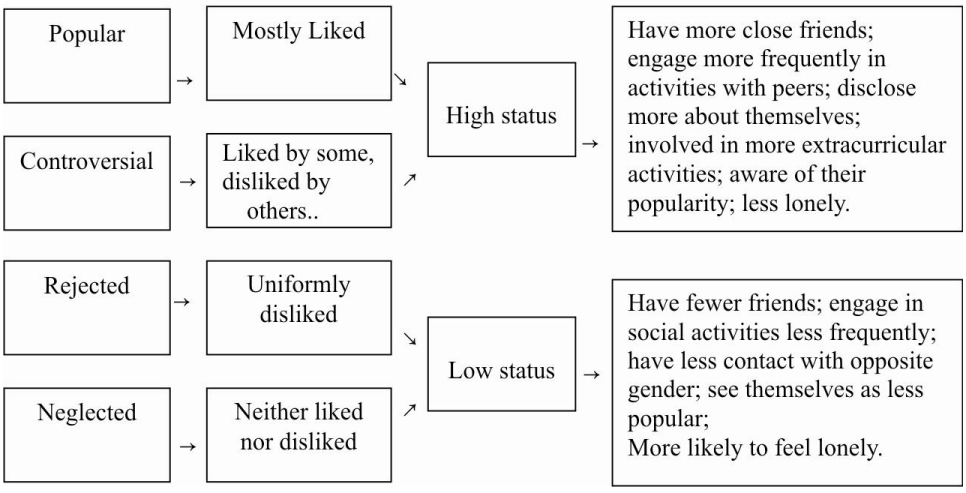

Figure 12.4 The social world of adolescents chart

Conformity: Peer Pressure in Adolescence:

When an adolescent requests for a particular kind of hairstyle or clothing, the parents are likely to pin the blame on peer pressure - the pressure to conform to the behaviours

and attitudes of one's peers. Adolescents believe that wearing the right clothes and having the right attitude determines their popularity. This makes them rely on the opinions of friends while deciding what to wear, which group to join, which girl/boy to date, etc. However, while deciding about non-social matters such as, what career choice to make or solving an important problem, adolescents are most likely to seek advice from adults (Phelan, Yu & Davidson, 1994).

Adolescents tend to rely on those that they see as experts, particularly in the middle and late adolescence. For instance, in social matters, peers are thought to be experts; in areas where adults have more experience and knowledge, teenagers consult them and accept on their opinions (Young & Fergusson, 1979; Perrine & Aloise-Young, 2004).

Thus, the sources of influence change in adolescence. While children are most likely to abide by parent's views, during teenage peer pressure increases as adolescents establish an identity distinct from their parents. Eventually as the sense of independence increase, they conform less to both peers as well as parents. The growing confidence and self-belief enables them to make their own decisions and resist pressures to conform from both sides. However, before they learn to resist peer pressure, teenagers are likely to face problems with friends (Steinberg, 1993; Crockett & Crouter, 1995).

Juvenile Delinquency: The Crimes of Adolescence:

The maximum crimes are committed by adolescents with young adults, than any other age group. Other than drinking and breaking the law, adolescents tend to be excessively involved in violent crimes such as murders, assaults, rape, thefts, robbery and arson. In the U.S., adolescents are known to have committed 40% of the violent crimes in the past decade and overall 16% of the serious crimes committed by person under the age of 18.

There are several factors that lead adolescents towards criminal activity. Some offenders, called **undersocialised delinquents**, tend to be raised by harsh and uncaring parents with little discipline. These adolescents are influenced by peers but their parents failed to inculcate social norms of appropriate and inappropriate behaviours and how to judge one's own actions. Undersocialised

delinquents begin criminal activity before entering adolescence.

They also tend to share certain characteristics. They become violent and aggressive early in life, leading to rejection by peers. Academic failure is common - they tend to be below average intelligent and are quite likely to have been diagnosed with attention problems (Silverthorn & Frick, 1999; Rutter, 2003).

Undersocialised delinquents often suffer from psychological problems. As adults they are likely to meet criteria for a pattern called antisocial personality disorder and they are less likely to be rehabilitated successfully (Lynam, 1996; Frick et al., 2003).

Majority of the adolescent offenders are **socialised delinquents**. Socialised delinquents are aware of and abide by the norms of the society. They do not suffer from any psychological problems. They believe that offences committed in adolescence do not lead to a lifetime of crime. Most socialised delinquents are involved in minor crimes during adolescence, such as shoplifting, and do not continue the same in adulthood.

Socialised delinquents are highly influenced by their peers and their illegal activities often occur in groups. Some studies suggest that they have less parental supervision as compared to others. These minor delinquencies are often a result of giving in to peer pressure or an attempt to establish one's identity as an adult (Fletchet et al., 1995; Thornberry & Krohn, 1997).

12.1.3 Dating, Sexual Behaviour and Teenage Pregnancy:

Dating: Close Relationships in the 21st Century:

When and how adolescents begin to date is determined to a large extent by the culture. The Western culture has always encouraged dating in the context romance, as a way of exploring relationships that are likely to lead to marriage. Today, adolescents perceive dating as having certain limitations and 'hooking up' – a term that implies everything from kissing to sexual intercourse, to be more appropriate. However, inspite of the changing cultural norms, dating continues to be the most popular form of social interaction among adolescents (Denizet-Lewis, 2004; Manning et al., 2006).

The Functions of Dating:

Other than courtship, dating offers a way of learning about intimacy. It also provides a form of entertainment. Dating gives status and can enable an adolescent to establish an identity (Skipper & Nass, 1966; Savin-William & Berndt, 1990; Sanderson & Cantor, 1995).

During the early and middle adolescence, dating doesn't enable one to learn about intimacy because at this stage it is often a very superficial activity where the individuals tend to be inhibited and may not be emotionally involved. Even when sex is a part of the relationship, psychological intimacy is likely to be missing (Savin-William & Berndt, 1990; Collins, 2003; Furman & Shaffer, 2003).

True intimacy emerges during late adolescence. By then, both the individuals involved consider dating seriously as a way of selecting one's prospective life partner and getting married.

Dating can be a challenging process for homosexual adolescents. Sometimes prejudice may compel them to date someone of the opposite sex to fit in. In cases where they seek same-gender relationships, partners may be hard to find because of the difficulty in revealing one's sexual orientation. Homosexual couples who openly date are often ill treated by others (Savin-Williams, 2003).

Dating, Race and Ethnicity:

Culture influences the pattern of dating among those from different racial and ethnic background and especially those who have immigrated from other countries. Parents of such adolescents may prohibit dating altogether or may restrict it to their own racial or ethnic group, as a way of protecting their traditional values.

Since Asian parents may have had an arranged marriage and never been exposed to dating, they tend to hold very conservative attitudes. In many cases they are adamant that there will be no dating without the presence of an elderly person, which may lead to arguments with their children (Kibria, 2003; Haman & Ingoldsby, 2003; Hoelter et al., 2004).

Sexual Relationships:

The pubertal changes lead to the maturation of the sexual organs as well as the experience of previously unfelt emotions. Almost all adolescents tend to be preoccupied

with sexual thoughts most of the times (Kelley, 2001; Ponton, 2001).

Masturbation:

Most adolescent tend to first engage in a solitary sexual act that involves self stimulation or masturbation. About 80% teenage boys and 20% teenage girls report having masturbated by the age of 15. Boys tend to masturbate quite frequently in early adolescence and it declines gradually. On the other hand, girl's frequency is quite low in the initial years but increases throughout adolescence. Studies have shown racial differences in masturbation – African American men and women masturbate less as compared to Whites (Schwart, 1999; Hyde & DeLamater, 2003).

Masturbation is a common phenomenon but it been producing feelings of shame and guilt due to wrong ideas. In the 19th century, people were warned against masturbation as it was believed to lead to dyspepsia, spinal disease, headaches, epilepsy, impaired eyesight, palpitations, pain in the side and bleeding of lungs, spasm of the heart and sometimes sudden death (Gregory, 1856). It was also believed that remedies such as, bandaging the genitals, tying the hands, male circumcision without anaesthesia so that it is remembered, and for girls, administering carbolic acid to clitoris, would bring relief. J.W.Kellogg, a physician, believed that certain grains reduce sexual excitement – this led to the invention of corn flakes (Hunt, 1974; Michael et al., 1994).

Masturbation is now viewed as a normal, healthy, harmless sexual practice. It is also suggested that masturbation can enable one to learn about one's sexuality (Hyde & DeLamater, 2003).

Sexual Intercourse:

Adolescents engage in several forms of sexual intimacy but sexual intercourse is a major high point in their lives. The average age at which adolescents have their first sexual intercourse has been falling over the years with about one in five adolescent having had sex before the age of 15. It is suggested that about half of all adolescent begin having sexual intercourse between ages 15 and 18 and atleast about 80% have had sex before the age of 20. On the other hand, many adolescents are delaying sexual activities. The number of adolescents reporting that they have never had sex has also increased by about 10% from 1991 to 2001, to

a large extent due to fear of being infected with AIDS (Seidman & Reider, 1994; Centre for Disease Control & Prevention, 1998).

Sexual conduct is governed largely by societal norms. Earlier, premarital intercourse was accepted among males but they had to ensure that they married virgin women. Today, the scenario has slightly changed where premarital sex is permissible between men and women involved in a long term committed or loving relationship (Hyde & Delamater, 2004).

Even in liberal cultures, the attitudes towards sexual behaviour are far more lenient for men as compared to women. In some cultures the norms for men and women are different – for example, in North Africa, the Middle East and most Asian cultures, women are expected to abstain from sexual intercourse until marriage. Mexican men are far more likely to engage in premarital sex as compared to women. On the other hand, premarital sex is a common practice among Sub-Saharan African women (Liskin, 1985; Spira et a;., 1992, Johnson et al., 1992; Peltzer & Pengpid, 2006).

Sexual Orientation: Heterosexuality, Homosexuality and Bisexuality:

Heterosexuality, sexual attraction towards members of the opposite sex is the most common pattern of sexual development. Some adolescents tend to develop a homosexual orientation, attraction towards members of the same sex while some others tend to be bisexual, sexual attraction towards members of both the genders.

In an attempt to explore homosexuality, about 20 to 25% adolescent boys and about 10% teenage girls have atleast one same-sex sexual experience. It is believed that heterosexuality and homosexuality are not two distinct orientations. Alfred Kinsey, a pioneer sex researcher, suggested that sexual orientation, like other attributes, runs on a continuum, where ‘exclusively homosexual’ lies on one end and ‘exclusively heterosexual’ on the other while people who show homosexual and heterosexual tendencies are the ones who fall in the middle of the continua.(Kinsey, Pomeroy & Martin, 1948). Some studies suggest that about 4 to 10 % of both men and women engage in exclusively homosexual practices for most of their lives (Michael et al., 1994, Diamond, 2003; Russell & Consolacion, 2003).

The difference between sexual orientation and gender identity further complicates sexuality. While sexual orientation relates to whether one's sexual interests lie in the opposite gender, same gender or both, gender identity refers to one's belief about whether one is psychologically a male or female. The two are not necessarily related to each other – a man with strong masculine features may be attracted to other men. Thus, the traditional 'feminine' or 'masculine' behaviours do not necessarily have anything to do with one's sexual orientation or gender identity (Hunter & Mallon, 2000).

Some people believe that they are trapped in the wrong gender's body – for example, an individual with male genitals may believe psychologically that one is a female. These transgendered individuals often go through elaborate surgical procedures involving administration of hormones and reconstructive surgery to acquire the physical features of the desired gender.

What Determines Sexual Orientation?

The factors involved in the development of one's sexual orientation are not clearly known. Studies suggest that genetic and biological factors have a determining role to play. Identical twins who share 100% of their genes are more likely to both have a homosexual tendency as compared to siblings who have a different genetic build. Other studies have shown that there are structural differences in the brains of homosexuals and heterosexuals and that the production of hormones is also related to sexual orientation (Lippa, 2003; Rahman & Wilson, 2003; Kraemer et al., 2006).

Some other studies highlight the role of family, peer and environmental factors. For instance, the psychoanalytical theory suggests that homosexuality results from an excessive identification with the opposite sex parent instead of the same sex parent in the phallic stage of psychosexual development (Freud, 1922/1959). The problem with Freud's or any similar theory is that there is no way of proving that a particular family dynamic or child rearing practice is consistently linked to sexual orientation. Other explanations like the learning theories which point to rewarding pleasant homosexual experiences and unpleasant heterosexual experiences as causative factors, are criticised for providing incomplete accounts (Bell & Weinberg, 1978; Isay, 1990; Golombok & Tasker, 1996).

Thus there are no accepted explanations of what determines sexual orientation but most experts believe that it is a result of a complex interaction of genetic, biological and environmental factors (LeVay & Valente, 2003).

Challenges Facing Gay and Lesbian Adolescents:

Adolescents with homosexual orientations go through a difficult teenage period than others. Gay and lesbian adolescents may face rejection from parents, peers and may be even tortured and assaulted by others, putting them at a greater risk for psychological disorders – the depression and suicide rates tend to higher in this population (Ryan & Rivers, 2003; Harris, 2004; Murdock & Bolch, 2005; Koh & Ross, 2006; Lester, 2006).

Teenage Pregnancies:

Although the teenage birth rate has dropped by about 30% in the last 10 years, teenage pregnancy continues to be a major social problem in the U.S. with about thousands of adolescents giving birth every year. In the U.S. the prevalence of teenage births is 2 to 10 times greater than any other developed nation.

Some factors that have led to a decline in the rate of teenage pregnancy in the U.S. are:

(i) A general awareness about unprotected sex has increased through new initiatives such as sex education in two-thirds of all U.S. high schools.

(ii) The rate of sexual intercourse has declined – there has been a drop from 51% to 43% from 1991 to 2001 in the percentage of teenage girls having sex.

(iii) There is an increase in the use of condoms and other forms of contraception – about 57% of adolescents who are sexually active report using a condom.

(iv) The nature of sexual activity has changed. For example, in a National survey of adolescent boys, about half of them between ages 15 and 19 reported receiving oral sex. Oral sex is not considered as ‘sex’ by many adolescents and its becoming popular as an alternative to sexual intercourse (Bernstein, 2004).

(v) To some extent, virginity pledge by adolescents is also thought be a reason for the decline in teenage pregnancies. These public pledges are an important part of some sex education programmes but they are often found to be ineffective – for example, in one study, from about 12000 adolescents who had taken the pledge, 88% reported having engaged in sexual intercourse. Nonetheless, the pledges helped them postpone sexual activity by about 18 months on an average (Bearman & Bruckner, 2004).

An accidental pregnancy can have a shattering impact on both the mother and the child. Today, teenage mothers are very less likely to be married as compared to earlier times and they tend to take care of the child themselves, without the help of the father. Due to lack of financial and emotional assistance, the mothers may have to give up education to take up an unskilled, poorly paying job for most of her life. Some may become dependant on the help provided by welfare organizations. On the whole, her physical and psychological health may suffer because of constant stress (Manlove et al., 2004; Gillmore et al., 2006; Oxford et al., 2006).

Check your progress:

1. Erikson calls the process of adolescents understanding, who they are as the _____ stage.
2. _____delinquents are aware of and abide by the norms of the society.
3. _____ orientation refers to sexual attraction towards members of both the genders.

12.3 QUESTIONS

1. Write a detailed note on the physical growth during adolescence with reference to puberty.
2. Explain the use and abuse of illegal drugs, alcohol and tobacco among adolescents.
3. Discuss the Piagetian approach to cognitive development among adolescents.
4. Describe the process of identity formation during adolescence focussing on self-concept and self-esteem.
5. Discuss in detail Marcia’s approach to identity development highlighting the four categories of identity.

6. What are some of the psychological difficulties faced by adolescents?

7. Explain the nature of adolescent relationship with parents.

8. Discuss what is sexual orientation and how it is determined. Elaborate on the sexual relationships during adolescence.

9. Write short notes on:

a. Eating disorders

b .Sexually transmitted infections

c. Egocentrism

d. Internet use among adolescents

e. Identity-versus-identity-confusion-stage

f. Peer relationships

g. Juvenile delinquency

h. Teenage pregnancy

<u>Suggested Reading</u>:

Elizabeth B. Hurlock (2006) Developmental Psychology (5th Ed.) Tata McGraw Hill, Customized Edition.

Papalia, D.E, Olds, S.W. & Feldman, R (2004) Human Development (9th Ed.) McGraw Hill, International Edition.