
UNIT 2 COGNITIVE CHANGES (EARLY ADULTHOOD, MIDDLE AGE, OLD AGE)

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2.0 INTRODUCTION

Young adulthood is a time when most of us finish school, find a career we enjoy, and create a family of our own. The cognitive stages during the early adulthood can be discussed as a period of realistic and pragmatic thinking; reflective and relativistic thinking. According to Piaget, he thought that young adults were quantitatively advanced in their thinking (they have more knowledge), however, they are qualitatively similar. He also believed that adults increase their knowledge in a specific area.

In this unit we will be dealing with all the three stages of adulthood and examine the physical, cognitive and other changes that come about. Particularly the focus will be on cognitive development.

2.1 OBJECTIVES

After going through this unit, you will be able to:

- define and describe the period of early adulthood;
 - describe the cognitive changes during early adulthood;
 - explain the characteristics of middle adulthood;
 - delineate the cognitive changes during middle adulthood;
 - define and describe the period of old age; and
 - analyse the cognitive changes during old age.
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2.2 EARLY ADULTHOOD

Young adulthood is a time when most of us finish school, find a career we enjoy, and create a family of our own. Physically, it is a time where we are our healthiest and will reach our peak performance. Cognitively, it is a time to grow up and make life decisions.

Socioemotionally, it is a time to take on roles of independence, lifestyles, marriage, and family.

According to Erik Erikson's eight stages of development, this is a time of intimacy vs. isolation. One either gets involved in an intimate relationship or isolates oneself. According to the literature, many areas of development are paramount during early adulthood.

The cognitive stages during the early adulthood can be discussed as a period of realistic and pragmatic thinking; reflective and relativistic thinking. According to Piaget, he thought that young adults were quantitatively advanced in their thinking (they have more knowledge), however, they are qualitatively similar. He also believed that adults increase their knowledge in a specific area.

Between the ages of 35-60, we find vast changes in many areas of our lives. The most obvious changes related to our lifestyle include: physical development and health, career and finances, marriage, and leisure activities. For many, midlife is a time when they start to think about "how much time they have left". Individuals begin to reexamine their lives, their relationships, their work, and even to question the meaning of it all. This process has been referred to as a mid-life crisis. Clearly, middle adulthood is a time of change and development.

Middle adulthood is the period in which an individual changes in their cognitive functioning as concerned to their intelligence: crystallized and fluid; information processing and memory; expertise; career, work and leisure; religion, health and coping; and meaning in life.

While the adult years are generally a time of vitality and good health, there are health concerns. The main health problems of middle adulthood are cardiovascular disease, cancer, and menopause. Another major problem that effects health and behaviour is stress. Overall this is a time of major change and development physically and mentally.

During the middle adult years there is a noticeable change in how adults view their careers. By this time most individuals have settled into their careers and between the ages of 40-45 have ceased to advance up the career ladder. In general, job satisfaction and commitment tend to be high and continue to increase into our sixties.

It is also at this time that adults adjust their idealistic hopes to realistic possibilities. This adjustment to attainable goals is dependent on how much time is left before retirement, with retirement planning being a major area of financial concern. These reassessments may lead to stress and sadness over unaccomplished goals, which for a small few may lead to a midlife career change.

Crystallized intelligence improves through middle age and on. The ability to remember and use information acquired over a lifetime is increased, and also depends on education and culture of the individual. An individual is able to use stored information's and process automatically in their daily lives.

Many psychologists believe that fluid intelligence was primarily genetic and that crystallized intelligence was primarily learned. This nature-nurture distinction is probably invalid, in part because the acquisition of crystallized intelligence is affected by the quality of fluid intelligence.

Another financial adjustment that tends to take place for many midadults is the planning for college and setting aside the necessary funds for their children. In response to these growing financial needs and greater free time, due to their children getting older, many women enter or reenter the workforce. In short, this tends to be a time of career and financial readjustment and planning for both men and women.

Leisure holds an important place in helping adults to deal with life experiences. Not only does leisure enhance ones well-being it is also a buffer to the stresses of life.

Cognitive Changes (Early Adulthood, Middle Age, Old Age)

Early adulthood is the stage of our life between the ages of about 20-40 years old, which are typically vibrant, active and healthy, and are focused on friendship, romance, child bearing and careers. It is the first stage of adulthood in which the body physically changes and is one of the hardest times in our lives after teenage years. One has to deal with so much in this time and it seems to be real time of self search as well as preparation. During this time in our life we find ourselves with a new sense of independence and for the first time in life we really feel free. However, along with that comes a lot of added personal responsibility to both ourselves and others and we really begin to learn more about ourselves as well as others through social interaction.

Young adulthood is a time when most of us finish school, find a career we enjoy, and create a family of our own. Physically, it is a time where we are our healthiest and will reach our peak performance. Cognitively, it is a time to grow up and make life decisions.

2.2.1 Cognitive Changes

The cognitive stages during the early adulthood can be discussed as a period of realistic and pragmatic thinking; reflective and relativistic thinking. According to Piaget, he thought that young adults were quantitatively advanced in their thinking (they have more knowledge), however, they are qualitatively similar. He also believed that adults increase their knowledge in a specific area.

Realistic and Pragmatic Thinking

Realistic thinking means looking at all aspects of a situation (the positive, the negative, and the neutral) before making conclusions. In other words, realistic thinking means looking at yourself, others, and the world in a *balanced* and *fair* way.

Some experts argue that the idealism of Piaget's formal operational stage declines in young adulthood, replaced by more realistic, pragmatic thinking. Schaie argues that adults use information differently than adolescents.

According to K.Warner Schaie, adults progress beyond adolescents only in their use of intellect. We typically switch from actually acquiring knowledge to applying that knowledge in our everyday lives. To support his theory of development, he included the following two stages to describe the cognitive changes in adults:

- *Achieving Stage*

Involves applying ones intelligence to situations that have profound consequences on achieving long term goals, such as those involving careers. This stage of development includes mastering the cognitive skills needed to monitor one's own behaviour. Young adults in this stage will also acquire a considerable amount of independence.

- *Responsibility Stage*

This stage of development begins in early adulthood and extends into middle adulthood. This is the time when a family is established and attention is given to the needs of a spouse and children. Young adults incur social responsibilities, deal with starting a career, and must take on some level of responsibility for others at work and in the community.

According to Labouvie-Vief, there are many changes that take place in the thinking of young adults, including a new integration of thought. Young adults rely less on logical analysis when solving problems. Idealised logic is replaced with commitment, and youth

focus their energy on finding their niche in the work place and society. During young adulthood, logical skills don't decline because cognitive abilities are strong.

Reflective and Relativistic Thinking

William Perry said that adolescents often engage in dualistic, absolute thinking, whereas adults are more likely to engage in reflective, relativistic thinking. The term dualistic thinking is used to describe an adolescents view of the world. Everything is seen in the polar terms or opposites. Examples for this are right/wrong or good/bad.

As youth mature, dualistic thinking is replaced by multiple thinking. They gradually become aware of the diversity of opinion in other people and realise that authority may not have all the answers. Young adults begin to create their own style of thinking, and believe that others are entitled to the opinion they hold and that one opinion is good as anyone's else's. This leads to the next form of thinking, relative subordinate thinking. Here, personal opinions begin to be challenged by others, and a logical evaluation of knowledge is actively pursued. This leads to the final form of thinking, which is full relativism. In this stage of thinking, young adults completely understand that truth is relative, and knowledge is constructed and not given, contextual and not absolute.

Post formal thought is qualitatively different than Piaget's formal operational thought. It involves understanding that the correct answer to a problem requires reflective thinking, may vary from one situation to another, and that the search for truth is often an ongoing, never-ending process. Along with this is the belief that solutions to problems need to be realistic and that emotion and subjective factors can influence thinking.

2.3 MIDDLE ADULTHOOD

Middle age is the period of age beyond young adulthood but before the onset of old age. Various attempts have been made to define this age, which is around the third quarter of the average life span of human beings.

In middle adulthood, an important challenge is to develop a genuine concern for the welfare of future generations and to contribute to the world through family and work. This period is aged between 40-60 years of life.

From the period of twenties and thirties, the individual arrives at middle age in the forties and fifties. Middle age is characterised by competence, maturity, responsibility and stability. This is the time when one wants to enjoy the success of job, satisfaction derived from the family and social life. People look forward to the success of their children. Attention gets more focused on health, the fate of children, ageing parents, the use of leisure time and plans of old age.

Middle aged adults often show visible signs of ageing such as loss of skin elasticity and graying of hair. Physical fitness usually wanes, with a 5-10kg accumulation of body fat, reduction in aerobic performance and a decrease in maximal heart rate. Strength and flexibility also decrease throughout middle age. However, people age at different rates and there can be significant differences between individuals of the same age.

Midlife is also viewed as a period of creativity and significant contribution to society. It is found that the best works of scientists, writers and artists are produced during the late forties and early fifties.

The changes that occur from adolescence to young adulthood may be stressful at times, but between the ages of 19 and 30 we are at our prime physically, and our cognitive skills are becoming finalised. Sure, sometimes it seems like we're dealing with a million things all at once and that one of any number of things could change the rest of our lives,

but that's the best part about it. Young adulthood is when (most of us) decide exactly what it is that we want to do with the rest of our lives whether it's raise a family, start a career, or both.

2.3.1 Cognitive Changes

Middle adulthood is the period in which an individual changes in their cognitive functioning as concerned to their intelligence: crystallized and fluid; information processing and memory; expertise; career, work and leisure; religion, health and coping; and meaning in life.

Intelligence

Cognitive development is multidirectional. It gains in some area and losses in others. Cross sectional measures of intelligence show decreases with age. There may be cohort effect of better or more schooling. Longitudinal measures show increase, at least until the age of 50s. It may be inflated due to practice effects and attrition. Cognitive abilities are more likely to increase than decrease, with exception of arithmetic skills, which begin to shift slightly downwards by age 40.

Fluid intelligence refers to our ability to see relationships, use abstract reasoning, and analyse information. Crystallized intelligence refers to our ability to use knowledge, experience, vocabulary, and verbal memory (Horn & Hofer, 1992). Fluid intelligence declines with age, but crystallized intelligence continues to grow as we learn more during middle age.

- *Fluid Intelligence*

Fluid intelligence is the flexible reasoning and is made up of the basic mental abilities such as inductive reasoning, abstract thinking and speed of thinking required for understanding any subject. It is fast and abstract reasoning, in adults, there is a decline with age. It includes nonverbal abilities and nonverbal puzzle solving, novel logic problems; allows best works at age 20s and 30s by mathematicians, scientists and poets.

Fluid intelligence peaks during the early adulthood and then declines ability to apply mental powers to new problems, perceiving relationships, forming concepts and drawing inferences. It declines probably due to changes in brain. These differences might be due to cohort effects related to educational differences rather than to age.

- *Crystallized Intelligence*

Crystallized intelligence is the verbal reasoning that holds across the lifespan which reflects accumulated knowledge and vocabulary. It allows best works at age of 40s, 50s, and older by historians, philosophers, prose writers. It refers to the accumulation of facts, information and knowledge that comes with education and experience within a particular culture.

Crystallized intelligence improves through middle age and on. The ability to remember and use information acquired over a lifetime is increased, and also depends on education and culture of the individual. An individual is able to use stored information's and process automatically in their daily lives.

Many psychologists believe that fluid intelligence was primarily genetic and that crystallized intelligence was primarily learned. This nature-nurture distinction is probably invalid, in part because the acquisition of crystallized intelligence is affected by the quality of fluid intelligence.

Fluid intelligence declines during adulthood, although this decline is temporarily masked by an increase in crystallized intelligence.

IQ tests may lack ecological validity as the reaction time slows down with age and results may be due to physical changes and not cognitive changes.

Robert Sternberg proposed that intelligence is composed of three distinct parts:

- *Analytic / Academic*

It consists of mental processes that foster efficient learning, remembering and thinking. Multiple choice tests, with one and only one right answer reward analytic intelligence. They tend to have an extensive, highly organised knowledge of a particular domain and increase in work satisfaction. There is a greater commitment towards the job. They have greatest physical and psychological well-being. The current middle-aged worker faces more challenges, and increased career challenges lead to career changes. The midlife career changes can be self-motivated or imposed by others.

- *Creative*

Creativity is another important adult skill related to intelligence. Like intelligence, though, it is hard to agree what it is. We know that some kinds of creativity, like writing, peaks during middle adulthood. Creativity and practical intelligence often combine to create people we call experts in their fields, whether repairing cars, farming, writing, or designing a spacecraft.

It involves the capacity to be flexible and innovative when dealing with new situations. Expertise increases in the middle adulthood years. They tend to use the accumulated experience of their life situations to solve problems. There is more creativity and flexibility in their domain than novices.

They prefer to make their own decisions and plans. They prefer their own judgment to that of others and don't tend to back down in the face of criticism or disagreement. They are most resourceful when faced with unique circumstances or problems. They show an imaginative use of many different words. They show more flexibility in their approach to problems, are eager to try new avenues, and are not bound to rules or accepted ideas of the way things work. They show originality and do not often come up with off the shelf solutions.

- *Practical*

It enables the person to adapt his/her abilities to contextual demands. They tend to have a pleasant time after work. They have more time and money to pursue activities and interests. There is decreased rate of heart disease and death due to vacations and leisure. During this time they are preparing themselves for retirement.

Information Processing and Memory

During the middle adulthood the speed of information processing, reaction time, and memory declines. The use of effective memory strategies can decrease the decline.

Religion, Health, Coping and Meaning in Life

Religion and spirituality is an important dimension of life during this stage. A significant increase in religiosity and spirituality is seen during middle age. There is an individual difference in religious interest, as the females show a stronger interest in religion than males do. Positive association of religious participation and longevity is noticed. Religion promotes physical and psychological health and positive functions of religious coping.

According to Victor Frankl, the examining of the finiteness of our existence leads to exploration of meaning in life. Many middle-aged individuals increasingly examine life's meaning.

Self Assessment Questions

- 1) Answer the following statements with True or False:
 - i) Young Adults is the time of freedom and when they find a sense of independence. ()
 - ii) Piaget thought that young adults are not quantitatively advanced in their thinking. ()
 - iii) William Perry gave views about realistic thinking. ()
 - iv) As youth mature, dualistic thinking is replaced by multiple thinking. ()
 - v) Crystallized intelligence is in peak during middle adulthood. ()
- 2) Fill in the blanks:
 - i) Creativity involves the capacity to be _____ and innovative when dealing with new situations.
 - ii) _____ refers to our ability to see relationships, use abstract reasoning and analyse information.
 - iii) _____ means looking at all aspects of situations before making conclusions.
 - iv) Cognitive development is _____.
 - v) Religion and _____ is an important dimension of life during middle adulthood.

2.4 OLD AGE

Late adulthood (old age) is generally considered to begin at about age 65. Erik Erikson suggests that at this time it is important to find meaning and satisfaction in life rather than to become bitter and disillusioned, that is, to resolve the conflict of **integrity vs. despair**. Despite the problems associated with longevity, studies of people in their 70s have shown that growing old is not necessarily synonymous with substantial mental or physical deterioration. Many older people are happy and engaged in a variety of activities. **Gerontology**, an interdisciplinary field that studies the process of ageing and the ageing population, involves psychology, biology, sociology, and other fields.

Late Adulthood is the period in an individual's life beginning at ages sixty or seventy and ending at death. This life period, like any other, is one of continuing change and adjustment both in the physical and the psychosocial realms.

Theories of successful ageing include the following:

The **disengagement theory** states that as people age, their withdrawal from society is normal and desirable as it relieves them of responsibilities and roles that have become difficult. This process also opens up opportunities for younger people; society benefits as more-energetic young people fill the vacated positions.

The **activity theory** contends that activity is necessary to maintain a "life of quality,"

that is, that one must “use it or lose it” no matter what one’s age and that people who remain active in all respects—physically, mentally, and socially—adjust better to the ageing process. Proponents of this theory believe that activities of earlier years should be maintained as long as possible.

Ageism may be defined as the prejudice or discrimination that occurs on the basis of age. Although it can be used against people of all ages, older people are most frequently its target and it may often result in forced retirement. Stereotyping of the elderly is also an aspect of ageism, as seen in such a statement as “He drives like a little old lady.”

2.4.1 Cognitive Changes

Cognitive development is a general loss cognitively as people move closer to the end of life. The study of cognitive changes in the older population is complex. Response speeds (neural and motor) have been reported to decline; some researchers believe that age-related decrease in working memory is the crucial factor underlying poorer performance by the elderly on cognitive tasks.

Selective optimisation with compensation is one means of making best use of their cognitive skills. They narrow their goals, select personally valued activities so as to optimise or maximise returns from their energy. They find means to compensate for losses.

Factors related to Cognitive change – mentally active people are likely to maintain their cognitive abilities into advanced old age. Retirement can bring about changes in cognitive abilities depending on how those years are used. Terminal decline is a steady, marked decrease in cognitive functioning prior to death.

Memory

The older adults are taking in information more slowly, and they use strategies less, can’t inhibit irrelevant information and retrieve important information from long-term memory. So memory failure increases. Slower processing speed means there will be less retained from current activities. They also forget context, which helps us recall information. Recognition memory does not decline as much as free recall.

- Deliberate vs. automatic memory
Implicit memory is memory without conscious awareness. This memory is more intact than deliberate memory, trying to recall information.
- Associative memory
Associative memory deficit is a problem creating and retrieving links between pieces of information. This is more common for elders.
- Remote memory is very long-term recall. It is not any clearer than recent recall for seniors, even though the myth is that seniors remember the past better than recent events.
- Autobiographical memory is memory for your own personally experienced events. Seniors best recall their adolescent and early adulthood experiences better than later life experiences. There was a lot of novelty in those times, as well as life choices being made—spouses, jobs, educational choices. These experiences were more emotionally charged, so they are remembered better. They become part of a person’s life story, and are remembered often.
- Prospective memory is remembering to do planned activities in the future. There is more forgetfulness and absentmindedness as people age. They tend to do better on event-based memory tasks than time-based tasks.

Language processing

Cognitive Changes (Early Adulthood, Middle Age, Old Age)

The two aspects of language processing diminish in older age: finding the right words and planning what to say and how to say it. Their speech will have more pronouns, unclear references, they will speak more slowly, pause more often, and have trouble finding the right words. There will be more hesitations, false starts, sentence fragments, word repetitions as they age. They tend to simplify their grammatical structures, so they can better retrieve the words they want.

Problem solving

The problem solving declines in late adulthood so married people tend to collaborate more in problem-solving. They will be better at solving problems they think are under their control. They will make more rapid decisions in areas of health, as that is an area they feel they have learned a lot about.

Wisdom includes practical knowledge, ability to reflect on and apply that knowledge, emotional maturity, listening skills, and creativity in a way that helps others. This does increase with age. It occurs as people deal with more difficulties in life and find various means to adapt to change. Those with wisdom tend to have better education and are physically healthier. It requires insight into the human condition and often follows that people with this ability are found in high positions in business and politics and religion.

- Knowledge about fundamental concerns of life: human nature, social relationships, emotions.
- Effective strategies for applying that knowledge to making life decisions, handling conflict, giving advice.
- A view of people that considers multiple demands of their life contexts.
- Concern with ultimate human values, the common good, respect for individual differences in values.
- Awareness and management of the uncertainties of life – many problems have no perfect solution.

Intellectual changes in late adulthood do not always result in reduction of ability. While **fluid intelligence** (the ability to see and to use patterns and relationships to solve problems) does decline in later years, **crystallized intelligence** (the ability to use accumulated information to solve problems and make decisions) has been shown to rise slightly over the entire life span. K. Warner Schaie and Sherry Willis reported that a decline in cognitive performance could be reversed in 40% to 60% of elderly people who were given remedial training.

Retirement

Retirement at age 65 is the conventional choice for many people, although some work until much later. People have been found to be happier in retirement if they are not forced to retire before they are ready and if they have enough income to maintain an adequate living standard. Chronic health problems such as arthritis, rheumatism, and hypertension increasingly interfere with the quality of life of most individuals as they age.

Widowhood

Women tend to marry men older than they are and, on average, live 5 to 7 years longer than men. One study found ten times as many widows as widowers. Widowhood is particularly stressful if the death of the spouse occurs early in life; close support of friends, particularly other widows, can be very helpful.

Death and dying

Death and dying has been studied extensively by Elisabeth Kübler-Ross, who suggested that terminally ill patients display the following five basic reactions.

- **Denial**, an attempt to deny the reality and to isolate oneself from the event, is frequently the first reaction.
- **Anger** frequently follows, as the person envies the living and asks, “Why should I be the one to die?”
- **Bargaining** may occur; the person pleads to God or others for more time.
- As the end nears, recognition that death is inevitable and that separation from family will occur leads to feelings of exhaustion, futility, and deep **depression**.
- **Acceptance** often follows if death is not sudden, and the person finds peace with the inevitable.

People who are dying are sometimes placed in a **hospice**, a hospital for the terminally ill that attempts to maintain a good quality of life for the patient and the family during the final days. In a predictable pattern after a loved one’s death, initial shock is followed by grief, followed by apathy and depression, which may continue for weeks. Support groups and counseling can help in successfully working through this process.

Cognitive interventions

Lifelong learning

- Types of programs include Elderhostel, which encourages older adults to live on college campuses and take courses from experts, as well as travel the world. Many universities offer classes at low or no cost for seniors.
- Benefits of continuing education include learning new information, understanding new ideas, making new friends, and developing a broader perspective on the world. This may serve to shake up their stereotypes and value diversity in a new way.

Self Assessment Questions

3) Fill in blanks:

- i) The study of the process of ageing and the ageing population is called _____.
- ii) Ageism is defined as the _____ that occur on the basis of age.
- iii) _____ is the memory without conscious awareness.
- iv) _____ memory is very long term recall.
- v) _____ memory is remembering to do plannedc activities in the future.

2.5 LET US SUM UP

Young adulthood is a time when most of us finish school, find a career we enjoy, and create a family of our own. Physically, it is a time where we are our healthiest and will

reach our peak performance. Cognitively, it is a time to grow up and make life decisions. Socioemotionally, it is a time to take on roles of independence, lifestyles, marriage, and family.

Erik Erikson, a prominent theorist in the field of emotional development, assigns specific goals to different periods of life. Those in early adulthood are said to be struggling with intimacy as opposed to isolation. This refers to the desire for a stable long-term relationship. Those who have achieved intimacy are thought to host a range of positive attributes, such as confidence and acceptance. Alternatively, those in isolation are more likely to fear loneliness and abandonment. Intimacy requires an individual to sacrifice some of his independence for another person. After successfully traversing the struggle of isolation and intimacy, an individual will deal with generativity, which is the desire to improve society for future generations.

Between the ages of 35-60, we find vast changes in many areas of our lives. The most obvious changes related to our lifestyle include: physical development and health, career and finances, marriage, and leisure activities. For many, midlife is a time when they start to think about “how much time they have left”. Individuals begin to reexamine their lives, their relationships, their work, and even to question the meaning of it all. This process has been referred to as a mid-life crisis. Clearly, middle adulthood is a time of change and development.

One of the major aspects of middle adulthood are the physical and biological changes that occur in the body. Two of the most noticeable changes are seeing and hearing. Each of these begin to decline in the middle years. One of the physical changes that occur is in height. Most individuals get a little shorter through the years. Also, hair is graying, skin is wrinkling, bodies are sagging, and teeth are yellowing. Some adults strive to make themselves look younger by having plastic surgery, dying their hair, wearing wigs, joining exercise programs, or taking heavy vitamin doses.

While the adult years are generally a time of vitality and good health, there are health concerns. The main health problems of middle adulthood are cardiovascular disease, cancer, and menopause. Another major problem that effects health and behaviour is stress. Overall this is a time of major change and development physically and mentally.

It is also at this time that adults adjust their idealistic hopes to realistic possibilities. This adjustment to attainable goals is dependent on how much time is left before retirement, with retirement planning being a major area of financial concern. These reassessments may lead to stress and sadness over unaccomplished goals, which for a small few may lead to a midlife career change.

Another financial adjustment that tends to take place for many mid adults is the planning for college and setting aside the necessary funds for their children. In response to these growing financial needs and greater free time, due to their children getting older, many women enter or reenter the workforce. In short, this tends to be a time of career and financial readjustment and planning for both men and women.

Adults demonstrate much variation in their intimate lifestyles. Nearly all of us are married at least some time during our adult lives. Many marriages either improve or deteriorate during middle age. If a couple form a relationship appropriate to this new period of life, their marriage will likely grow stronger. But if they cannot adapt to the new conditions of their lives, their marriage may develop problems. Regardless, intimacy, marriage, and family concerns are a priority during middle adulthood. Some specific issues include the empty nest syndrome, late parenting, divorce, sexuality, remarriage, and grand parenting.

Late adulthood (old age) is generally considered to begin at about age 65. Erik Erikson suggests that at this time it is important to find meaning and satisfaction in life rather than to become bitter and disillusioned, that is, to resolve the conflict of **integrity vs. despair**.

Late Adulthood is the period in an individual's life beginning at ages sixty or seventy and ending at death. This life period, like any other, is one of continuing change and adjustment both in the physical and the psychosocial realms.

Cognitive development is a general loss cognitively as people move closer to the end of life. The study of cognitive changes in the older population is complex. Response speeds (neural and motor) have been reported to decline; some researchers believe that age-related decrease in working memory is the crucial factor underlying poorer performance by the elderly on cognitive tasks.

Retirement at age 65 is the conventional choice for many people, although some work until much later. People have been found to be happier in retirement if they are not forced to retire before they are ready and if they have enough income to maintain an adequate living standard. Chronic health problems such as arthritis, rheumatism, and hypertension increasingly interfere with the quality of life of most individuals as they age.

2.6 UNIT END QUESTIONS

- 1) Discuss critically the cognitive changes in early adulthood.
- 2) What are the important cognitive changes that come about in middle adulthood?
- 3) How does old age affect cognitive development?
- 4) Compare age differences in implicit and explicit memory.
- 5) How does each part of information processing system such as the sensory register, short term and long term memory knowledge base etc.?

2.7 SUGGESTED READINGS

P.J. Whitehouse and G.C. Gilmore (eds) (1989). *Memory, Ageing and Dementia*. New York, Springer

S.L. Willis and J.D. Reid (Eds) (1999). *Life In the Middle*. San Diego, CA, Academic Press.

Lachman, M.E.(Ed). (2001). *Handbook of Midlife Development*. New York, Wiley.

2.8 ANSWERS TO THE SELF ASSESSMENT QUESTIONS

- 1)
 - i) True
 - ii) False
 - iii) False
 - iv) True
 - v) True
- 2)
 - i) Flexible
 - ii) Fluid intelligence

- iii) Realistic Thinking
 - iv) Multidimensional
 - v) Spirituality
- 3) i) Gerontology
- ii) Prejudice
 - iii) Implicit memory
 - iv) Remote
 - v) Prospective
- Cognitive Changes (Early Adulthood, Middle Age, Old Age)**