

Quadrant II – Transcript and Related Materials

Programme : Bachelor of Arts(Third Year)

Subject : PSYCHOLOGY

Semester : VI

Paper Code : PSD 105

Paper Title : Developmental Psychology

Title of the Unit : Unit 2 – Physical Development

**Module Name : Late Adulthood:
The Aging Brain,
The Adapting Brain,
Sensory Development (Part I)**

Elvira Pereira
Assistant Professor

St. Xavier's College, Mapusa

Late Adulthood

1. The Aging Brain

a)The shrinking, slowing brain:

On average the brain loses 5 to 10% of its weight between the ages of 20 and 90.

Brain volume also decreases.

Some areas shrink more than others.

The prefrontal cortex is one area that shrinks with aging and has linked this shrinkage with a decrease in working memory and other cognitive activities in older adults.

A general slowing of function in the brain and spinal cord begins in middle adulthood and accelerates in the late adulthood. Both physical coordination and intellectual performance are affected.

Aging had also been linked to a reduction in the production of some neurotransmitters, including acetylcholine, dopamine and gamma aminobutyric acid (GABA).

Reduction in acetylcholine is responsible for small declines in memory functioning and with the severe memory loss associated with Alzheimer disease.

Severe reductions in the productions of dopamine have been linked with age related diseases characterized by a loss of motor control, such as Parkinson disease.

2. The Adapting Brain:

The brain has remarkable repair capacity.

Even in late adulthood, the brain loses only a portion of its ability to function and the activities older adults engage.

Researchers have found that *neurogenesis*, the generation of new neurons does occur in lower mammalian species such as mice.

Also research indicates that exercise and an enriched complex environment can generate new brain cells in rats and mice, and stress reduces their survival rate.

It is now accepted that neurogenesis can occur in human adults.

Researchers have found that neurogenesis in only two brain regions: the hippocampus which is involved in memory and the olfactory bulb, which is involved in smell.

Dendritic growth can occur in human adults even in older adults.

However in people who are in their nineties dendritic growth doesn't occur.

There are individual differences in how the brain changes in older adults.

Sensory Development

1. Vision:

With aging visual acuity, color vision and depth perception decline.

a) Visual Acuity:

In adulthood the decline in vision becomes more pronounced.

Night driving especially difficult, to some extent because tolerance for glare diminishes.

Dark adaptation is slower – that is older individuals take longer to recover their vision when going from a well-lighted room to semidarkness.

In extreme old age these changes might be accompanied by degenerative changes in the retina causing severe difficulty in seeing.

Large print books and magnifiers might be needed in such cases.

Recent research has shown that sensory decline in older adult is linked to a decline in cognitive functioning.

b) Color Vision:

Color vision also may decline with age in older adults as a result of the yellowing of the lens of the eye.

As a result older adults may have trouble accurately matching closely related colors such as navy socks and black socks.

c) Depth Perception:

Depth perception changes little after infancy until adults become older.

Depth perception typically declines in late adulthood, which can make it difficult for the older adult to determine how close or away or how high or low something is.

A decline in depth perception can make steps or street curbs difficult to manage.

d) Disease of the Eye:

- i. Cataracts: involve a thickening of the lens of the eye that causes vision to become cloudy, opaque, and distorted.

By age 70 approximately 30% of individuals experience a partial loss of vision due to cataracts.

Cataract is initially treated by glasses if they worsen a simple surgical procedure can remove them.

- ii) Glaucoma:

Involves damage to the optic nerve because of the pressure created by a buildup of fluid in the eye.

Approximately 1% of individuals in their seventies and 10% of those in their nineties have glaucoma which can be treated with eyedrops.

If left untreated glaucoma can ultimately destroy a person's vision.

- iii) Macular degeneration:

Is a disease that involves deterioration of the macula of the retina, which corresponds to the focal center of the visual field.

Individuals with macular degeneration may have relatively normal peripheral vision but be unable to see clearly what is right in front of them.

It affects 1 in 25 individuals from 66 to 74 years of age and 1 in 6 of those 75 years old and older.

2. Hearing:

For hearing as for vision the age of older adults is important in determining the degree of decline.

The decline in vision and hearing is much greater in individuals 75 years and older than in individuals 65 to 74 years of age.

Hearing impairment usually does not become much of an impairment until late adulthood.

Older adults often don't recognize that they have a hearing problem, deny that they have one or accept it as a part of growing old.

Older women are more likely to seek treatment for their hearing problem than older man.

Two devices can be used to minimize the problems linked to hearing loss in older adults:

- a) Hearing aids that amplify sound.
- b) Cochlear implants that restore some hearing following neurosensory hearing loss.
