



THE WOMEN'S
HEALTH INITIATIVE

Aging and Cognition: What Do We Know and How Can We Protect Brain Health

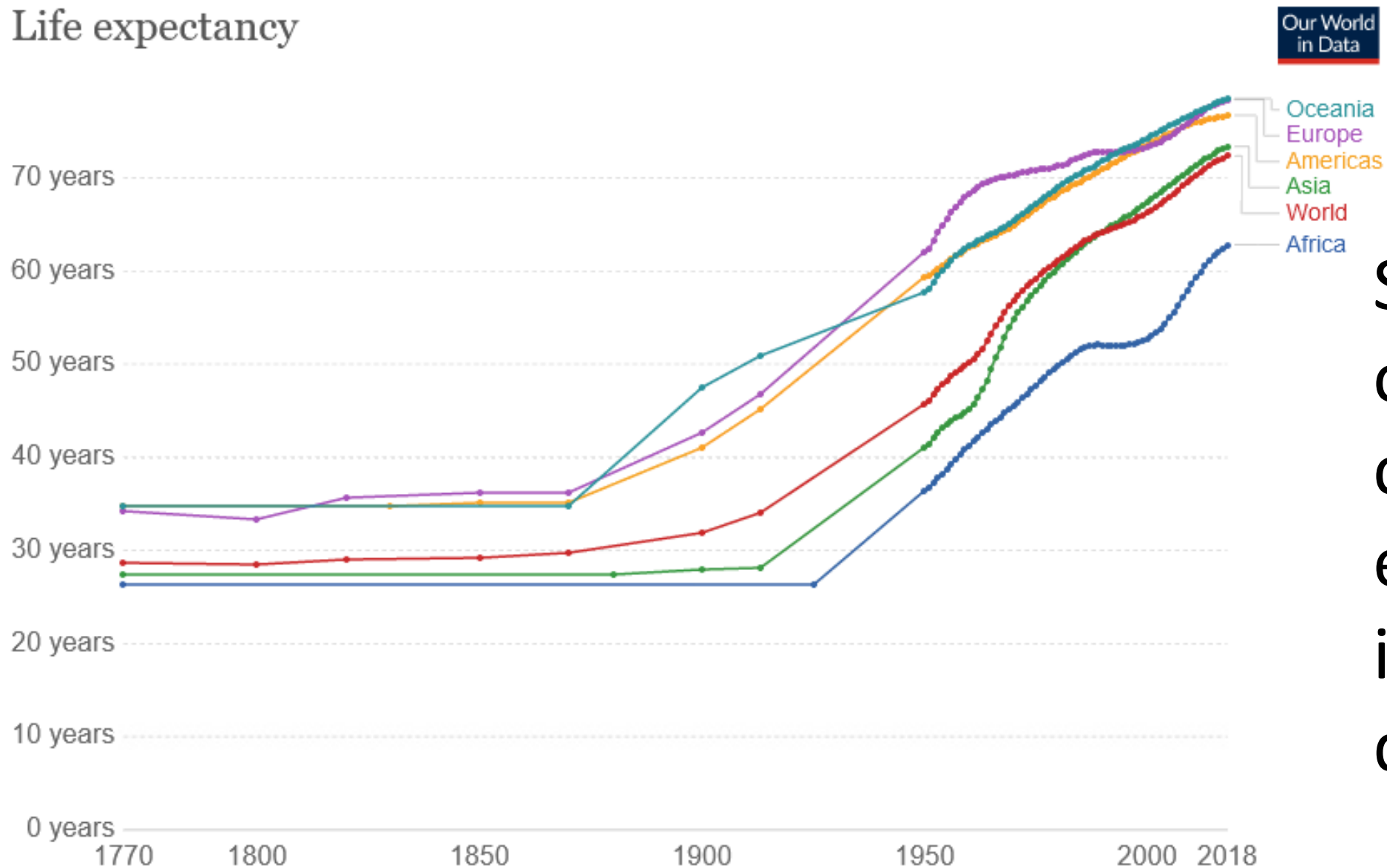


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Hallmarks of Aging and Cognitive Aging

Dr. Kate Hayden

Life expectancy



Since the turn of the 20th century, life expectancy has increased dramatically

Source: Riley (2005), Clio Infra (2015), and UN Population Division (2019)

Note: Shown is period life expectancy at birth, the average number of years a newborn would live if the pattern of mortality in the given year were to stay the same throughout its life.

OurWorldInData.org/life-expectancy • CC BY

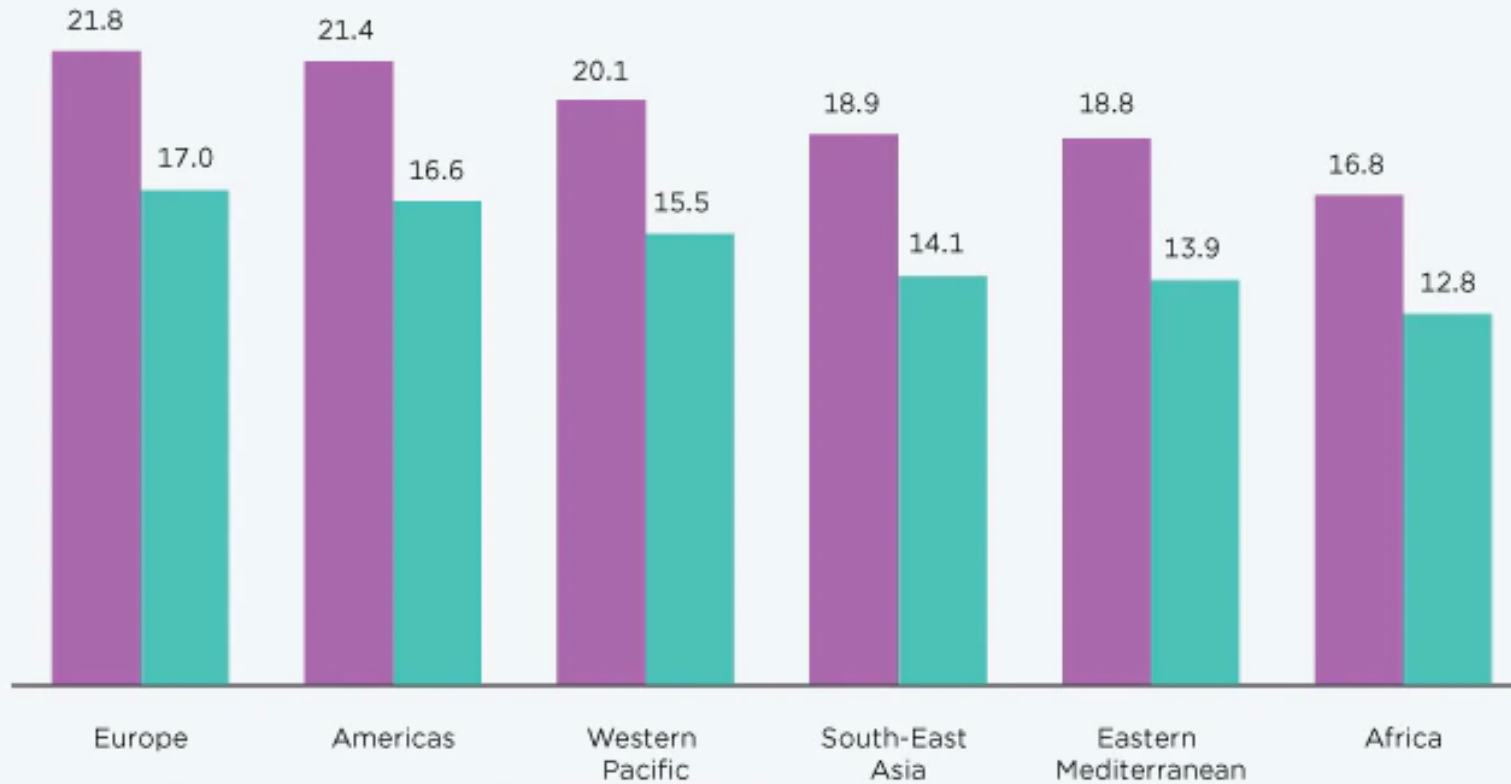


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LE60 and HALE60 by Region: 2016

(In number of years)

Full life expectancy Healthy life expectancy



Full life expectancy is not the same as healthy life expectancy

Sources: Data on life expectancy and healthy life expectancy come from the World Health Organization's [Global Health Observatory](#). Data on country national income level come from the World Bank's [Country Classifications by Income Level](#). Production of this infographic was supported by the National Institute on Aging.

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With increased age, our senses decline

Sensory declines:

- Vision

- **Lens loses elasticity** → trouble focusing
- **Cornea becomes less transparent** → distortion and blurring
- **Pupil** loses ability to **dilate** as easily
- **Cataracts cloud** the lens → decrease the amount of light that passes
- **Retina becomes thinner** → decreases visual acuity and contrast sensitivity



- Hearing

- Stiffening of the **tympanic membrane**
- **Atrophy** of ear muscles
- Loss of **auditory neurons** in brain



Sensory declines:

- Taste

- **Dentures**
- **Medications**
- Reduced number of **taste buds**



- Smell

- Decline in ability to smell due to changes in **nasal mucosa**
- **Loss of neurons** in brain areas involved with smell



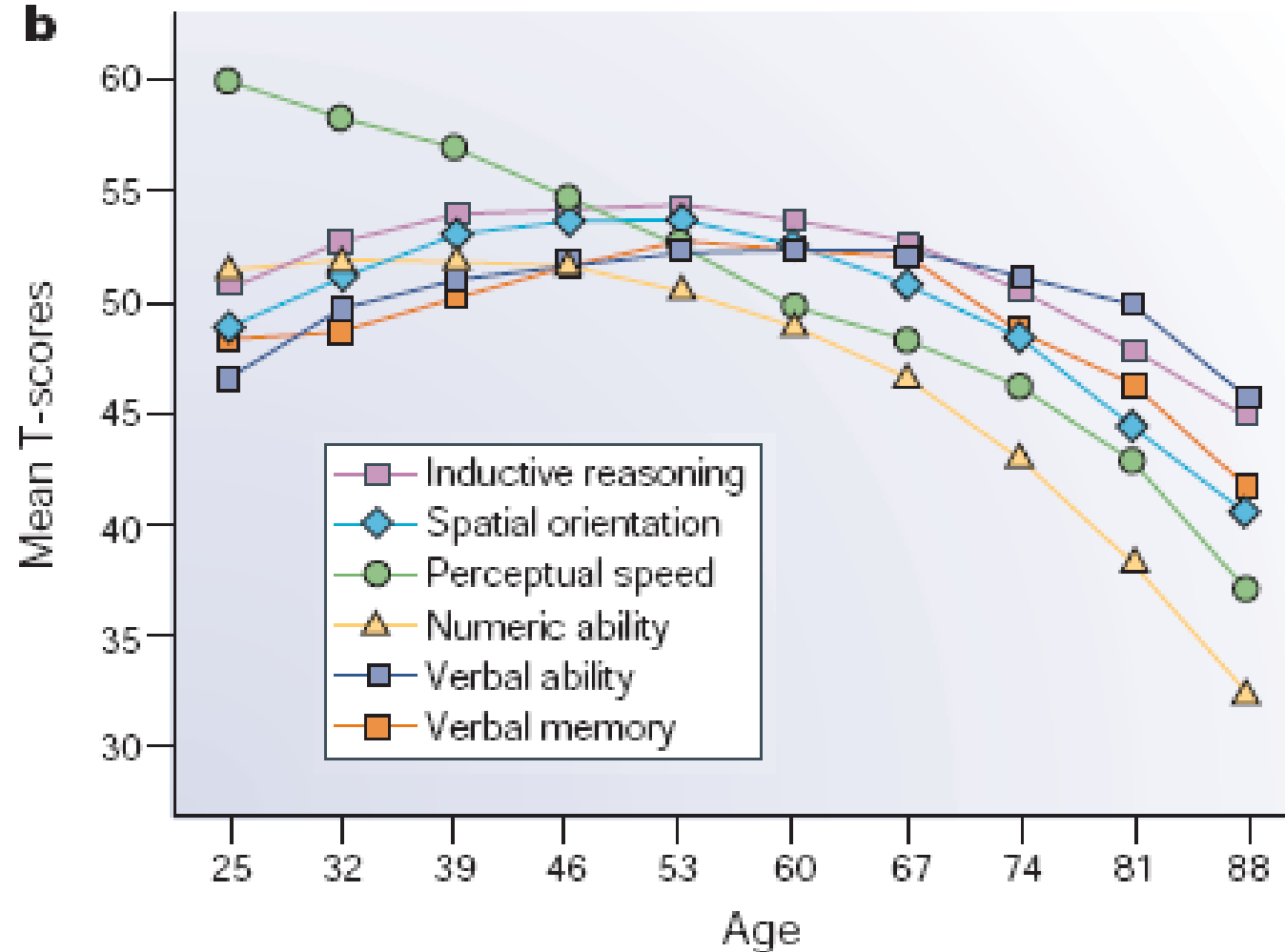
- Touch

- **Loss of receptors** on the skin
- Reduction in the number of **sensory fibers innervating the skin**



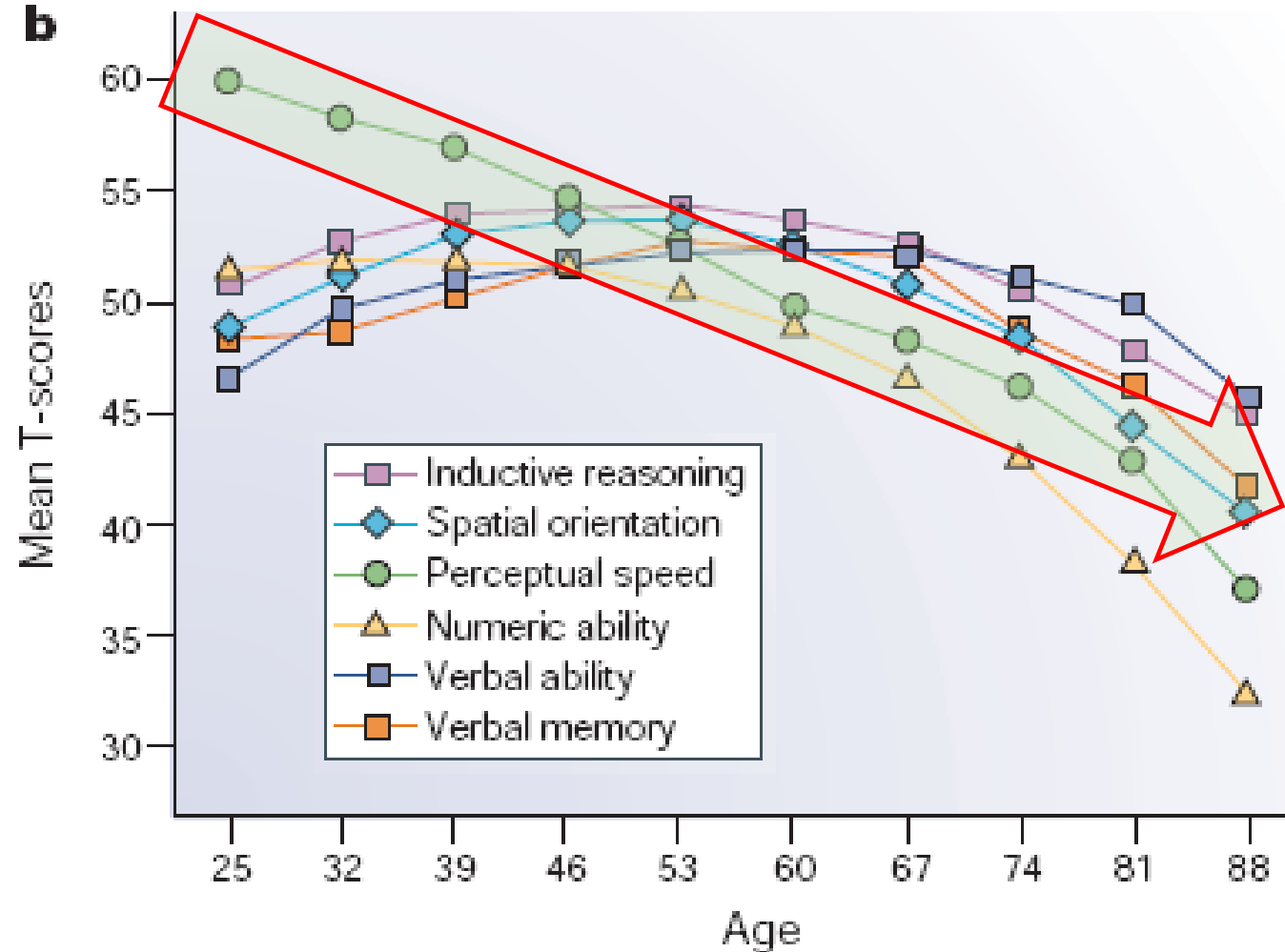
What is normal cognitive aging?

Change in Cognition Over Lifespan



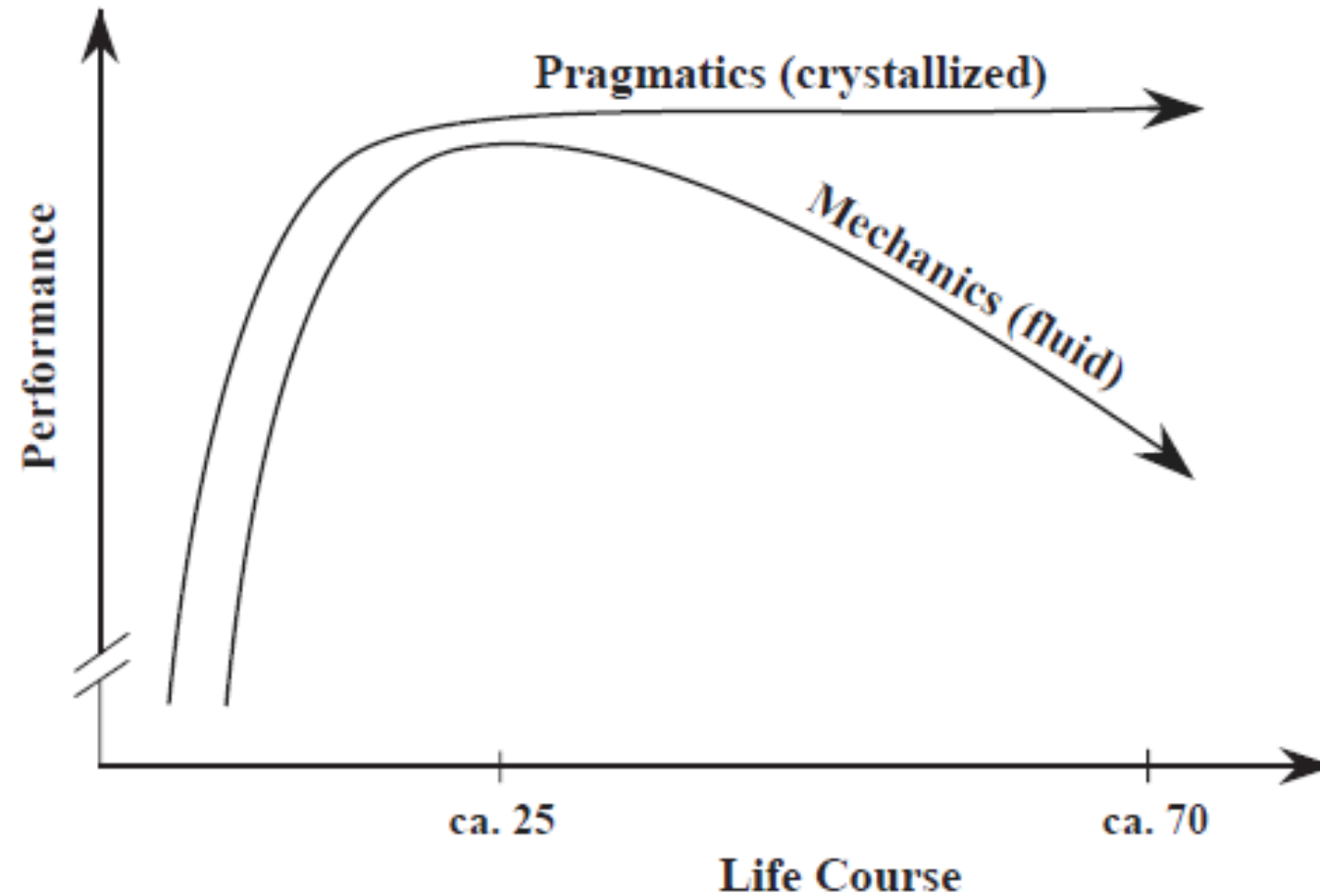
The only cognitive domain that shows a steep decline from early life is perceptual speed.

Change in Cognition Over Lifespan



The only cognitive domain that shows a steep decline from early life is perceptual speed.

Some abilities are maintained



Crystallized= past learning (rote) and experience

Fluid= abstract reasoning, thinking on your feet

What is normal cognitive aging?

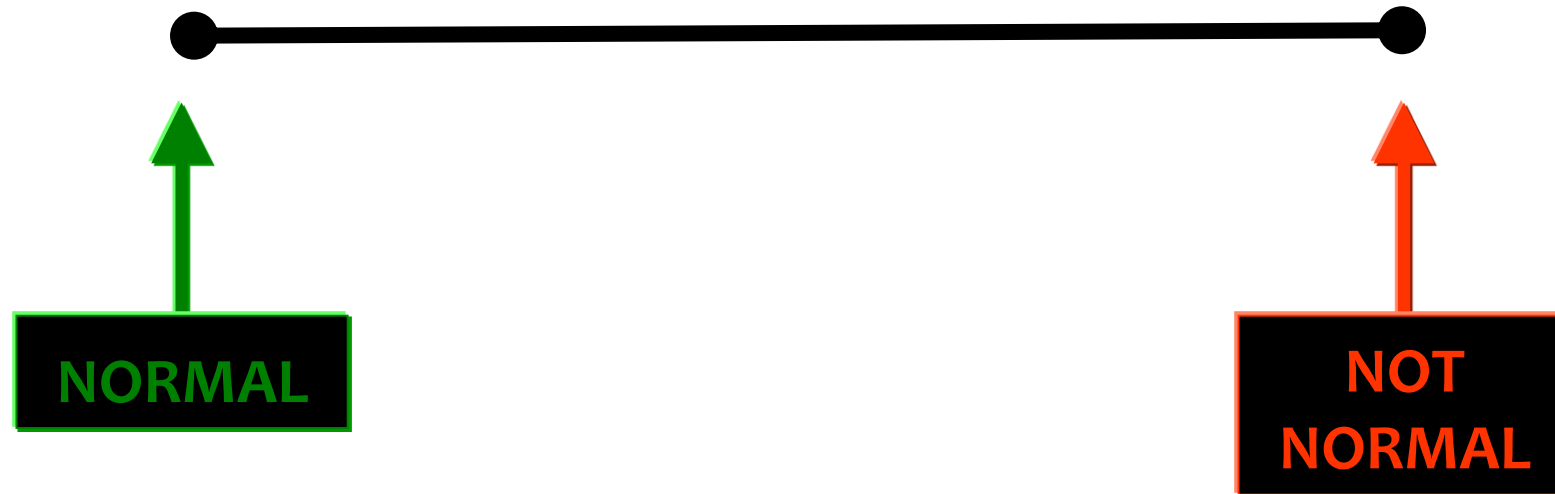
As a result of decreased sensory input in **normal aging**:

- **Mild declines** in:
 - Visual and verbal memory
 - Visuospatial abilities
 - Immediate memory
 - Ability to name objects
- **Decreased** control and maintenance of **attention**
- Common to have **less recall of recent events** and be **slower** to remember names and details

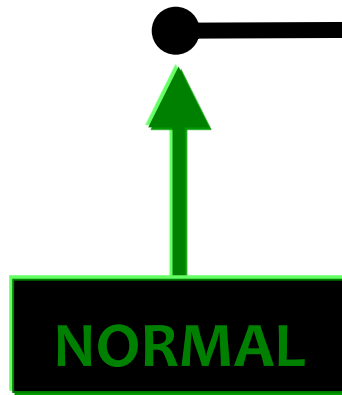
What is normal cognitive aging?

- ✓ Vocabulary and verbal reasoning remain unchanged or may improve
- Does *not* include:
 - Memory impairment
 - Loss of ability to function

Aging Memory



Aging Memory



- Forget names
- Get a little more confused when doing too many things at once
- It takes more time and energy to learn something new ... it “feels” more difficult
- Amount of new information learned in a short period of time is a little less than before
- Not always able to recall information WHEN you need it (tip-of-the-tongue)

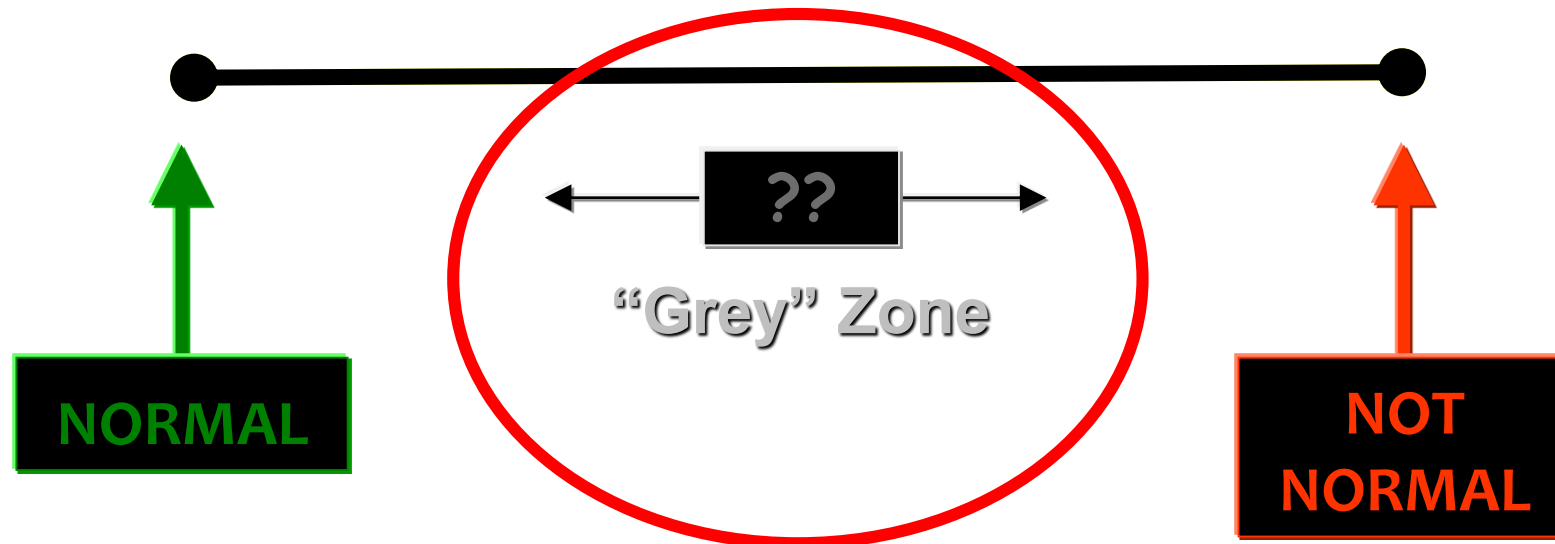
Aging Memory



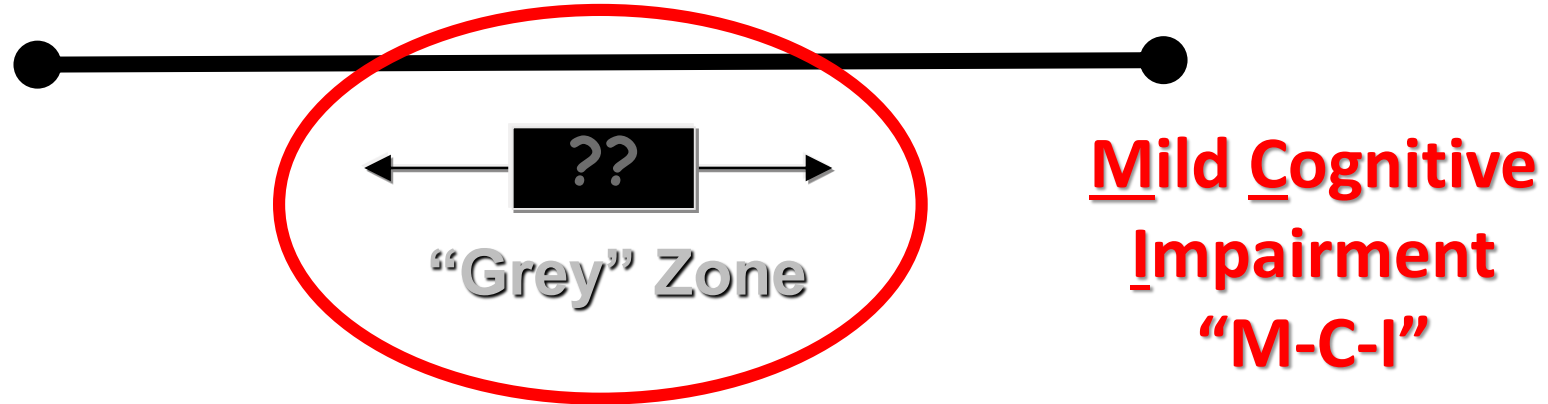
- Feel confused - more often than usual
- Get lost or turned around more frequently
- Parts of conversations are repeated - more often than usual
- Family and friends notice a difference
- Difficulty managing daily tasks
- Loss of interest in hobbies and usual activities
- Dementia



Aging Memory

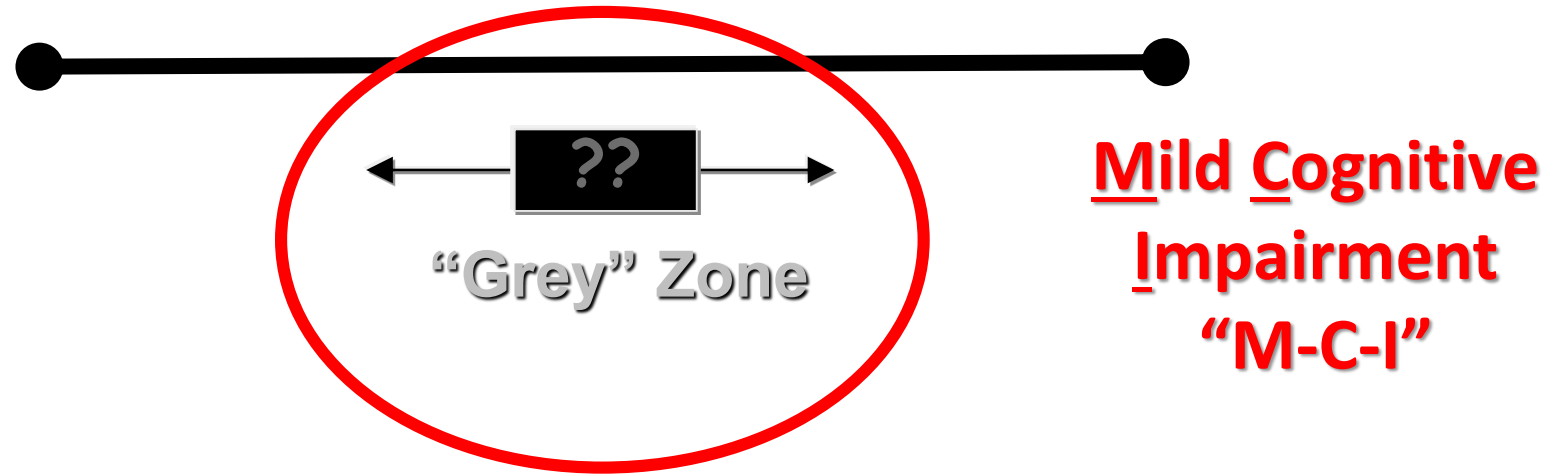


Aging Memory



- More trouble remembering appointments, dates, events, etc.
- May feel “overwhelmed” more often
- Feel that “something is not right” even though others fail to notice a change
- May feel a little more irritable or “short fused”
- Feel more “stressed” than usual
- May feel like mood is not what it used to be

Aging Memory



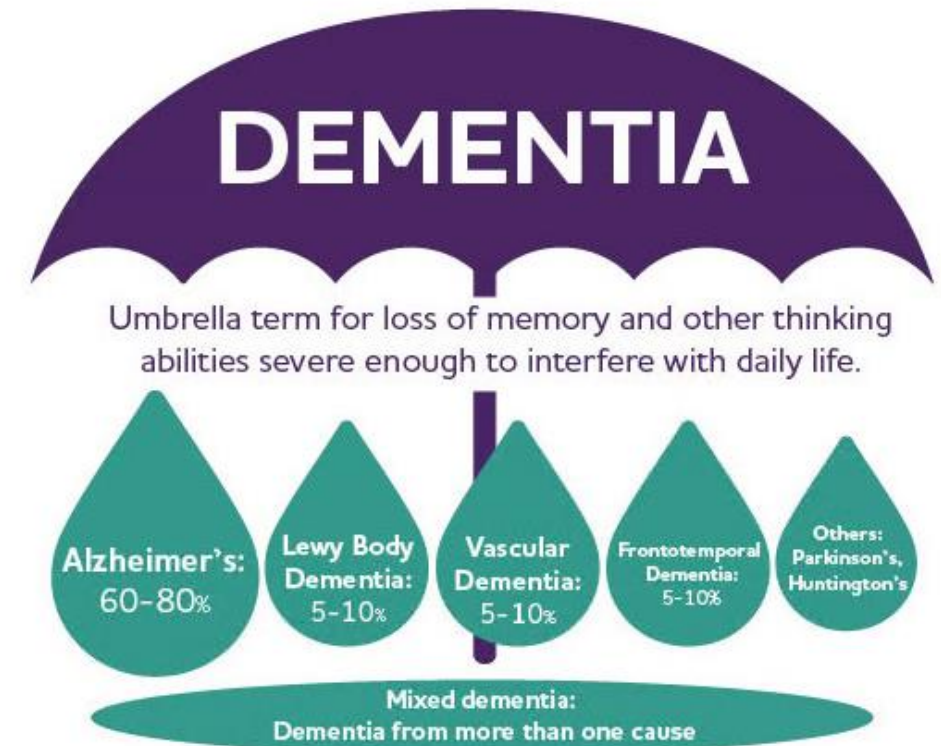
- Adults with MCI are at increased risk of developing Alzheimer's or other type of dementia in the next few years

Definitions of cognitive impairment

- **Mild cognitive impairment**
 - **Stage between normal aging and the more serious decline of dementia.**
 - **Causes cognitive changes that are serious enough to be noticed**
 - **~ 12-18% of people age 60 or older are living with MCI.**

Definitions of cognitive impairment

- **Dementia**
 - **General term** for loss of memory, language, problem-solving and other thinking abilities that are severe enough to interfere with daily life
 - **Alzheimer's is the most common** cause of dementia



What have we learned from WHI about
MCI and dementia?