


Slide 1



Click here to start the module.

## Cognition and Aging, Part 1

*At any time, feel free to select the **CC** button to see captions text  
or the **Exit** button to leave the module.*

*Use the forward arrow to continue.*




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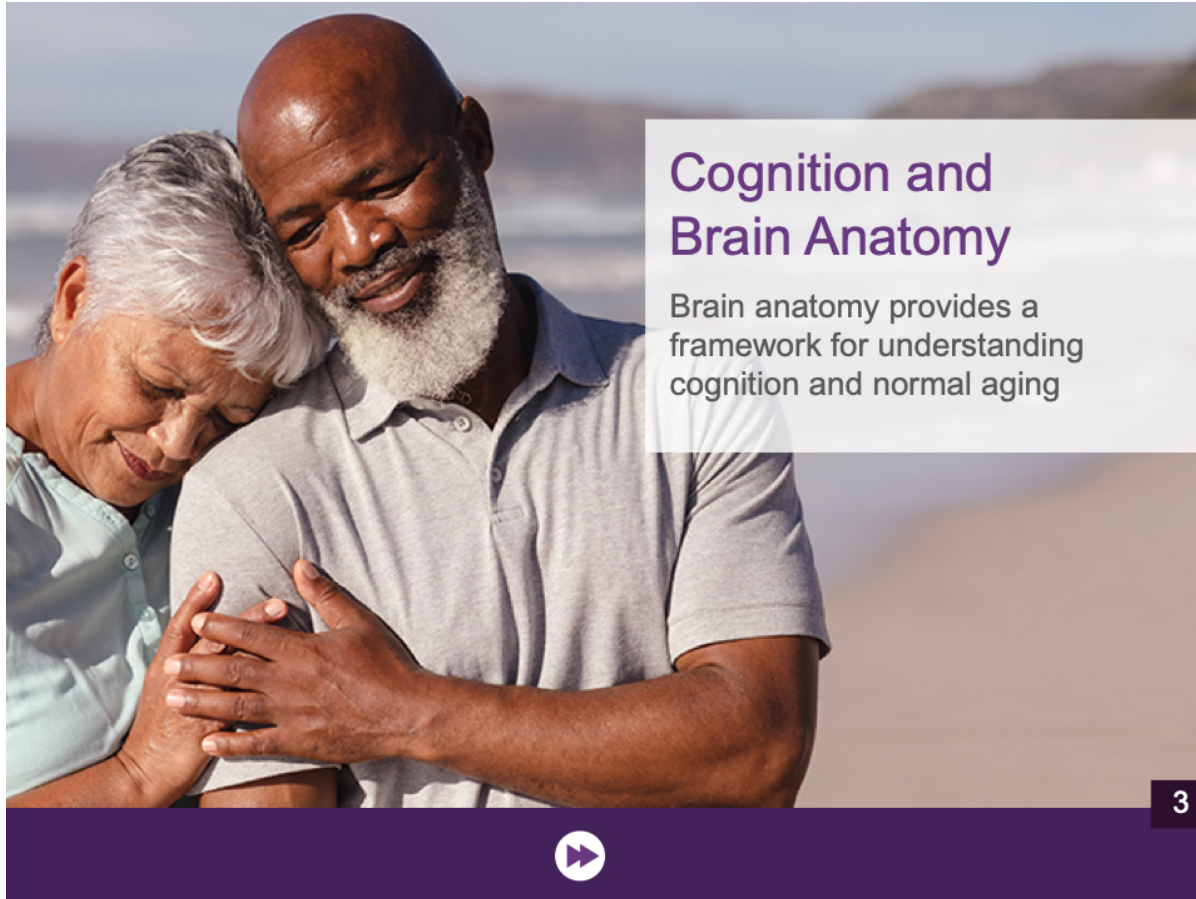
## Learning Objectives

After this completing this module, learners will be able to:

- Identify basic structure and function of the brain
- Discuss domains of cognitive function
- Describe how these domains are affected by normal aging

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## Cognition and Brain Anatomy

Brain anatomy provides a framework for understanding cognition and normal aging

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## Brain Anatomy

- Cerebral cortex
  - Cortex means bark
- Contains the cell bodies of neurons
- Part of the gray matter of the brain
- Where information and conscious thought processing takes place



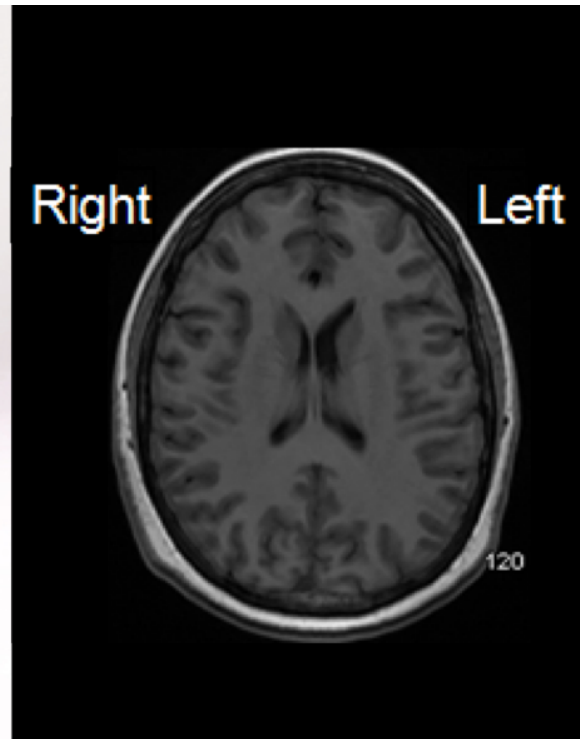
*Use the forward arrow to continue.*

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## Brain from Above

- White matter
  - Contains all the connections and pathways between different brain areas
- Brain divided into large areas called lobes

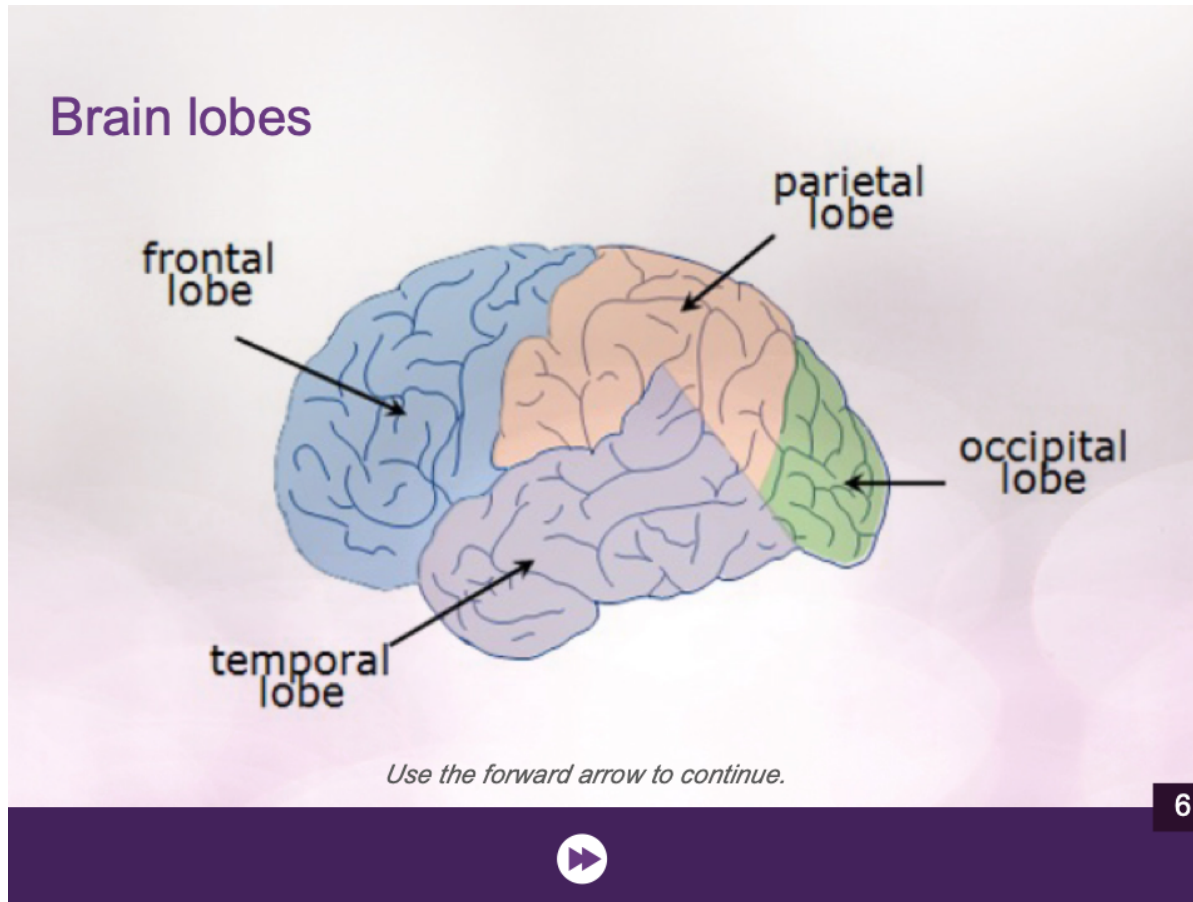


*Use the forward arrow to continue.*

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Slide 7



## Normal Aging Impact on Brain Structure

- Brain anatomy changes with age
- Anatomical and functional changes are not uniform across the whole brain or across all older adults
- “Last in, first out” theory
  - Areas last to mature, first to shrink with normal aging



*Use the forward arrow to continue.*

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## Learning Check

True or false? The prefrontal cortex is located in the temporal lobe and is responsible for problem-solving and planning, as well as impulse control.

A. True

B. False



## Learning Check

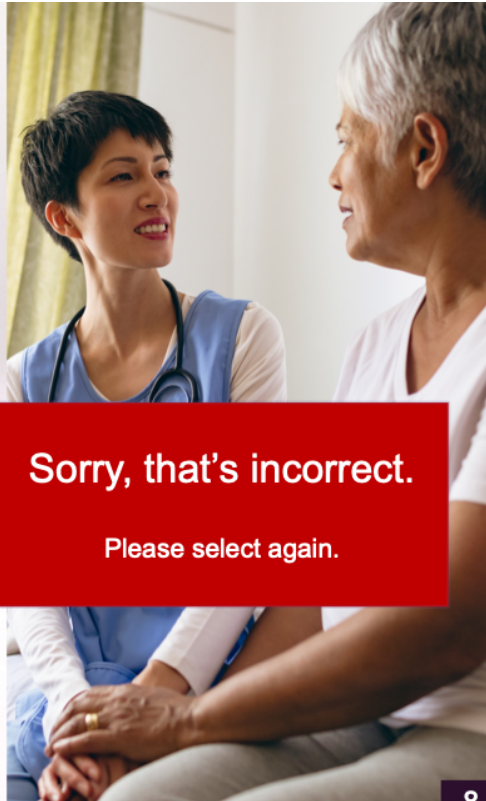
True or false? The prefrontal cortex is located in the temporal lobe and is responsible for problem-solving and planning, as well as impulse control.

**A. True**

B. False

**Sorry, that's incorrect.**

Please select again.



## Learning Check

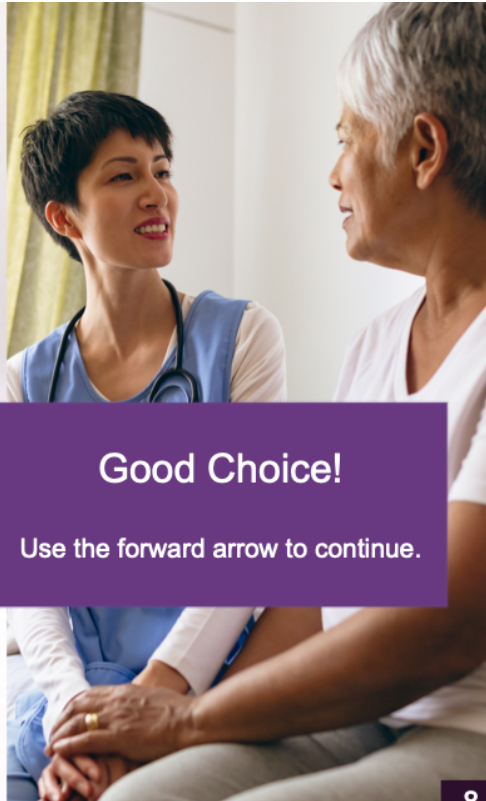
True or false? The prefrontal cortex is located in the temporal lobe and is responsible for problem-solving and planning, as well as impulse control.

A. True

B. False

Good Choice!

Use the forward arrow to continue.



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## Take Home Message


- Brain functions occur in distinct and connected areas
- As the brain shrinks somewhat with normal aging, certain areas of brain function decline



*Use the forward arrow to continue.*

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## Cognitive Abilities and Age

Cognitive abilities are affected by  
the aging process

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## Memory: Declarative

- Two types of declarative, or explicit memory
  - Semantic memory
    - Facts, concepts, names, general knowledge
  - Episodic memory
    - Memory of past events
- Decline in both types occurs with normal aging



## Memory: Non-declarative

- Non-declarative, or procedural memory
  - Memory for things we know how to do without having an explicit memory for steps or specific actions
- Preserved in normal aging and even in many kinds of dementia



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## Declarative Memory Stages

- Works in stages
  - Encoding
  - Storage
  - Retrieval
- Problems can occur at different stages of the memory process





## Declarative Memory Stages

- Problems with encoding and retrieval are caused by conditions that affect the frontal lobes or the white matter
- Normal aging is associated with encoding and retrieval difficulties



## Attention

- Attention plays a role in all cognitive domains except when a task is habitual or automatic
- Sustained attention
  - Ability to maintain concentration on a task over an extended period of time
- Selective attention
  - Ability to attend to stimuli while disregarding other competing stimuli
- Divided attention
  - Allows for performance of two or more tasks at once



## Attention & Independence

- Declines in attention and reduced processing speed may significantly affect ability to engage in activities essential to independence
- Divided attention impairment is associated with increased automobile accidents in older adults



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## Language

- Ability to understand others and express oneself orally and in writing
  - Well preserved with age
  - Vocabulary may improve with age, although age-related changes in retrieval processes can cause word-finding difficulty
- Hearing loss can often give the appearance of a language comprehension problem



## Processing Speed

- Refers to the speed of cognitive and motor performance
  - Declines over the course of the lifespan
- Accounts for much of the cognitive changes that are inherent with normal aging



## Visuospatial Abilities


- Process of interpreting the two- and three- dimensional world
  - Walking down stairs
  - Fastening a button on a shirt
  - Judging distances between objects
- Generally remain stable with age



## Executive Function

- Processes involved in the planning, organization, coordination, implementation, and evaluation of daily tasks and activities
- Declines with age including abstraction, mental flexibility, response inhibition, and inductive reasoning






## Take Home Message

- Many cognitive abilities affected by aging
- Some abilities may stay the same or even improve, while others decline

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## In Summary

In this module, we discussed:

- ✓ Structures of the brain and functions
- ✓ Cognitive domains and how they are impacted in the normal aging process





## Next Steps

- Please see the accompanying reference list
- Watch the second module that focuses on abnormal changes to cognition

[Click here to end presentation](#)

**Then click the close button to proceed to the post test**

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