

Effect of aging on the brain

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Language Processing and Aging , Dr. Vera Demberg

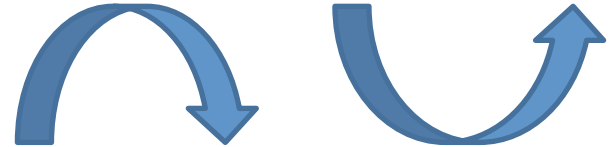
Universität des Saarlandes, 04-12-2014

Overview

- Which general skills and regions of the brain are affected?
- In how far are language regions affected?
- How can good performance levels in language comprehension be maintained?

Which general skills and regions of the brain are affected?

- the structure of the brain

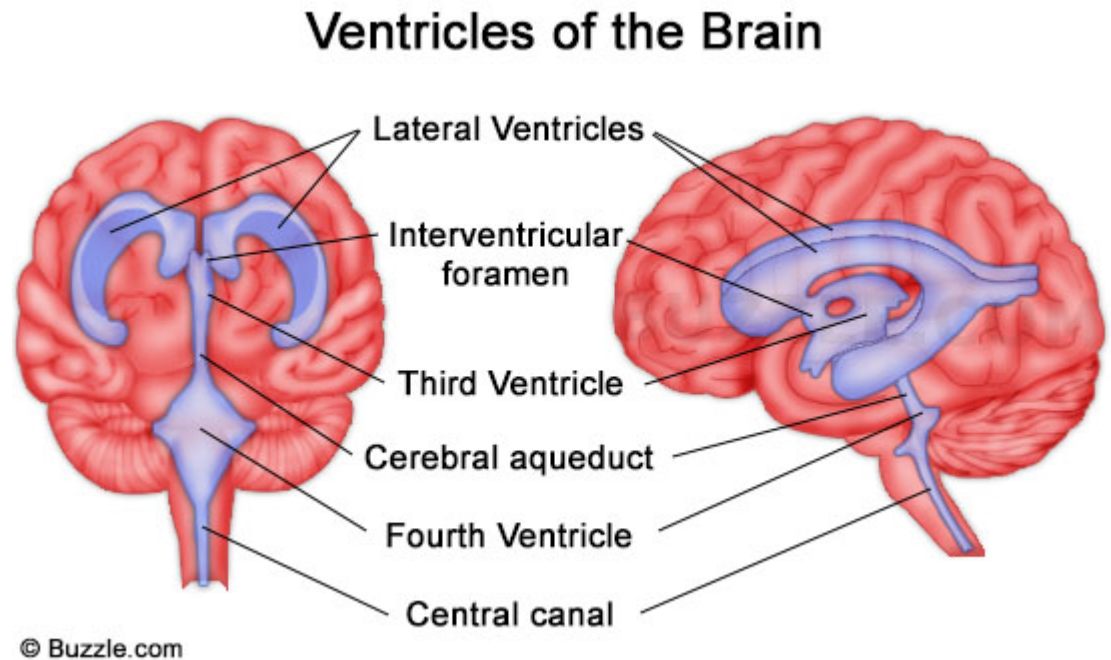


- aging + structural brain changes

- magnetic resonance imaging (MRI) studies

brain changes

- Brain: shrinks in volume
- ventricular system expands

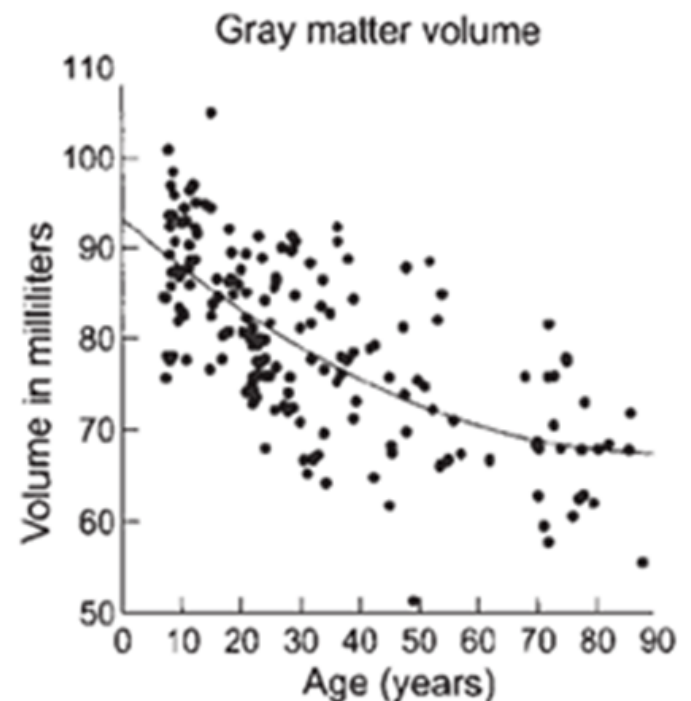




volumetric brain reductions

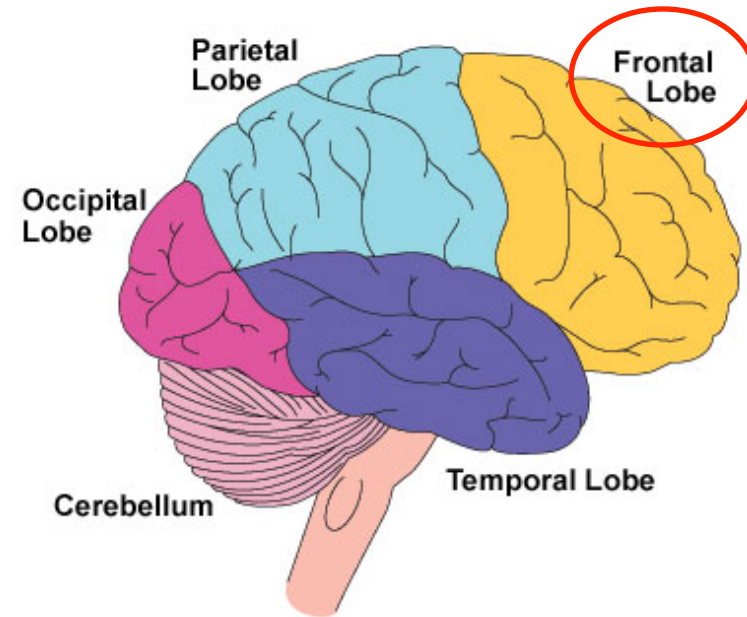
- shrinkage of neurons
- reductions of synaptic spines
- lower numbers of synapses

→ reductions in
grey matter



reductions in grey matter

- Loss in
 - **prefrontal cortex**
 - executive functions
(e.g. controlling the attention)

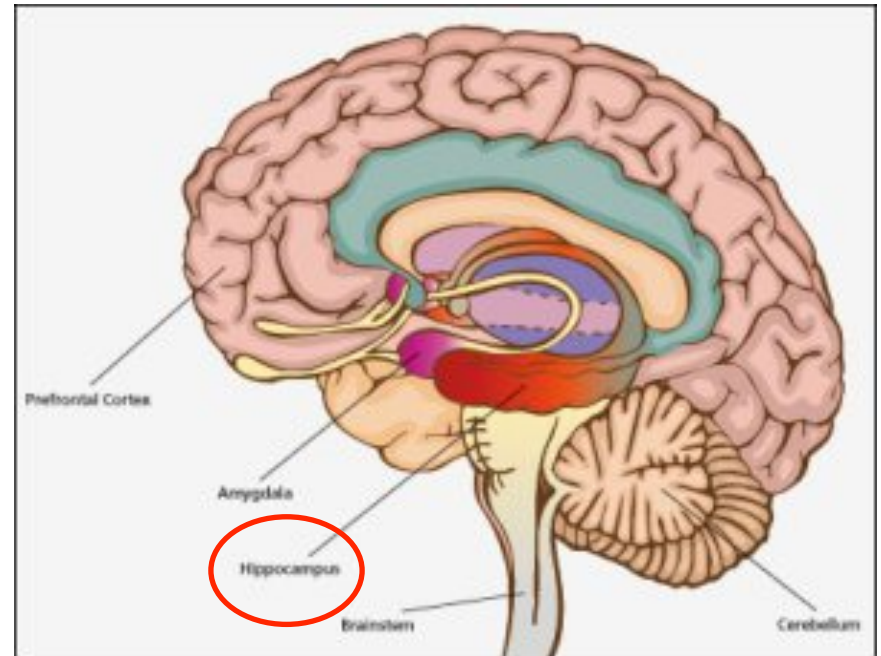


Picture source: <https://www.withfriendship.com/user/mithunss/temporal-lobe.php> (24-11-14)

- **hippocampus**
- long term memory (episodic memory)

reductions in grey matter

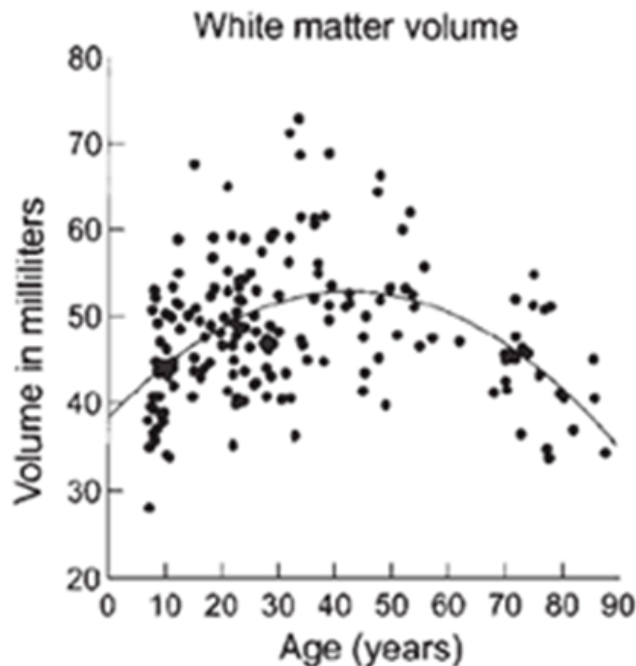
- Loss in
 - **prefrontal cortex**
 - executive functions (e.g. controlling the attention)



- **hippocampus**
 - long term memory (episodic memory)
 - Alzheimer

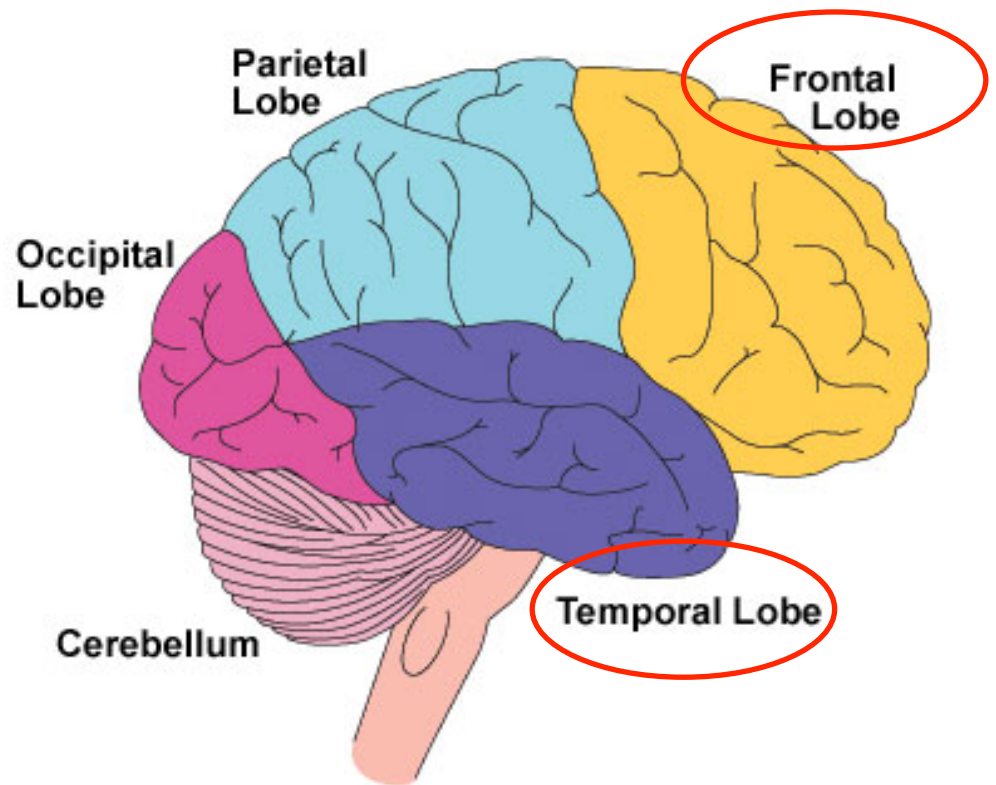
reductions in white matter

- the length of myelinated axons
 - Loss of mental processing speech
 - reduce communication between the brain areas



the pattern of changes

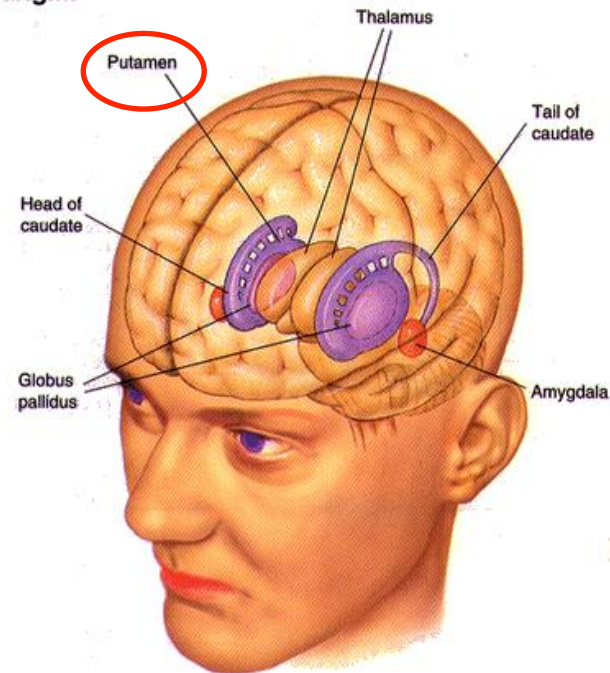
- highly heterogeneous
- the changes:
 - frontal cortex
 - temporal cortex
 - putamen
 - thalamus
 - n. accumbens



the pattern of changes

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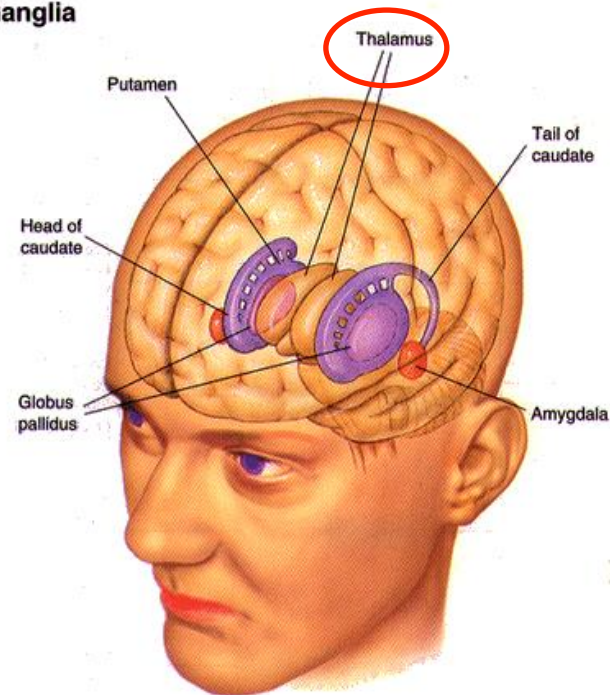
► The Basal Ganglia



the pattern of changes

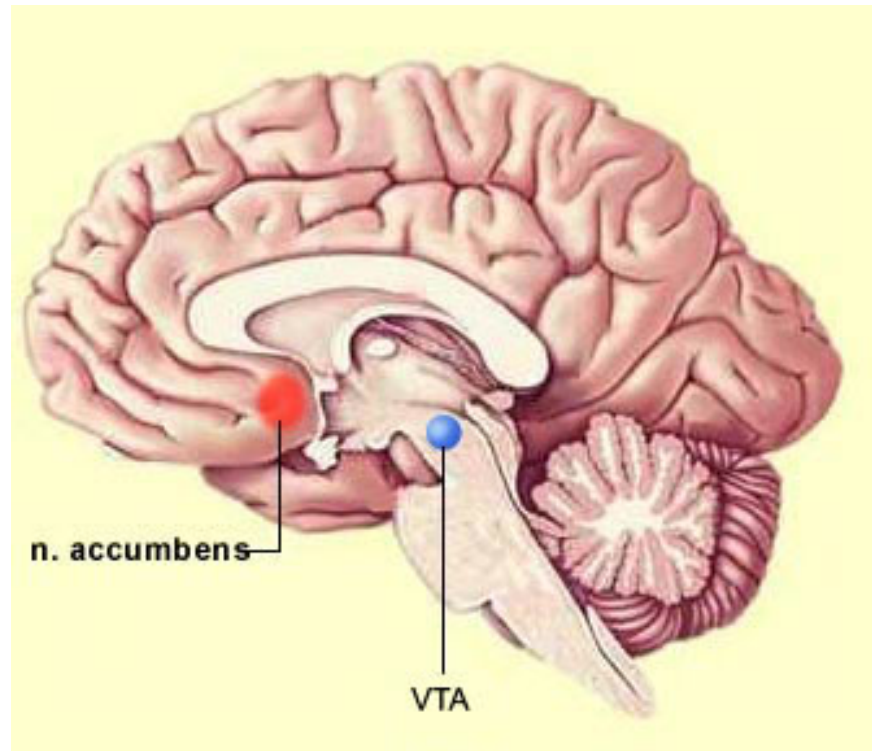
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Literatur

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