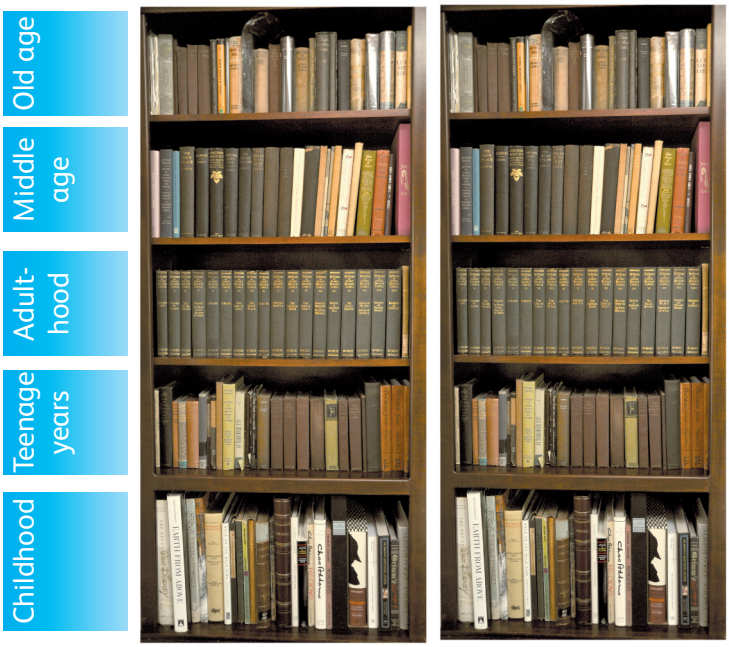
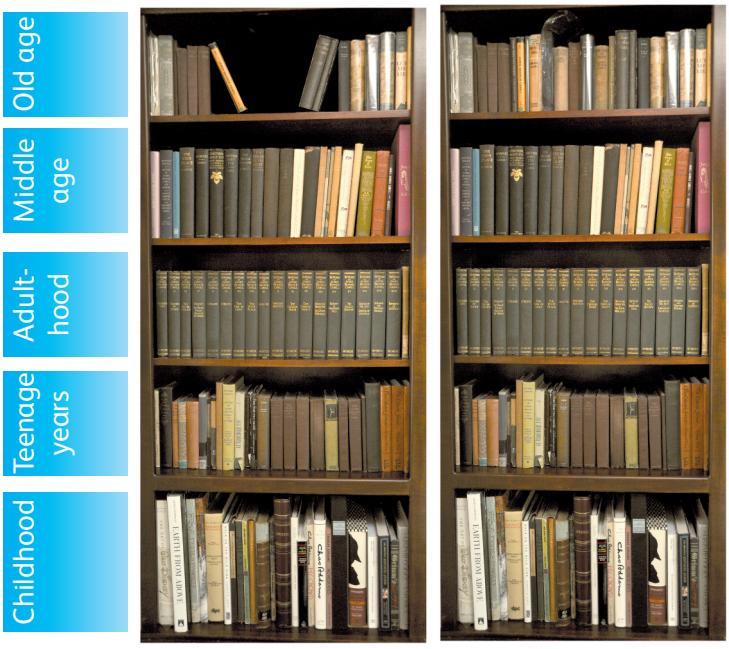
The bookshelf model of memory storage

Hippocampus
logic/fact/reason

Amygdala
feelings and emotional memories



Healthy brain



Early stage dementia

The brain stores memories in many complex ways. This model shows two fundamental types of memory: factual, including logic and reason – stored by the **hippocampus** system; and emotional, feelings-based memory – stored by the **amygdala**.

Both factual and emotional memories can be attached to all experiences.

For a person with dementia, the factual memory bookshelf – the hippocampus – is the first to be damaged. In the early days there may only be a small amount of damage to the most recent memories (stored on the top shelves). This may mean that the information is still there – albeit a little muddled or hard to find – for example, dates and times may be confused.

Over time this bookshelf will start to collapse resulting in the loss of factual memory and the order of time. If the top shelves, the recent memories, have been damaged then the person will have the strongest memories from many years ago. This could mean that the person believes themselves to be much younger than they are and if so, they may have difficulty 'placing' those around them in their life.

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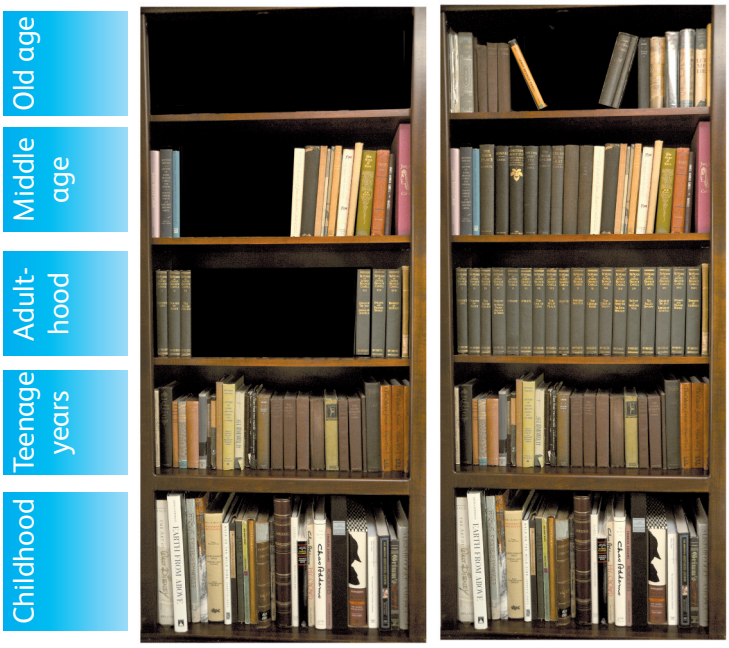

Middle stage dementia

Late stage dementia

If factual information and the ability to use logic and reason are lost, it is much more difficult to find and make sense of the memories that remain.

Although in the later stages of dementia both logical and emotional responses are damaged, emotional memories remain intact for much longer, and memories stored via the amygdala are used to make sense of the world. Consequently, although a person with dementia may not remember who someone is, they will know how they 'feel' to them, for example someone who makes them happy and creates a feeling of comfort and security. However, if they can't place the feeling, they may experience fear and mistrust.

Similarly, someone who does not have the ability to use logic and reason may interpret a place not by where it is, but rather where does it 'feel' like. For people with dementia, we need to see all behaviour as a means of communication based on feelings not facts.

A person may behave in a manner that is difficult to understand as it does not seem to make any sense. Try to move away from looking at the situation with logic and reason and instead establish and respond to what the person may be feeling on an emotional level.

Reference

Braak, H (1991). Review: Neuropathological stageing of Alzheimer-related changes. Acta Neuropathologica. Vol 82. pp239–259.