

How does Age Effects the Memory?

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ABSTRACT

Age appears to have a significant impact on memory, according to a large body of research. When compared to younger individuals, older persons often score worse on memory tests, and this discrepancy gets worse with age. This deterioration in memory with age can be attributed to a variety of factors. One explanation is that older folks just have more years of experience and have had more time to forget things. It's also possible that aging-related brain changes make it more challenging for older folks to store and recover memories. The age-related deterioration in memory is a well-known phenomena, regardless of the reason.

Keywords: *Age, Memory, Old age, Brain*

The human memory is an incredibly complex and fascinating subject. The average person can remember a great deal of information if they are motivated to do so. However, the human memory is also fallible, and people can forget things that they have learned.

The act of taking in data from the environment, processing it, storing it, and then retrieving it later—often years later—is referred to as memory. The human memory is comparable to a computer memory system. There has been a significant amount of research on the subject of memory, which is known as cognitive neuroscience. Much has been learned about how memories are created, stored, and retrieved thanks to memory research.

Sensory memory, short-term memory, and long-term memory are the three main categories of memory. We can temporarily retain information that we have just sensed thanks to a memory type known as sensory memory. For instance, if you see a bird flying by, you probably have a brief memory of what colour it was. This is due to the fact that the data is kept in your sensory memory.

We can retain knowledge for a little amount of time because to our short-term memory. If you are given a phone number, for instance, you will probably be able to recall it long enough to dial it. However, you will definitely forget the phone number if you are not given the opportunity to utilise it straight away.

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A type of memory called long-term memory is capable of preserving data for lengthy periods of time. Autobiographical memories, factual memories, and procedural memories are a few examples of long-term memory.

Age is defined as the amount of time that or someone has been alive.

The aim of the study is to know how age affects the memory, as their isn't enough research done. Older adults are more likely to experience age-related memory decline, which can impact their ability to remember recent events or new information.

The power or process of recalling what has been learnt and kept" is the definition of memory. The bond between us and our family, friends, and community is created through our capacity for memory and retroactive recall. Age is a major factor in memory. Subtle memory alterations that come with ageing are a normal component of the ageing process. As people age, they often experience a decline in their ability to remember things. This is due to a number of factors, including a decrease in the number of neurons in the brain, a decrease in the activity of these neurons, and a decrease in the ability of the brain to form new connections. The relationship between age and memory is a complex one, with a number of factors influencing the strength and accuracy of our memories as we age. Age-related changes in the brain can impact our ability to form new memories, as well as our ability to recall memories from the past. age-related changes in the brain make it more difficult to pay attention, which interferes with memory.

Additionally, our lifestyle choices, health status, and general cognitive abilities can all play a role in how well we remember things as we age. While it is true that some memory decline is a normal part of aging, there is still much we can do to keep our minds sharp as we get older. A healthy lifestyle, social engagement, and mentally stimulating activities can all help keep our memories in good shape as we age. As people age, they tend to experience a decline in memory. This is especially true for those who are over the age of 60. There are a number of reasons for this decline in memory. One of the most important reasons is that the brain cells that are responsible for memory begin to die off as people age. This process is known as neurodegeneration. Additionally, the connections between brain cells, known as synapses, also begin to deteriorate. This makes it more difficult for information to be passed between cells. Another reason for the decline in memory is that the level of a protein called BDNF (Brain-derived neurotrophic factor) decreases as people age. BDNF is important for the formation of new memories. Finally, the ability of the brain to generate new cells, known as neurogenesis, also declines with age. This makes it more difficult for the brain to form new memories. There are a number of ways to combat the decline in memory that occurs with age. One of the most important things that people can do is to stay mentally active. This can be done by engaging in activities that require mental effort, such as puzzles or games, it is important to stay physically active, as this can help to improve the memory.

Age-related memory problems can be caused by a number of factors, including the loss of neurons, changes in the way the brain processes information, and the presence of diseases that affect the brain. There are a number of diseases which come age related to memory. The most common of these is Alzheimer's disease, which affects around 5 % to 10% of people over the age of 65. Alzheimer's disease is a degenerative condition which leads to a gradual decline in cognitive function and memory. Other age-related diseases which can affect memory include dementia, and Parkinson's disease.

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Emma V. Ward et al (2013), In their research they have shown that Age-related reductions in explicit memory (such as recognition) are well-documented. In contrast, many contend that healthy ageing preserves implicit memory, such as priming. When suitable techniques and controls are used, older people prime less than younger people, while the difference is less than the decline in explicit memory. Age differences in priming do, in fact, seldom achieve significance, although this is probably owing to a combination of poor statistical power and unreliable measures. As performance on explicit and implicit tasks is controlled by a single memory signal, this sort of twofold dissociation would pose a challenge to the single system model.

According to a research by, Bruce A. Schneider Et al (2016), inform us. that after accounting for age-related changes in word recognition, older people were demonstrated to have age-related memory impairments. These deficits may be brought on by age-related losses in phonetic, linguistic, and semantic capacities as well as age-related declines in the capacity to memorise or recall information. The memory test findings reveal age-related declines in all serial locations when Continuous Babble is present. The root cause of the consistent impairments reported in each serial position could be aging-related declines in the perceptual and attentional abilities necessary to separate word pairs from a cacophony of

voices. When a word pair is presented against a continuous babble background, the listener might need to continuously concentrate on the acoustic signal in order to process it, using up resources that might have been used to keep the words in working memory where they could be repeated and transferred to long-term memory.

Janine L. Kwapis, Et al (2018), In their research they have shown that ageing impairs both circadian rhythms and long-term memory. Although it is obvious that the circadian cycle has an impact on memory performance. It is uncertain if hippocampal memory loss results from alterations in the circadian clock brought on by ageing. We demonstrate that in the ageing hippocampus, the restraining histone deacetylase HDAC3 restricts synaptic plasticity, long-term memory, and experience-induced expression of the circadian gene *Per1*. This limitation takes place without altering the circadian activity's predictable rhythm. The importance of her *Per1* in the hippocampus for the formation of long-term memory is also demonstrated by us. These findings question the widely held belief that changes in the circadian clock cause changes in memory formation. Instead, they show that the hippocampus circadian clock's gene activity may have an independent effect on long-term memory development.

Lars Nyberg & Sara Pudas (2018) in their studies conducted have shown that some older people are doing very well in areas where age-related memory decline is commonly observed, and from multiple longitudinal studies that show a much deeper level of stable memory function. The success of memory aging is a fact, as evidenced by accumulating evidence from Evidence of old age. We have looked at some of the different factors that may support healthy memory aging. A key component of this concept is the hypothesis that there may be multiple life paths in memory-enhancing aging. According to Nyberg et al. (2012), one method commonly involves brain salvage or low-level brain disease. Here, we have focused on the structural integrity of the cingulate cortex and hippocampus. Another indirect approach is based on the hypothesis that a strong cognitive reserve associated with effective scaffolding and memory allows certain people to age normally despite age-related brain changes. increase. (Chan et al. 2018)

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In their study Melissa Glatigny (2019) showed that in young people, activation of autophagy in hippocampal neurons promotes memory development and improves cognition by integrating the effects of whole-body variables. By increasing hippocampus autophagy, which declines with ageing, age-related memory impairment can be effectively corrected. shows that autophagy is initiated. They found that inducing autophagy in hippocampus neurons is a key technique for enhancing the integration of recent experiences caused by memory and for allowing the influence of systemic factors on cognitive fitness. We also show that preventing senescence-related cognitive decline may be medically facilitated by modulating aged brain autophagy.

Kaoru Nashiro & Mara Mathe (2010) Highlighted in their studies how arousal affects memory retention involved young adults. However, it is not yet known whether arousal has the same effect on memory retention in older adults. Previous studies investigating the effects of emotional arousal on memory (rather than memory retention) (Denburg, Buchanan, Tranel & Adolphs, 2003; Kensinger, Brierley, Medford, Growdon & Corkin, 2002; Kensinger, Gutchess & Schacter, 2007b), the effect remains consistent with normal aging. Therefore, the current study explores whether stimulus arousal increases (1) object memory, (2) intra-object memory coupling, (3) age-gated inter-object memory coupling, and (3) strategy We investigated whether the use of increased memory for both forms of retention.

Charlotte Vercammen (2016) In their studies they wanted to know how well young, middle-aged, and elderly groups with abnormal hearing thresholds performed on memory tasks. They do not accurately reflect the data from a representative sample of the population. Adolescents (ages 20-30), middle-aged adults (ages 50-60), and seniors (ages 70-80) are given the task. A cognitive screening test, the Montreal Cognitive Assessment (MoCA), was successfully completed by each individual. Young people performed significantly better than middle-aged participants on three memory tests, but older participants and middle-aged adults performed similarly. individuals with clinically normal hearing outperform middle-aged individuals on memory tasks. However, changes in memory performance occur even under ideal conditions of intact sensory processing. Our results indicate that these changes occur before middle age.

As a result, their results are also exceptional: they are elderly. It performs similarly to middle- aged people with good hearing thresholds on the Digit Span and Reading Span tests. However, changes in memory performance occur even under ideal conditions of intact sensory processing. According to their statistics, these change begins before the Middle Ages.

Jarrett Evans et al (2018) in their research they examined how lifelong episodic memory is affected by determinants of age, depressive symptoms, demographics, frailty, and health in two large heterogeneous groups. According to a hierarchical regression model, depressive symptoms adversely affected episodic memory performance in both populations, with the effects being more pronounced in older subjects. This study's relevance is that it demonstrates that, among a sizable adult nonclinical lifetime sample, age moderates the relationship between depressive symptoms and episodic memory. The results suggest detecting and researching depressed symptoms: its significance ageing process in order to better comprehend the complicated interaction between physical function, mood, and ageing both memories.

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Elizabeth A. Kensinger and Angela Gutchess (2015) in their studies they have highlighted that age-related changes in social and emotional processing have traditionally been looked at separately. While the amygdala and the amount or vividness of information stored in and retrieved from memory are two impacts that emotion and social processes have in common, ageing has a varied influence on neural activation during these processes. Younger and older persons both activate the mPFC in social circumstances, whereas older adults have greater PFC activation or connection during emotion processing (Ritchey et al., 2011; St. Jacques et al., 2008). Older adults often lack connectivity in the midline areas that make up the 'normal network', but they seem to be able to utilize these areas when it comes to social or emotional processing, and in some cases may even over-rely on them. This similarity may indicate that social and emotional processing overlap in important ways. Aging is beginning to show how memory is affected. Additional effort is required to fully understand the information provided emotionally and socially. Understand the underlying mechanisms of how these activities can contribute to reliable memory.

Myra A. Fernandes & Michelle Manios (2014) conducted their studies on how participants evaluated visually given words with either a strong (intact face) or weak (scrambled face) image as context as "Remember," "Know," or "New." In Experiment 1a, younger individuals demonstrated better memory recall for phrases from rich-than from weak-context encoding trials, but older participants did not. Age-related memory loss maintained in Experiment 1b even when encoding and retrieval periods were quadrupled for older participants, proving that insufficient processing time is not the root cause of this age-related impairment.

The recollection boost from rich encoding conditions was still apparent in Experiment 1c, when splitting attention in young persons during encoding decreased overall memory but did not account for this age-related deficit.

Experiment 2 showed that an own-age bias could not explain the differences in ageing either, considering the context provided by images. The results indicate that a lack of spontaneous binding, or elaboration, of target information during encoding, is the root cause of age-related memory impairments.

Interpretation and Analysis:

Numerous studies have been done to determine how ageing affects memory. The general consensus is that as we age, our memory begins to decline. This decline can be due to a number of factors, including changes in the brain, changes in lifestyle, and changes in health.

One of the most common changes that occurs in the brain, there is a decline in the number of neurons as we age. This decrease can lead to a decrease in the amount of information that the brain can process, which can in turn lead to a decline in memory. Another change that occurs in the brain is a decrease in the amount of blood flow to the brain. This decrease can also lead to a decline in memory.

Changes in lifestyle can also contribute to a decline in memory. As we age, we may become less active and more sedentary. This sedentary lifestyle can lead to a decrease in the amount of oxygen and nutrients that reach the brain, which can in turn lead to a decline in memory. In addition, as we age, we may also lose some of our social connections. This loss of social interaction can lead to a decline in cognitive stimulation, which can also lead to a decline in

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memory. One way to keep our memory sharp as we age is to stay active and engaged. As we age, it's important to keep our minds active through things like reading, doing puzzles, and socializing. This helps keep the brain cells healthy and can prevent memory decline.

Another way to help keep our memory sharp is to eat a healthy diet. Eating plenty of fruits, vegetables, and whole grains can help improve blood flow to the brain and reduce inflammation. This can lead to better brain health and a lower risk of memory problems.

Finally, getting enough sleep is important for memory. When we sleep, our brains consolidate memories and get rid of toxins. This helps us to better remember things when we wake up.

While there are some things we can do to help keep our memory sharp as we age, it's still normal to experience some decline. If you're concerned about your memory, talk to your doctor. They can help you determine if there's a cause for concern.

CONCLUSION

As people age, they may notice that it takes longer to learn new things, they have more trouble remembering where they put things, and they sometimes forget the names of people and common objects. All of these are normal age-related changes in memory and thinking. However, some older adults experience more serious memory problems that interfere with their daily lives. These problems may be a sign of Alzheimer's disease or another dementia.

As people age, they may notice that it takes longer to recall information or that they can no longer remember certain details. This is because the brain changes with age, and certain regions responsible for memory may not function as well as they once did. However, there are ways to help improve memory, such as staying active and engaged in new activities, eating a healthy diet, and getting enough sleep.

Age does not necessarily have a direct correlation with memory recall ability. However, as people age, they may have a more difficult time forming new memories due to changes in the brain. Additionally, older adults may have a harder time retrieving information from their long-term memory. Although there may be some cognitive decline with age, there are many ways to keep the mind sharp and memory strong, such as by staying socially active, mentally active, and physically active.

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Conflict of Interest

The author(s) declared no conflict of interest.

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