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How age and disease affect memory of a person: A review

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Abstract
As we age, our memory generally declines. This is due to a number of factors, including changes in the brain and the effects of disease. One of the most common age-related changes in the brain is the shrinkage of the hippocampus. This area of the brain is responsible for memory formation and recall. As it shrinks, our ability to form new memories and recall old ones declines. Disease can also have a profound effect on memory. Alzheimer's disease, for example, is a degenerative brain disorder that causes memory loss, confusion, and eventual death. Other diseases, such as stroke, can also lead to memory loss. There are a number of ways to combat age-related memory loss and the effects of disease. Some simple lifestyle changes, such as getting regular exercise and eating a healthy diet, can help keep the brain healthy. There are also a number of memory-enhancing supplements that are available.

Keywords: Memory, Alzheimer's disease, age, disease

Introduction
As we age, our brains go through changes that can lead to a decline in memory and other cognitive skills. This is normal, and there's no need to be concerned unless your memory problems are severe or are interfering with your daily life. There are also a number of diseases and conditions that can cause memory loss, such as Alzheimer's disease, dementia, and stroke. If you're worried about your memory, talk to your doctor. They can help you determine if your memory loss is due to normal aging or if it's something more serious. The correlation between age, disease and memory loss is a complex one. Age-related changes in the brain can lead to problems with memory, even in the absence of any medical conditions. And, as we get older, we are more likely to develop conditions that can impair memory, such as Alzheimer's disease. There is no single answer to how age and disease affects memory. Each person is unique and will experience different effects, depending on many factors. However, there are some general trends that can be observed. Age-related changes in the brain can lead to problems with memory, even in the absence of any medical conditions. As we get older, our brains change in structure and function. These changes can make it more difficult to remember things, even in healthy people. Conditions that affect the brain, such as Alzheimer's disease, can also lead to memory problems. Alzheimer's is a degenerative disease that causes changes in the brain that can lead to memory loss and other cognitive problems. It is the most common cause of dementia, and affects people of all ages, although it is most common in older adults. There are many other conditions that can cause memory problems, including stroke, head injury, and depression. Treatment for these conditions can sometimes help improve memory. There is no single answer to how age and disease affects memory. However, understanding the general trends can be helpful in managing memory problems. If you are concerned about your memory, talk to your doctor. They can assess your individual situation and offer guidance on how to best manage your memory problems.

Objective
The article aims to establish link between effects of advancing age, disease and memory of an individual.

Memory, ageing and social factors
Research was conducted to determine how ageing and social factors affect memory and following observations were made: 497 adults between the ages of 25- 80 were made to answer the Metamemory in Adulthood survey.

They were questioned about their involvement in volunteer organizations, perceived involvement in sports, and social relationships.

Results

Activity levels and a high level of social interaction with loved ones were associated with better memory scores. Additionally, those with greater capacity ratings were younger, healthier, and more in control of their own behavior. On the other hand, those with greater anxiety scores exhibited more symptoms, had lower levels of education, and were more outwardly focused.

Conclusions

Persons who consider themselves to be socially and physically active also believe that their memory is good, and they are less concerned about their memory than people who do not consider themselves to be as socially and physically active. While memory ability and memory anxiety are more influenced by social factors, perceived memory change appears to be primarily driven by ageing [1].

Another observation made on Memory Aging for age group of 18 to 80 it was observed that it is important to consider factors occurring early in life when attempting to understand the causes of memory and cognitive impairments apparent late in life [2]. Further studies on Age-related Changes in Memory and Fluid Reasoning in a Sample of Healthy Old People were conducted in which subjects were taken from Healthy Old People in Edinburgh (HOPE) number of participants were 398, tool for evaluation was Raven's Progressive Matrices and Logical Memory. It was observed that while the fall in Logical Memory was speeding up, Raven's score decreased linearly with age. Individual rates of decrease for Ravens varied significantly, but not for logical memory. The covariances of the slope-intercept were not noteworthy. Lower scores were already present in those who went on to acquire dementia, especially so for Logical Memory than Raven's. The correlation between death and study attrition and performance was once more stronger for logical memory. Conclusions: For the purpose of researching healthy cognitive ageing, the HOPE methodology of incremental screening is a workable and useful technique. The rates of deterioration were relatively homogenous, as would be expected for a cohort that was initially healthy. Both the notion of differentiated decline and a rigorous interpretation of the claim that disease alone is solely responsible for cognitive ageing were unsupported [3].

Insufficient subjective memory was discovered in 76.3% of the participants in a study that was conducted on a random population in Finland between the ages of 60 and 78. The study's inclusion criteria were subjective and objective memory impairment, no dementia, and no evidence of any neurologic or other medical conditions that could cause cognitive deterioration. It was determined that there is a high prevalence of age-associated memory impairment in the elderly Finnish population based on the prevalence rates for objective memory impairment, which varied in tests from 31.9 to 78.4% [4].

Memory and Alzheimer's disease.

Based on research on healthy ageing and episodic memory in Alzheimer's disease. Having trouble recalling memories, especially those that depend on personal experiences in their time and spatial settings, is a clear indicator of cognitive ageing (i.e., episodic memories). Depending on the stage being examined (encoding, storage, or retrieval), inter-individual variances, and whether we are discussing normal or pathological (like Alzheimer's disease; AD) ageing, this decline may differ. These cognitive changes are related to the many anatomical and functional alterations in the brain networks governing human episodic memory. The medial temporal lobe (MTL), parietal cortex, and cerebellum undergo age-related alterations after the prefrontal cortex. However, AD affects the hippocampus and the tissues around it before the neocortex. This review discusses research that combines structural, behavioural, inter-individual, and neuroimaging measurements of episodic memory to describe both normal and abnormal cognitive ageing on a variety of levels [5].

This study explores the relationship among normal aging and Alzheimer's disease in autobiographical memories that are highly related to the self. Personal semantics and autobiographical events make up autobiographical memory, while both self-defining memories and unusual recollections comprise these memories. The different elements of autobiographical memory (personal semantics, personal semantic events, and SDMs) have never been compared between healthy aging and pathological aging until now. The study surveyed young adults, older adults, and individuals with Alzheimer's disease about the relationship between AFM3SAM2TM (what is considered the best model for conceptualizing Memoirs of Memory) between healthy ageing and pathological ageing. Autobiographical memories rely on personal semantics, in addition to autobiographical events (AE). Self-defining memories (SDMs) are odd recollections that are intensely important to personality development and serve as a vital resource for the self. The AE and PS elements of AM (including SDMs) and their relationship with the self-have not yet been compared between healthy and pathological aging related alterations. The method involved asking young adults, older adults with Alzheimer's disease and controls to do an autobiographical memory task. According to a study on the influence of normal aging and Alzheimer's disease on autobiographical memory, which is closely tied to the self. Personal semantics and autobiographical events make up autobiographical memory (AM) (PS). Self-defining memories are freak recollections that are extremely important to personality development and serve as an important source for the self. The AE and PS parts of AM (including SDMs) and their relationship to the self-have not yet been compared between healthy and pathological aging-related alterations. The method involved asking young adults, older adults, and Alzheimer's patient's descriptions of their earliest personal experiences. According to a recent study, both normal aging and Alzheimer's disease have an influence on autobiographical memories linked to the self. Personal semantics and autobiographical events (AE) make up autobiographical memory (AM) (PS). Self-defining memories (SDMs) are strange recollections that are extremely important for personality development. They serve as a vital source of self-information when addressing the AE and PS elements of AM and their relationship to the self in healthy vs pathological aging changes has not yet been addressed. The method involved asking young adults (AE 20-35, ACC 35-60), older adults aged 60-90 years, AD patients 60+, and AN participants -NAD healthy control group of 18-64-year olds and 16 AD sufferers, about six episodes relating them to childhood, adolescence, or adulthood. They then complete 21 Likert items which measure episodic self-knowledge in three

domains: awareness, self-orientation and personal concern [6]. In a study the authors looked at the degree and kind of losses in distant memory in those who likely had Alzheimer's disease (AD). In the initial trial, 40 AD patients demonstrated noticeably more severe losses on the free-recall and recognition portions of the Remote Memory Scale, which tests memory for well-known individuals and events. In the second trial, 25 AD patients displayed noticeably worse deficits on the Autobiographical Memory Scale's free-recall part when compared to healthy control subjects. Deficits in retrieval abilities and memory traces may both contribute to remote memory deficits in AD [7].

Memory and Parkinson's disease

It was discovered how well persons with late-onset Parkinson's disease processed facial emotions in a study on the perception and memory of faces in Parkinson's disease. Patients with Parkinson's disease performed worse than controls in the initial trial on a test of recognition memory for unfamiliar faces, but not for words. Patients with Parkinson's illness also had trouble matching different images of strange faces. Experiment 2's findings demonstrated that the memory deficit made it difficult to recognise both familiar and unfamiliar faces, and that this difficulty extended to sex selection and facial speech interpretation as well. In a subsequent word recognition memory test, the performance of the Parkinson's disease and control groups did not significantly vary. Given that Bruce and Young's functional model of face processing suggests that memory impairment cannot be solely attributed to abnormal perception, the challenges that patients face are addressed [8].

Memory and cortisol reactivity to acute stress.

In large part, stress has been connected to the cognitive changes that occur as we age. In a study, the gender differences in the relationship between middle-aged adults' memory function and the amplitude of the acute stress-induced salivary cortisol response were examined. To accomplish this, a crossover design was used, with a control condition and 16 men and 16 women (aged 54–72) who underwent the Trier Social Stress Test. After that, their memory skills were evaluated using a standardised memory exam (Rey's Auditory Verbal Learning Test). Women's memory was more negatively impacted by stress, and both under stressful and control conditions, there was a correlation between a greater cortisol response to the stressor and a weaker memory. Additionally, earlier menarche age, which was also tangentially connected to increased cortisol sensitivity to stress, was associated with a worse memory performance. These findings support the notion that sex plays a significant role in the connection between elevated cortisol levels and subpar memory function. The results also highlight a robust relationship between postmenopausal women's unique cortisol responses to stress and memory functioning [9].

Memory and cigarette smoking (HIV positive)

A study was conducted to observe effects of smoking on memory of people who are diagnosed positive for HIV and it was observed that Current smoking has a detrimental effect on memory, learning, and general cognitive functioning in patients receiving treatment for HIV infection. There was some evidence that smoking-related cognitive deficits in learning were more severe in men than in women. However, it is not at all clear what caused these impacts, but When education level and hepatitis C virus infection were taken into account in multivariate models, the differences related to smoking were not statistically significant. Therefore, rather than having an immediate effect on cognitive performance, smoking may just represent a general trend to more widespread impairments and comorbidities [10].

Memory and chronic diseases

Subjective memory complaints (SMC) are regarded to be the earliest sign of dementia and are a common predictor of ageing. Inflammatory processes, which are common in other chronic diseases and disorders such arthritis, heart disease, and stroke, are thought to have an impact on cognitive impairment. From August 2013 to March 2014, 6179 persons aged 56 and above participated in a cross-sectional study to investigate the relationship between SMC and chronic diseases. The association between SMC and specific chronic diseases (such as asthma, kidney disease, heart disease, stroke, arthritis, hypertension, and diabetes) as well as multimorbidity was investigated using multivariable logistic regression analysis. Utilizing latent class analysis, the profile of health issues was evaluated (LCA). In the latent class model, the impact of SMC was calculated using multinomial logistic regression. Results: In the fully controlled multivariable logistic regression models, there was a statistically significant correlation between SMC and asthma, stroke, heart disease, arthritis, and multimorbidity [11].

Memory and Functional Memory Disorder

Patients at memory clinics frequently have functional memory disorder (FMD), which is a crucial prodromal dementia differential diagnosis. The description of FMD offered by the authors is that it is an inherited medical and psychological disorder that is intimately linked to psychosocial burden and misery. A study was conducted in which 73 patients who suffered memory deficit and psychological distress were chosen they went through testing and follow up was taken after 20 months, results: Overwork, interpersonal issues, physical illness, adjustment disorder, dysthymia, and anxiety about Alzheimer's disease were all noted as sources of unhappiness. Only six patients' FMD had improved at the time of follow-up, while 39 had it still. The average level of symptom severity only slightly decreased. Conclusion of the study was In many cases, FMD is a chronic issue rather than a passing one. The persistence of burdensome conditions and the inability to avoid the "stress cycle," which reinforces both cognitive impairment and suffering, are potential causes [12].

Memory and Addison's disease

A lot of debate has surrounded the impact of corticosteroids on memory function. While many research have indicated that corticosteroids can negatively affect memory function, other studies have shown that they can actually improve it. The two separate corticosteroid receptor types—the glucocorticoid receptor (GR) and the mineralocorticoid receptor (MRs)—and the roles they play in memory formation provide one reason for these inconsistent effects. Studies on rats and chickens imply that encoding of sensory information requires MR activation, whereas consolidation and retrieval of memories require normal levels of GR activity (in addition to the already activated MRs). In review of their benefits and side effects, the researchers found that their best results were on a program using MR-specific and GR-specific exogenous steroids when compared to the use of GR-only. Nine

Addison's disease patients participated in a study to determine the effects of adding high-dose steroids tailored for MR or GR (9-fluorohydrocortisone or dexamethasone, respectively) to MR and GR. The outcomes demonstrated that when both receptors were activated in comparison to when GRs alone were activated, participants performed better on the Digits Backward task. The statistical significance of this finding was P0.01.In nine Addison's disease patients, the effects of using MR-specific exogenous steroids or GR-specific exogenous steroids on verbal and nonverbal memory were investigated (mean age, 37.9 years). Either GR activation with dexamethasone or 9-fluorohydrocortisone stimulated MR activation. The Digits Backward exercise revealed that subjects performed better when both receptors were active, which is a sign of verbal and nonverbal memory (P at less than 0.01). Thirty-nine year old Addison's disease patients had their functional MR and GR levels increased. Using a repeated measures approach, researchers found that participants significantly improved in the Digits Backward task when MRs and GRs were both activated. The difference of performance was so large that it lead to a discovery: when only untreated GR receptors are activated, subjects will perform worse than they would have with an equal activation of both receptor types [13].

How age and disease affects memory

It is a well-known fact that as a person ages, their memory begins to decline. This is due to the fact that the brain begins to shrink and the connections between neurons begin to deteriorate. Additionally, the level of neurotransmitters, which are chemicals that transmit signals between neurons, also decrease with age. All of these factors can lead to a decrease in memory function.

There are a number of diseases that can also affect memory. Alzheimer's disease is the most well-known of these, and is characterized by a loss of memory and cognitive function. Other diseases that can affect memory include dementia, Parkinson's disease, and Huntington's disease.

There are a number of ways to help offset the effects of age and disease on memory. These include staying mentally active, eating a healthy diet, and getting regular exercise. Additionally, there are a number of supplements that are believed to help improve memory function. These include omega-3 fatty acids, ginkgo biloba, and vinpocetine.

The relationship between age, disease and memory

There are many factors that can affect a person’s memory, including age and disease. As we age, our brains can shrink and we can lose brain cells. This can lead to problems with memory, thinking, and judgment. Diseases like Alzheimer’s and dementia can also cause memory problems. There are some things you can do to help keep your memory sharp as you age. These include staying physically active, eating a healthy diet, socializing, and challenging your mind with activities like puzzles and memory games. If you are worried about memory problems, talk to your doctor.

Conclusion

There is no single answer to how age and disease affects memory. However, understanding the general trends can be helpful in managing memory problems. If you are concerned about your memory, talk to your doctor. They can assess your individual situation and offer guidance on how to best manage your memory problems.

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