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Relationship between the Inferotemporal Cortex and the Memory Centre (Hippocampus) in Animals and the Responsible Factors Affecting the Memory

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ABSTRACT: The inferotemporal brain in primate plays a major role in the acquisition and retention of visual shape discriminations. The inferior temporal cortex (IT), a component of the ventral visual pathway, is involved in several aspects of object vision, including object identification, face perception, and scene interpretation. Foveal representations within the neurosensory retina specialize in high-acuity object vision, notably face identification, whereas intermediate representations analyze behavioral valence utilizing color and surface cues. Peripheral representations encode information relevant to scenes. This multistage, parallel-processing paradigm indicates an intrinsically determined arrangement refined by visual experience, matching with principles of cortical development. Long-term memory involves constant reconfigurations, especially at lower levels of neuronal clusters. Defining the capacity of memory lacks an agreement, since it relies on elements such as interference generated by objects being active in memory. Working memory capacity (WMC), a brain memory system, analyzes and retains transitory information, crucial for cognitive functions. While the capacity to repeat information relies on work demands, a central memory store is restricted to 3 to 5 significant items in young adults. Emotion strongly impacts cognitive processes in humans, including perception, attention, learning, memory, reasoning, problem-solving, and motivation. Attention and executive control, fundamental to learning, are tightly connected to naturally restricted attention capabilities, concentrating on important information. Emotion improves encoding and supports effective information retrieval. However, the impact of emotion on learning and long-term memory retention may vary, with studies revealing boosts or impairments dependent on numerous conditions. This review article covers the elements impacting human forgetfulness, including aging, stress, emotional disturbance, encoding failure, storage failure, and retrieval failure. The efficacy of the brain in keeping information as memories is studied, coupled with a study of variables impacting the brain's potential for long-term retention.

KEYWORDS: Inferotemporal cortex, Dorsolateral prefrontal cortex, Ventral visual pathway, Lethologica, Sulcus principalis, Flashbulb memory.

I. INTRODUCTION

The human brain consists of around one billion neurons, each forming around 1,000 synapses with other neurons, resulting in a network of over a trillion connections. The possible constraints on storage capacity that arise from individual neurons storing single memories are overcome through a collective process, enabling each neuron to participate in numerous memories simultaneously [1]. This collaborative process significantly increases the brain's capacity to store memories, reaching an estimated 2.5 petabytes [2]. Quantifying the extent of memories is a challenge in accurately determining their storing capacity. The adult brain contains around 100 billion neurons, which are highly interconnected by multiple synapses [3]. The ventral visual pathway (VVP), which is involved in the identification of visual elements such as objects within a visual field, includes the inferior temporal cortex (IT). While macaque monkeys demonstrate IT on the lateral and ventral surfaces of the occipital and temporal cortex, human IT is placed along the lateral boundary of the temporal lobe onto the ventral and medial surface. Although there are differences between human and monkey brains, both species' visual systems demonstrate commonalities in psychophysical performance. The layout of early cortical visual-processing areas (V1, V2, V3) is essentially equal, and the placement of IT is comparable. The significance of information technology (IT) in object vision, face identification, and scene

perception is well recognized and backed by robust blood-oxygen-level-dependent signals detected in functional magnetic resonance imaging (fMRI) when individuals are presented with images of items, faces, and scenes. IT neurons exhibit stimulus selectivity for images, with certain neurons showing exceptional selectivity for entire categories [4]. Memories, distinguished by complex details, consume varied amounts of space, with certain memories fading with time, releasing cognitive resources. The intricate interplay within our cognitive faculties influences our emotional states, cognitive interpretations, affective experiences, and motivational inclinations, so contributing to the formation of our individuality. Contrary to the popular conception of Long-Term Memory (LTM) as stable and static, emerging insights from neuroscience and informatics reveal continual reconfiguration of LTM, particularly at lower levels of neuronal clusters. Rough approximations propose a human memory capacity of 10^{8432} bits [5].

The multidimensional aspect of memory is underlined by its participation in information storage, reasoning, comprehension, and learning. Notably, memory performance fluctuates based on elements such as attention, vigilance, awakening, focus, interest, motivation, emotional state, ambient conditions, breathing patterns, and olfactory oscillations. The latter phenomena, involving the activation of olfactory system neurons upon the entry of air through nasal receptors, covers four categories linked with learning and memory [6].

WORKING OF INFERIOR TEMPORAL CORTEX (IMAGE FORMATION)

The importance of the inferior temporal cortex (IT) extends beyond its key role in object vision, playing a vital part in determining the relevance of things to behavior in nonverbal, especially social, communication, such as face recognition, and in the navigation of the environment. The operational mechanism of IT involves the formulation of a theoretical framework elucidating how the visual system undergoes a transformation of retinal images into seemingly abstract representations, notably semantic ideas encompassing object categories such as vehicles, animals, buildings, and tools. Notably, while vision relies on retinal signals, the comprehension of object knowledge seems to operate independently of these signals, introducing a disconnection between the sensory input from the retina and the higher-order cognitive processing associated with object recognition and categorization.

VISUAL INFORMATION PROCESSING

The information processing inside the ventral visual pathway depends upon a feed forward hierarchical network that interconnects a number of visual regions, culminating in the development of high-level visual representations within the inferior temporal cortex (IT). The cerebral cortex, in turn, stores numerous spatially different retinotopic representations of the visual field, requiring the presence of various cortical representations for full visual processing. A visual area, defined as a region of the cortex, encompasses a single, more-or-less full representation of the visual field, devoted to conducting basic computations related with visual perception. Although first imagined as a strictly hierarchical sequence, the actual connectivity between neurons in various visual regions is convoluted, comprising reciprocal feedback connections and feed forward pathways that may bypass intervening areas. Prominent routes, such as the V1–V3-MT pathway, contribute to this complex neuronal network. Notably, direct connections between V1 and regions beyond V2 question the tight hierarchical pattern typically given to the visual pathway. The traditional concept of each visual region having a solitary, unified purpose is challenged by observations of sub-compartments inside these areas, demonstrating diverse functions from the rest of the area. An example is the detection of "blobs" in V1. Furthermore, discrete bands of deteriorated tissue demarcate unique representations within the visual field. For instance, a band along the vertical meridian divides V1 from V2, while another band gives evidence for the presence of additional visual regions, namely V3 and V4, with the border between V2 and V3 corresponding to a horizontal meridian. Moving anterior to V4, the detection of degenerating tissue in the form of islands, despite without a definite band structure, signals an evident relationship between hemispheres, suggestive of a fragmented representation between V4 and IT. These complicated structural and connectivity characteristics underline the comprehensive and nuanced architecture of the visual processing network inside the ventral visual pathway [7-8].

What is memory?

Memory, within the context of psychological processes, comprises a variety of sophisticated activities, including the acquisition, storage, retention, and eventual retrieval of information. The human memory system is defined by its ability to both retain and retrieve information, forming a key cognitive function. Nevertheless, this cognitive process is not immune to faults. Instances of forgetting or misremembering illustrate the fundamental difficulties involved in human memory, where failures may show at different levels. The memory process develops via three basic phases: encoding, storage, and retrieval. Encoding signifies the initial transfer of sensory information into a format suited for storage, whereas storage entails the preservation of encoded information throughout time. Retrieval, the last step, refers to the effective recall of stored information when necessary. The effectiveness of these mechanisms together influences the dependability and accuracy of human memory. Although memory lapses are generally seen as insignificant

inconveniences, such as forgetting birthdays, they may also act as markers of more severe cognitive diseases, including Alzheimer's disease and different kinds of dementia. These circumstances have a major influence on the overall quality of life and the individual's ability to operate optimally in everyday activities. Thus, knowing the complexity of memory processes and detecting possible indicators of memory-related illnesses is vital for developing cognitive well-being and guaranteeing complete healthcare.

How memories are formed?

The act of remembering generally applies to the process of memory encoding, which may be defined into three stages of information processing: superficial, middle, and deep [9]. Specifically, the shallow level includes the first exposure to the physical structures of stimuli. The intermediate processing stage comprises assigning labels to identified things, whereas the deep level of processing digs into the meaning and symbolic aspects of the stimulus.

To construct a new memory, information must undergo encoding, a procedure that turns it into a useful form. Once correctly encoded, the information is kept in memory for eventual retrieval. Prevailing thinking among researchers has postulated that memories are produced by modifications in brain neurons, with recent knowledge highlighting the significance of connections between neurons. The development of memories requires either strengthening existing connections or stimulating the growth of new ones [10]. Changes in synaptic connections, essential for learning and retaining new information, play a critical part in memory formation. The process of reviewing and rehearsing material assists to strengthen memory by reinforcing the connections between synapses encoding the relevant knowledge.

While a large percentage of our stored memories normally live beyond our conscious awareness, the memory retrieval process helps the conscious remembrance of stored memories when required. Neuronal processes in the prefrontal cortex (PFC) underline its capacity to choose and flexibly integrate input from multiple areas to execute a shared behavioral strategy. Notably, the PFC contains color-biased areas, and although their exact placements across a hemisphere may vary, they display a systematic link to face patches. The structure of the PFC, driven by inputs, shows that various PFC regions may contribute uniquely to decoding parallel representations in the inferior temporal cortex (IT).

How long do memories last?

Examining the nature of memory unavoidably requires analyzing the time component of memories, since they vary in length. Certain memories are transient, lasting just a handful of seconds, enabling humans to acquire sensory information from the current environment. Short-term memories, on the other hand, have a somewhat larger lifespan, often enduring for around 20 to 30 seconds. These memories largely consist of material presently consuming an individual's concentration and cognitive processes. In contrast, long-term memories exhibit a remarkable ability for endurance, lasting across days, weeks, months, or even decades. While most long-term memories stay outside of current consciousness, they may be brought into awareness when appropriate. Notably, some memories, especially those related with traumatic situations, display a longer duration. The persistent quality of these recollections is ascribed to heightened physiologic arousal after unfavorable situations, leading to the extended retention of such memories. The effect of enhanced physiologic arousal acts as a mechanism that augments the lifespan of memories, especially those endowed with emotional meaning [11].

Using memory

The usage of information contained in memory needs its retrieval, a process impacted by several elements such as the nature of the information and the existence of retrieval signals. However, this retrieval process is intrinsically faulty, leading to times when people may feel that the solution to a question is just beyond their immediate grasp. This behavior is represented by a difficult memory recall problem known as *lethologica* or the tip-of-the-tongue phenomenon. The tip-of-the-tongue phenomenon encompasses the feeling of being unable to recollect a particular piece of knowledge despite a subjective impression that it is retrievable. This typical cognitive phenomenon illustrates the subtleties involved in memory recall, where despite the encoded information being available, retrieving it may be temporarily difficult. The phenomenon acts as a testimony to the subtle and dynamic character of the human memory system, where occasional hurdles in retrieval contribute to the continual research of memory processes and their underlying principles.

Organizing memory

The skill to access and recover knowledge from long-term memory plays a vital role in decision-making, social relationships, and problem-solving. However, for memories to be retrievable, they must be structured in a methodical fashion. One perspective of memory structure is the semantic network model, which claims that particular triggers activate connected memories [12]. According to this paradigm, visiting or remembering a specific place might awaken

memories associated to events that occurred in that area. Similarly, pondering a particular campus building may act as a trigger for memories associated to attending courses, studying, and connecting socially with classmates. Additionally, some stimuli, such as fragrances, may operate as strong triggers, bringing memories into conscious consciousness. For instance, the aroma of a specific perfume or freshly made cookies might elicit a flood of vivid memories related to individuals and events from one's past. The relevance of fragrance in memory is further underscored by its function in the recognition of odors. To identify a fragrance, a person must recall times when they previously experienced it and then relate it to visual information connected with those events. Notably, injury to parts of the brain associated to memory might affect the capacity to detect fragrances [13]. Conversely, research shows that fragrance may act as an effective trigger for autobiographical memories in persons with Alzheimer's disease [14]. This discovery underlines the tremendous influence and power of memories, as well as the delicate interaction between sensory experiences and memory retrieval processes.

Types of Memory

Numerous models have been put up to explicate the complicated structure and function of memory, with the stage model of memory emerging as a notable framework. First presented by Richard Atkinson and Richard Shiffrin in 1968, this paradigm delineates three separate phases or kinds of memory: sensory memory, short-term memory, and long-term memory [15].

1. Sensory Memory

Sensory memory represents the earliest step in the memory process. At this stage, sensory information obtained from the environment is temporarily kept for an incredibly limited length, often lasting little more than half a second for visual information and three to four seconds for aural information. Notably, people selectively attend to various features of their sensory memory. The process of concentrating attention on sensory inputs increases the transmission of important information into the second stage of memory, specifically short-term memory.

2. Short-Term Memory

The word "short-term memory" is typically associated with "working memory," meaning the mechanisms involved in briefly storing, organizing, and modifying information depending on our present requirements. This sort of memory, sometimes referred to as active memory, covers the knowledge inside our present awareness or conscious thinking, corresponding with Freud's Psychoanalytic Theory's idea of the conscious mind. Sensory memories, when attended to, contribute to the establishment of short-term memory.

Although many short-term memories are fleeting and rapidly forgotten, devoting attention to this information permits it to develop to the second stage: long-term memory. The normal period of information retention in active memory is roughly 20 to 30 seconds [16]. This length may be increased by the use of memory methods such as chunking, including the grouping of relevant information into smaller, more digestible pieces. A landmark work by psychologist George Miller in 1956 stated that the capacity of short-term memory for retaining a list of objects was between five and nine. Some recent studies argue that the true capacity of short-term memory is likely closer to four, demonstrating its limits in keeping only scant details from the provided information [17].

3. Long-Term Memory

Long-term memory covers the permanent preservation of knowledge, and in Freudian psychology, it coincides with the ideas of the preconscious and unconscious. This reservoir of knowledge mostly lies outside our immediate awareness but may be brought into working memory as necessary. The ease of remembering specific experiences varies, with some being accessible and others proving tougher to recover.

One prominent approach asserts three major forms of memory: sensory memory, short-term memory, and long-term memory. Sensory memory is transient, short-term memory has a somewhat greater endurance, and long-term memory may persist for a lifetime. While long-term memory is typically regarded to lack specific information, it is documented that it can retain a massive amount of facts [18]. Evaluating the information capacity of long-term memory demands an honest evaluation of both the number of objects that can be remembered and the fidelity, or amount of detail, with which each item is recalled. This perspective emphasizes a key shortcoming in large-scale memory experiments [19-21].

WHY WE FORGET

Forgetting is a very widespread event, appearing either as the loss of knowledge from memory or, in rare situations, as a failure to retain information properly from the beginning. The dynamics of memory encompass several elements, including situations when memories compete with one other, hindering the recollection of particular information. Additionally, people may consciously strive to forget facts they wish not to recall.

Consider the ordinary occurrences of forgetting someone's name or neglecting an important meeting, highlighting the regular nature of forgetfulness in daily life. Several basic theories underpin the phenomena of forgetting, encompassing:

1. **Failure to store a memory:** Occurs when information is not correctly encoded and stored in memory.
2. **Interference:** Arises when fresh or existing memories disturb the retrieval of targeted information.
3. **Motivated forgetting:** Involves the purposeful suppression or avoidance of certain memories owing to personal goals or emotional causes.
4. **Retrieval failure:** Reflects difficulty in retrieving stored information despite its existence in memory.

These four hypotheses jointly add to our understanding of why forgetting is a prevalent characteristic of human memory [22].

How to Improve Memory

Enhancing memory may be done via numerous successful ways for treating minor memory loss [23]. These tactics include:

1. **Write it down:** The act of physically writing with a pen and paper assists in anchoring the memory into the brain, functioning as a future reminder or reference [24].
2. **Repeat it:** Repetition is crucial in storing memories beyond short-term memory, promoting increased retention.
3. **Mathematical calculations:** Engaging in mathematical tasks corresponds favourably with working memory capacity. Regular practice in mathematics adds to the strengthening of working memory.
4. **Attach meaning to it:** Associating meaning with knowledge boosts recollection. For example, associating a freshly encountered individual to someone previously known might benefit in recalling their name.
5. **Test yourself:** Contrary to widespread assumption, being tested on material emerges as one of the most effective techniques to strengthen recall and improve memory [25].
6. **Take a mental picture:** Actively creating mental notes of commonly forgotten items, such as the location of vehicle keys, helps boost memory recall.
7. **Group it:** Categorizing knowledge helps better retention and retrieval, making memory more structured.
8. **Get adequate rest:** Research reveals that sleep plays a critical role in learning and the creation of new memories, contributing considerably to memory consolidation [26]. Human sleep is typically categorized into two primary phases: non-rapid eye movement (NREM) and rapid eye movement (REM). NREM sleep contains four distinct depths (NREM-1, NREM-2, NREM-3, and NREM-4), with stages 3 and 4 indicating smaller branches of REM sleep [27-28]. Sleep appears especially advantageous for hippocampus-related forms of memory. Inadequate sleep, including instances like micro sleep, sleep attack, sleep apnea, and sleep deprivation, severely impairs memory. A comprehensive summary of cognitive performance after sleep deprivation reveals several effects: a decline in both short-term recall and working memory, reduced learning during cognitive tasks, impaired divergent thinking skills, increased errors in tasks involving the prefrontal cortex, elevated errors in providing irrelevant answers, performance decline over time, and heightened errors in answering non-situational questions [29-30]. Deprivation of rapid-eye-movement sleep (REMD) significantly impacts memory processes, notably procedural and implicit memory. Animal studies imply that REM sleep adapts dependent on the needs of memory consolidation. During REM sleep, the brain undertakes a complete process of memory consolidation [31-32].
9. **Use memorizing techniques:** Employing tactics including repeating knowledge, mnemonics, and participating in memory games, such as chess and number games, may successfully overcome minor memory issues.
10. **Physical exercise:** Regular physical activity, as shown in disciplines like yoga, has been found to increase cognition. Yoga, based in Indian culture, not only enhances physical strength but also significantly influences mental well-being, attention, and cognitive capacities. This ancient practice has been adopted internationally for its various health advantages.

How to Protect Your Memory

While psychological illnesses, including Alzheimer's disease and age-related memory impairments, afflict a considerable percentage of older persons, the deterioration in memory throughout later adulthood may not be unavoidable. Despite some talents exhibiting a propensity to deteriorate with age, research suggests that persons in their 70s typically do equally well on cognitive tests as those in their 20s. Even in their 80s, certain forms of memory may

indicate improvement with age [33]. To maintain cognitive health as one matures, following specific lifestyle choices is recommended:

1. **Avoid stress:** Research underlines the damaging effect of stress on memory-associated brain structures, notably the hippocampus [34].
2. **Avoid drugs, alcohol, and neurotoxins:** Excessive drug use, alcohol intake, and exposure to neurotoxic chemicals including heavy metals and pesticides have been related to synaptic degeneration, disrupting neural connections [35].
3. **Get adequate exercise:** Regular physical exercise promotes brain oxygenation, necessary for synapse development and growth [36].
4. **Stimulate your brain:** The cliché "use it or lose it" is true for memory. Engaging in cognitively stimulating activities, particularly those connected to one's employment, has been associated to a lower chance of getting dementia [37].
5. **Maintain a feeling of self-efficacy:** A high feeling of self-efficacy, defined as the belief in one's control over their life, is connected with sustaining cognitive capacities in old age. This psychological aspect has also been connected with decreased stress levels [38].
6. **Adopt a healthy lifestyle:** A diet high in unsaturated fatty acids (UFA) and low in calories has been found to increase memory performance. Breakfast, in particular, has a key function in enhancing cognitive performance among older persons [39-40].

By integrating these lifestyle recommendations, people may take proactive actions to enhance brain health and perhaps lessen the effect of age-related cognitive decline.

FACTORS AFFECTING EFFECTIVENESS OF MEMORY

1. DISEASE AND BRAIN DETERIORATION DUE TO AGING

Memory is prone to fluctuations throughout various periods of an individual's life, with varied levels reported in children, adults, and elderly persons. In youngsters, working memory capacity is noticeably stronger, impacted by their learning ability and environmental development. This heightened working memory capacity plays a critical role in their information acquisition, planning, and execution. Adults, on the other hand, frequently have a more specific emphasis on work-related knowledge owing to employment duties, enabling them to prioritize and recall activities pertinent to their professional domains while possibly neglecting other information. In contrast, older persons often display a reduction in memory ability, a result of the aging process that puts constraints on learning capacity. Memory in later age tends to be selective, with people more skilled at recalling facts of personal interest. Visual working memory capacity, which peaks about age 20, undergoes changes with aging. Older persons may have higher sensitivity to distractions, needing more effort to concentrate on pertinent information. The aging brain experiences cognitive obstacles, including a reduction in information processing speed. Working memory capacity decline becomes essential in discourse processing, impacting the perception of word meanings and links between fresh stimuli and existing knowledge. Moreover, age-related disorders such as Alzheimer's disease, defined by chronic memory loss, have been strongly connected with increasing age. Alzheimer's disease appears via the existence of plaques and the decrease of cholinergic neurons in the brain, further impairing memory skills [41-43].

2. ENCODING FAILURE

Memory lapses typically occur when we fail to capture comprehensive information at the proper time, leading to encoding problems and eventual amnesia. The process of encoding entails changing sensory data into a form that the brain can store. Two degrees of encoding attempts are recognized: inadvertent and purposeful.

i. **Incidental encoding:** This happens when there is a high degree of encoding attempts, generally when people are actively focused on and attempting to retain certain information.

ii. **Intentional encoding:** This includes a low degree of encoding attempts, where people may not be actively seeking to retain specific things.

Selective attention has a crucial influence in encoding failure. In many communication scenarios, numerous sources of acoustic information may be concurrently observable for sensory processing, particularly in auditory environments. The struggle for attention among multiple sources might lead to a failure to fully encode the desired information, resulting in memory lapses. Understanding the dynamics of selective attention and improving encoding attempts may help to more efficient memory recall [44].

3. FAILURE IN USE OF STORED MEMORY

When people participate in remembering signals from their external world, this process is generally undertaken separately. However, when charged with conveying the encoded knowledge to others, the requirement arises to extract this information from their memory system. The inability of certain persons to correctly recover information may be

linked to the introduction of new information or the remembrance of pre-existing knowledge. The interference hypothesis delineates into two separate types, each demonstrating how either fresh or old information impairs memory. The first kind is proactive interference, when elements learnt earlier impair the recovery of later acquired information [45]. Conversely, retroactive interference identifies a scenario where knowledge received later creates uncertainty in remembering information acquired earlier. These phenomena find connection with the obstacles involved with retrieval cues. Decay hypothesis suggests that memory loss tends to worsen with time, increasing to the complexity of retrieval. Another common occurrence of retrieval failure in people's lives is the Tip-of-the-Tongue (TOT) phenomena. This semantic retrieval failure involves substantial cognitive effort and typically depends on familiar signals, even though people may be unclear whether these cues coincide with their desired remembrance. Understanding these theoretical frameworks increases our grasp of the various mechanisms involved in memory retrieval [46-47].

4. YERKES-DORSON LAW WITH HIPPOCAMPUS AND STRESS LEVEL EFFECT ON COGNITION

The hippocampus, a region especially sensitive to stress hormones, stands as a highly adaptable but vulnerable portion inside the human brain. Collaborating with the medial temporal lobe, it takes a vital role in the process of memory formation. The influence of stress hormones on the hippocampus has ramifications for memory formation, perhaps altering its efficacy. Flashbulb memory, a separate sort of memory, incorporates emotionally meaningful experiences. Individuals generally remember facts relevant to such occurrences with more precision and vividness compared to less emotionally charged encounters. This occurrence illustrates the delicate connection between emotions and memory processes.

The Yerkes-Dodson Law gives useful insights into the link between arousal levels and performance. According to this rule, optimum performance is obtained within intermediate arousal circumstances, with lower or greater arousal states leading to poor results. This underlines the intricate nature of the link between arousal levels and cognitive performance, underlining the significance of a balanced and moderate arousal state for optimum functioning [48-49].

5. LATELY MEMORY LOSS DUE TO LACK OF REVISION

Memory storage is typically divided into two different components: Short-term Store (STS) and Long-term Store (LTS). The Short-term Store (STS) is connected with obvious restrictions in practical scenarios, whereas the Long-term Store (LTS) is assumed to have an endless capacity, with no known constraints. The process of information transfer often entails migrating from the Short-term Store (STS) to the Long-term Store (LTS) [50-51].

Stored information demonstrates connection within various memory stores. Numerous scholars suggest that relational networks describe the nature of these linkages. Activating a single point within the assembled information in the learning process causes the firing of subsequent items. This covers both those already activated and those indirectly related to the active points. Such simultaneous activations disclose a complicated web of links among stored objects, underlining the intricate structure of memory networks [52-54].

II. CONCLUSION

The inferotemporal brain in primates plays a major role in the learning and retention of visual shape discriminations. Notably, retrograde effects arising from lesions in the inferotemporal brain substantially influence memory for forms specified by any cue. Understanding the encoding process is crucial in appreciating the incidence and processes of forgetting. While direct control over forgetting may be challenging, adopting a better lifestyle, including a balanced diet, proper sleep, and frequent exercise, might help to memory development. Memory is subject to numerous elements such as age, stress levels, and cognitive ability. Mitigating these impacts may be done via adopting beneficial habits into one's routine, including physical exercise, yoga, meditation, participating in hobbies like chess and puzzle-solving, and mastering mathematics. These actions together lead to the strengthening of memory capacity.

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