**Recent Studies**

            Memory itself is a topic that has been extensively researched and studied. It is frequently a �hot topic� for scientists and the general public, as memory is an important aspect of everyone�s daily life. In 1999 and 2000, Time magazine published two articles containing information and groundbreaking studies on memory, how memory functions, and the improvement of memory. The 1999 article highlighted a study from Princeton, M.I.T. and Washington University, which altered a mouse�s DNA in an attempt to improve its memory and therefore intelligence. Everything in our consciousness requires memory; without a short term memory, it would be impossible to comprehend any written and spoken word, as one would be unable to remember what had been previously stated. Therefore, improved memory would directly influence brain aptitude. In an aging population, ways to enhance one�s memory or reverse deterioration of it would be coveted information. The number of people suffering from Alzheimer�s increases daily, and it becoming a major concern in the health field. Based on the mice in the study, professors and scientists from the universities suggest that that improving a human�s NR2B gene could remarkably enhance their learning capability. The NR2B gene is responsible for creating the NMDA protein, which is a chemical signal receptor in nerve cells. With more NR2B and in turn, more NMDA, a human brain would have a heightened sensory in the firing and reception of chemical signals. The patterns and pathways of these signals, as was previously discussed, help in the consolidation of memories (Lemonick 56-57).

The other extensive Time article, published less than a year later in 2000, discussed the �Battle to Save your Memory�. Among other things, it feature memory boosting tips, including everything from Ginkgo Biloba to self-help books. Also, the article challenged an old theory in science: neurons (that help build memory circuits) can *not* be depleted, as was formerly assumed. Instead, poor memory at older ages can be blamed on the connections between neurons. Older humans may have trouble remembering because the stimulus that activates the neurological memory pathway has been in some way altered or depleted (Kluger 48-49, 54-55).

            MIT, in addition to their collaboration on the aforementioned study, has been doing groundbreaking research on the memory, brains, and dreams of animals, specifically rodents. In January 2001, MIT�s Matthew Wilson published a study that proves that animals do dream. During these dreams, which, like humans, occur during REM episodes, the rats� brains showed activity in the hippocampus activity. Matthew Wilson�s research is focused on how memories are stored in the brain during sleep, and he theorizes that the �long-term encoding of memories may occur when memories are reactivated during sleep.� Wilson has continued his research in this area, and published another study in December of 2002. This information reinforced the earlier study, but added the idea that rats dream both during their REM sleep and non-REM, or slow wave sleep. While it was previously assumed that most short term memories were stored in the later portion of one�s sleep, during an REM period, this new study suggests that early, non-REM sleep and later REM sleep may work hand-in-hand to process and store new information that was learned during the day. Based on their findings, the MIT researchers can speculate that the memory storage that occurs in non-REM sleep immediately after the event occurred serves to hastily save the short-term memory; the REM episodes that occur in nights following the learned task serve to reinforce the memories (web.mit.edu/newsoffice/www).

            With sleep deprivation and the brain as such an intriguing current topic, many other students have recently performed relevant experiments to further explore the issue. A 2001 study from a Biology student at Bryn Mawr College on �The Effects of Sleep Deprivation on Brain and Behavior� offers some unique viewpoints. This paper discussed sleep deprived peoples� abilities to perform various tasks under sleep deprivation. Verbal learning tasks were not impaired due to the fact that other areas of the brain compensated for the temporal lobes hindered function. Another interesting aspect of the brain under strained conditions pertains to the frontal lobe. This regions seems to be affected after sleep deprivation, because subjects have trouble using their full vocabulary and thinking complexly. The subject might exhibit symptoms resembling those  of a depressant drug, such as slurred speech, stuttering, and a slow pace of speaking (http://serendip.brynmawr.edu/bb/nuero/nuero1/web3/Ledoux.html).

            The discussed studies all contain fascinating information and discoveries. The research that each and every student or scientist is doing on the topic of sleep deprivation and memory is helping to advance understanding by both the medical community and the general public. Although monumental advancements have recently been made in further learning about the brain, there is still much that is unknown. The memory is even more mysterious than the brain, but just as intriguing, as it effects every single aspect of our lives. While the previous studies may have interested me in the topic and encouraged me to pursue this project, I ultimately plan on branching out into a different, though related area for my own investigation.

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