

Cognitive term of behaviour

Psychology, Behaviorism



Examine one interaction between cognition and physiology in terms of behavior. Evaluate two relevant studies. One of the most famous case studies of amnesia in the history is HM who was suffering from epileptic seizures and had a surgery when he was only nine years old that removed 2/3 of his hippocampus, medial temporal lobes, parahippocampal gyrus and amygdala. The operation was successful in its primary goal of controlling his epilepsy but as a result of the operation he suffered from severe anterograde amnesia.

After the operation, he could not commit new events to long-term memory. He could remember events from before the operation for the rest of his life. His working memory and procedural memory were intact. After the operation, he could continue to complete tasks that require recall from the short-term memory and that involved procedural memory but could not make use of long-term episodic memory after the operation. After the operation, he lost his declarative memory (semantic and episodic). Because of the removal of these parts of brain, he might face these problems.

One that might be he couldn't encode the information or he could do that but he couldn't retrieve it or he could do them but could not store them in his memory. Clive Wearing had brain infection -herpes encephalitic- affecting the parts that are concentrated on memory. MRI scanning shows damage to the hippocampus and some of the frontal regions. His ability to perceive what he saw and heard was unimpaired. But he did not seem to be able to retain any impression of anything for more than a few blink. In he did blink, his eyelids parted to reveal a new scene.

In Clive's case, the virus damaged his brain. It damaged the hippocampus, which play a major role in the handling of long-term memory formation. Additionally he sustained marginal damage to the temporal and frontal lobes. The former houses the amygdala, a component implicated in the control of emotions and associated memories. Clive developed a profound case of total amnesia as a result of his illness. Because the part of the brain required to transfer memories from the working to the long term area in damaged.

He is unable to encode new memories. He only remembers a little part of his life before. He still knows how to play piano, which is because his cerebellum responsible for the maintenance of procedural is not damaged. The fact that he could no longer remember anything and was not aware, tells us that the hippocampus and the temporal and frontal lobes are the bits responsible for LTM's and STM's formation and recall. In both cases, the hippocampus was damaged, and so they both had problems with their long-term memory.

In HM's case only two thirds of the hippocampus was removed while in Clive's case most of it was destroyed. As a result both had very severe amnesia and because of that we can conclude that hippocampus is the part of the brain responsible for forming/retrieving or storing the LTM. This is an example of the link between cognition and physiology of the brain. However, certain exceptions make this theory a lot more complex. For example HM had remembered JFK's assassination and both could still learn new skills.

In Clive's case, the fact that he could still emotionally remember his wife does not fit into the former explanation. However, the researches that were

done consistently for these two people are reliable, giving us the opportunity to generalize such hypothesis on the cognitive part of the brain. For example, Brenda Milner, who studied HM following his surgery till his death, is a very well-known researcher and in her reports she has clearly mentioned HM's past and present conditions.

Since she is known and experienced, her reports are likely to be true and not exaggerated. And because of that we believe it to be dependable and creditable as well as following a data triangulation. Milner hasn't had any brain illnesses in her life, so we can easily decide that her research was in no way influence by her own disabilities. On the other hand she has not checked and re-checked her research results, trying to find fault in them, since HM's case is a very unique case in the world.

And the fact that HM was old at the time when most of her research were conducted, we could argue that his memory loss was due to old age. Another fault in her research is its inaccuracies, an example of such inaccuracy is when HM remembered John F. Kennedy's assassination. Based on these findings we can assume that her research is strong enough for us to be able to generalize its effects. That is why recently, scientists associate hippocampus and amygdala with memory formation and storage.