

Memory Reconsolidation: Chapter Ten: Reconsolidation of Declarative Memory

2 Memory reconsolidation is a process that allows previously consolidated memories to be modified or updated. This process is thought to be necessary for the formation of new memories and the integration of new information into existing memories. In this chapter, we will discuss the evidence for memory reconsolidation and the mechanisms by which it is thought to occur.

One of the most compelling pieces of evidence for memory reconsolidation comes from studies in humans. In these studies, participants are presented with a memory that has been previously consolidated and then given a treatment that is designed to disrupt memory reconsolidation. The results of these studies have shown that the disruption of memory reconsolidation can lead to forgetting of the previously consolidated memory.

For example, one study by Nader and colleagues (2000) found that participants who were given a dose of the drug propranolol after recalling a previously consolidated memory showed impaired recall of that memory 24 hours later. This suggests that propranolol disrupted the reconsolidation of the memory, leading to forgetting.



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Other studies have shown that memory reconsolidation can be disrupted by other treatments, such as electroconvulsive shock (ECS) and transcranial magnetic stimulation (TMS). These findings provide further evidence for the existence of memory reconsolidation.

1. **Reactivation of the memory:** The first step in memory reconsolidation is the reactivation of the memory trace. This can occur through a variety of means, such as recalling the memory, thinking about the memory, or being exposed to a reminder of the memory.
2. **Destabilization of the memory:** Once the memory trace has been reactivated, it becomes destabilized. This means that the memory is more susceptible to being modified or updated.
3. **Re-encoding of the memory:** The destabilized memory trace is then re-encoded into a new memory trace. This process involves the formation of new neural connections and the strengthening of existing neural connections.
4. **Consolidation of the new memory:** The newly encoded memory trace is then consolidated into a new long-term memory. This process involves the strengthening of the neural connections that support the memory.

The process of memory reconsolidation is thought to be necessary for the formation of new memories and the integration of new information into

existing memories. By allowing previously consolidated memories to be modified or updated, memory reconsolidation helps to ensure that our memories are accurate and up-to-date.

Second, the discovery of memory reconsolidation suggests that it may be possible to develop new treatments for memory disorders. For example, it may be possible to develop drugs that target the process of memory reconsolidation and prevent the forgetting of memories in patients with amnesia.

Memory reconsolidation is a complex and fascinating process that plays an important role in our ability to learn and remember. By understanding the mechanisms of memory reconsolidation, we can gain a better understanding of how our memories work and how we can improve our memory function.



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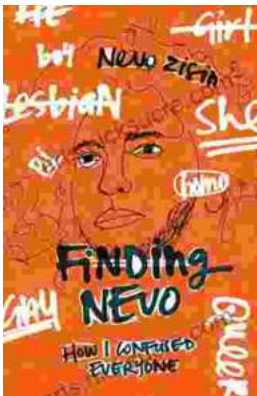
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