

Working memory and consolidation

Psychology



Working memory and consolidation: Introduction: The ability to retain and use information in the mind to bring it into use later for either verbal or nonverbal tasks like talking or understanding and arguing or processing is largely associated with the system of working memory. This whole phenomenon of retaining the received information to do verbal and nonverbal tasks is universally considered to be so important that the query why we forget usually forms a core part of any memory theory. This is actually a theoretical concept associated with both psychology and neuroscience. Forgetting heavily interferes with the tasks of the working memory system which is why so much research is done on this particular subject. It could be due to insufficient encoding of the information received as information cannot be manipulated and processed later if it is not properly encoded first. Now the capacity associated with short term memory happens to be limited as theorists following Baddeley and Hitch's (cited in Bower, 1989) multi-component model also suggest a limited-capacity working memory that shares attentional resources between its processing and storage (short term memory, STM) components. As there is a limited capacity, so probably when the cognitive demands of a memory task overloads the cognitive resources available, there results inadequate encoding and information is forgotten. This means that the memory item was inadequately stored because it surpassed the capacity of the working memory and the amount surpassed is eventually forgotten. Even extensive training on myriad encoding information strategies does not expand the working memory capacity from short-term memory, rather it only serves to improve the information retrieval capacity from long-term memory.

According to Joliceour and Dell'Acqua (1998), items are encoded into the <https://assignbuster.com/working-memory-and-consolidation/>

durable storage component of STM through a consolidation process. In their dual-task paradigm, participants were presented with a memory item, followed by a speeded auditory decision-making task presented at different time intervals, and then prompted to recall. Shorter time delays between the memory item and the speeded task were associated with longer reaction times. They suggested that short-term consolidation (STC) demands cognitive resources to move memory items from perceptual memory to STM. Thus, other cognitive functions are slowed down or stopped during STC. For the shorter delays in their study, the speeded processing task temporally overlapped the STC period. Thus, the longer reaction time reflects the slowing down of other cognitive functions during STC. Alternatively, these results can be accounted for by the principle of rehearsal. Barroillet, Bernardin, and Camos (2004) argue from the research of Joliceour and Dell'Acqua (1998) as they found that participants performed better when there were less processing tasks separating a memory item and recall prompt even if there were no shorter time delays and the time duration was kept the same as when there were more processing tasks. Their time-based resource-sharing model states that a memory item cannot be maintained when attentional resources are focused on processing items. Time-related decay occurs only because attention-demanding processing tasks eliminate rehearsal opportunity. In their time-based resource-sharing model, Barroillet, Bernardin, and Camos (2004) found that time-related decay occur because attention-demanding processing tasks prevent maintenance opportunity. When time intervals between memory item and recall prompt were held constant, they found better memory performance when there were fewer processing tasks during the interval. This antagonizes consolidation and the <https://assignbuster.com/working-memory-and-consolidation/>

fact regarding how memory rehearsal is consistent with consolidation effect also forms a part of the discussion presented in this paper. Where according to the rehearsal effect fewer processing tasks during the interval lead to enhanced memory performance, consolidation suggests that memory performance either good or bad is independent of the number of processing tasks because STC is not interrupted (Joliceour & Dell'Acqua, 1998).

Rehearsal demands less attention than attentional refreshing, so is used when there are attention-demanding processing tasks. How articulatory suppression has been one tool used to assess the effects of rehearsal is also discussed in the paper. Much research has been done to examine the relationship shared by articulatory suppression with irrelevant speech effect so as to demonstrate the effect produced on articulatory rehearsal process. It is shown by one (Neath, Farley, and Surprenant, 2003) that memory performance is more inhibited and articulatory rehearsal process is interfered by articulatory suppression because the ability to depend on the auditory cues is affected which keeps the information from being encoded in the mind. Facts and discussion presented in this research paper are basically meant to determine whether the effects of better memory performance in delayed condition can be attributed to rehearsal rather than consolidation. Consistent with consolidation theory, it is hypothesised that the delayed condition will yield better memory performance than the immediate condition in both AS and non-AS groups. References: Barroillet, P., Bernardin, S., & Camos, V. (2004). Time Constraints and Resource Sharing in Adults' Working Memory Spans. *Journal of Experimental Psychology*, 133(1), 83-100. Bower, G. H. (1989). *The Psychology of Learning and Motivation: Advances in Research and Theory*, Volume 24. Academic Press. Joliceour, P., & <https://assignbuster.com/working-memory-and-consolidation/>

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