Interference in Motor Learning

Introduction

The history of prior action in the human motor system is known to influence not only future performance through memory, but also the capacity for future learning. Interference and savings are two oppositelydirected phenomena that produce this effect. Interference describes the ability of one task to impair the learning of another, while savings describes the ability of previous learning to enhance future learning. In certain cases, after initial learning and subsequent washout of a particular task, relearning is faster than the initial learning, even if the performance levels of the learner at the onset of learning and relearning are identical.

Types Of Interference

Retrograde Interference

Retrograde interference occurs when newly learned information interferes with and impedes the recall of previously learned information. Retrograde interference is a result of decreased recall of the primary studied functions due to the learning and recall of succeeding functions. The phenomenon of retroactive interference is highly significant in the study of memory as it has sparked a historical and ongoing debate in regards to whether the process of forgetting is due to the interference of other competing stimuli, or rather the unlearning of the forgotten material. The important conclusion one may gain from RI is that "forgetting is not simply a failure or weakness of the memory system" but rather an integral part of our stored knowledge repertoire.

Anterograde Interference

Anterograde interference is the "forgetting [of information] due to interference from the traces of events or learning that occurred prior to the materials to be remembered. "Anterograde interference occurs when in any given context, past memories inhibit an individual's full potential to retain new memories. It has been hypothesized that forgetting working memories would be non-existent if not for proactive interference. In short, anterograde interference occurs when past memories inhibit an individual's full potential to retain new memories.

Participants

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Experimental Design

•The experimental paradigm used here is the A_1BA_2 paradigm, where a subject is instructed to serially learn Task A, Task B, and then Task with time delay of 5 minutes inserted between tasks. Here task B is taken to be the opposite of task A.

The participants were instructed to use the 'Leap' device to position a cursor in a target circle which appeared in one of six locations on the screen(randomly). The screen had 30 degree rotational perturbation.



The Participants were then asked to perform the same task with the opposite visual perturbation after an interval of 5 minutes.

The Participants were then asked to re-perform the first task 5 minutes after the completion of second task.



Experimental Results



Directional Error in relearning of Task A



Conclusion

•The presence of anterograde interference is evident in the learning of task B. Because of which task B is learnt at a slower rate.

•The relearning of A is observed to be done at a much faster rate. The presence of retroactive interference is inconclusive in this experiment...

Acknowledgement

I thank Prof. Amitabh Mukherjee for giving me guidance in doing this experiment.

♦ I thank Programming Club for giving me technical guidance for 'Leap'.

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