Motor Sequence Learning Experiment
PSY310: Lab in Psychology
17th October 2024
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INTRODUCTION:

Motor sequence learning deals with the learning of a sequence of movements that gradually become easy to perform. Muscle memory is organic in any activity as simple as typing to as complex as playing an instrument or sports. In the laboratory, motor sequence learning is typically investigated to acquire knowledge about how the brain stores, stabilizes, and recovers motor coordination.

Explicit motor learning: When individuals are fully aware of the sequence, they are learning like the preparations they go through before they engage in verbal instructions.
Implicit motor learning: That is, when people learn the sequence through rote learning, and are not conscious of, the fact.

Motor learning has been defined in terms of a whole spectrum of tasks, starting from the rather basic, such as keeping track of the position and orientation of our limbs, up to the more complex cognitive processes that determine how to behave during a new situation. These are considered in view of the more and major existing approaches to characterizing motor at the behaviour and neural stage. Specifically, we conduct a critical analysis of two historical perspectives employed in motor learning research: adaptation and sequence learning.

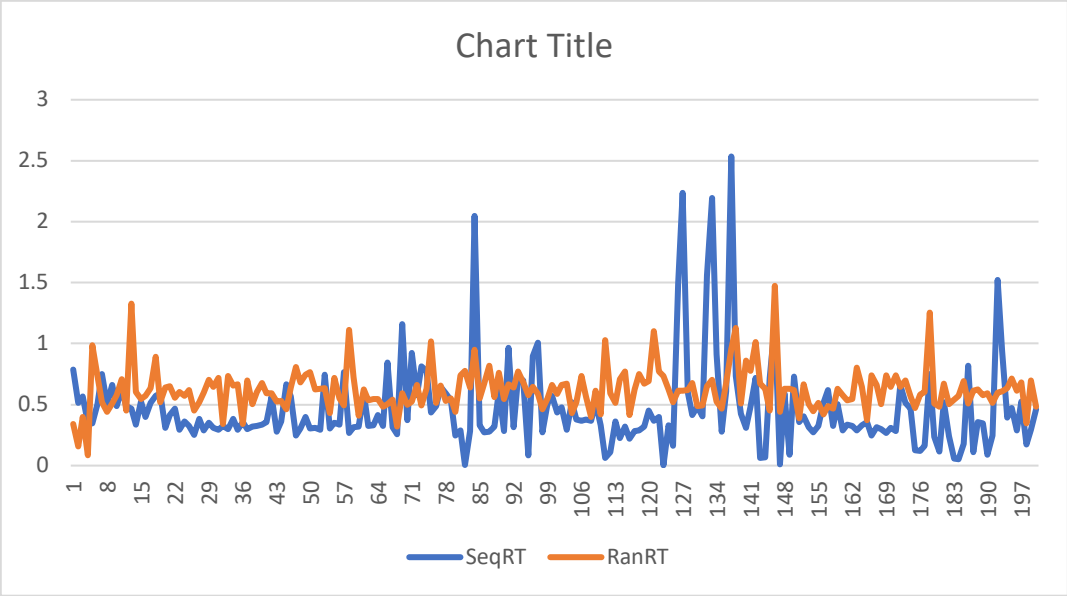
METHOD:

This experiment aims to reveal some insight into the cognitive processes involved in skill development and memory consolidation by examining how people learn, retain, and generalize sequential information.

Participant condition:

The experiment had 400 observation with the help of PsychoPy to generate the job on a laptop. After a fixation cross, the experiment's sequence added 4 polygon where we added different position in all the four polygon namely, -50,150,50,-150were correct response was z,x,c, and v respectively. Participants press keys in response to a series of stimuli that appear in a repeated sequence. A graph was later created once that data was examined. It will show the effectiveness of performed task and awareness of the type of attention processes.

Results:
The average reaction time of first 200 observation was 0.465699 (sequential) and the second half of last 200 observation was 0.618759(random). The difference between them was 0.15306.




Here we can observe that participants are learning the sequence so the RT'S is falling faster compared to random condition.

Discussion:
Reaction times in the sequential and random circumstances differed significantly (0.15306), which effectively implies that participants are gradually learning the repeating sequence. Participants were able to estimate the next position based on past responses during the first 200 trials, which featured stimuli in a predictable order. Faster reaction times (0.465699) are the result of this anticipation, suggesting procedural learning, a type of implicit memory in which participants get better at doing an action without realizing it.
The assumption that actions become more automatic and less dependent on conscious control with experience is supported by the use of keypresses linked to specific places (z, x, c, and v), which demonstrate how motor abilities improve with repetition.

REFERENCES:

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