Motor Sequence Experiment

PSY310: Lab In Psychology

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**Introduction**

The process in which people learn and develop a set of motions to carry out activities precisely and proficiently is called motor sequence learning in psychology. The famous procedural memory, a type of long-term memory on how to perform tasks stems from such kind of learning. Repetitive repetition is an important factor in motor learning as it increases the speed and accuracy. More insights on how motor sequence operates can help in rehabilitating people with motor disabilities and offer more information on human cognition. Driving, Dancing or Playing a guitar are examples of motor sequence learning.

**Method**

An undergraduate student from Ahmedabad University, majoring in History participated in this experiment. A 21-year-old, Female. The participant was fully informed, with clear instructions and they participated with consent. The experiment was conducted using PsychoPy v2024 .1.5 (Peirce et al., 2019), with stimuli presented on a 14” monitor with a resolution 1100 x 600 pixels. This task consisted of four rectangular lines, labelled as “probe” and in each trial a triangle appeared on either the four rectangle lines, the participant had to press the correct answer key allotted to the specific rectangle line.

In this experiment, we have the keyboard response. If the triangle appears on the first line, then we need to press the key z. If the triangle appears on the second line, then we need to press the x key. Similarly, if the triangle appears above the third line, then we need to press the c key and if the triangle appears above the fourth line, then we need to press the v key. For this experiment, we had to run both sequential and random trials. We had to run 50 number of trials for both sequential and random trials, and as there are 4 rectangle lines it would give us a total of 400 trials (200 Sequential Trials and 200 Random Trials).

**Results**

The average reaction time for the sequential trials is 0.88 seconds. The average reaction time for the random trials is 1.03 seconds. The difference between the sequential trails and random trials was 0.15 seconds. The graph shows us the time and the number of trials of both the sequential trial and random trials.

From the graph below, we see that the time taken for the random trials was more than the time taken in sequential trials.

**Graph-1**

The mean difference in the RT between sequential and random conditions must be reported along with a plot showing the change in RT across trials (Graph-2).

**Graph-2**

**Discussion**

The difference between random and sequential trials is because after a few trials, the participant grew used to the pattern. Whereas in random trials the participant was unable to get used to the pattern, the random trials hence reaction time is greater in random trials than the sequential trials. Counterbalancing is a strategy that helps a researcher control the effects of distracting factors in study designs where the same participants are repeatedly exposed to the same conditions, treatments, or stimuli. Counterbalancing is the process of methodically changing the sequence of the conditions within a research design in order to increase the interval validity of the task.

**References**

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Doyon, J. (2008). Motor sequence learning and movement disorders. *Current Opinion in Neurology*, *21*(4), 478–483. <https://doi.org/10.1097/wco.0b013e328304b6a3>