Task switching essay

Throughout the day, people constantly find themselves starting, stopping and finishing many different cognitive tasks. This study was conducted to discover the effect that task switching has on performance. Thirty eight students participated in this experiment. They were asked to complete both repeating and switching tasks. The 100 total tasks were fully randomized with 50 task repeating and 50 task switching. It was hypothesized that when a participant will be asked to switch a task over repeating one, he or she will be significantly slower in reacting. The collected data revealed that in fact, the reaction time for task switching trials was significantly higher than for repeating ones. These findings supported the hypothesis. One can conclude from here that when one switches between cognitive tasks they can expect themselves to perform less than optimally then when they repeat the same task over and over.

Task-Switching

In today’s world, we complete many different tasks within one day. Majority of these different tasks are completed all at once. While, doing this, we are using our available resources to accomplish our tasks. As you may very well know this is time consuming. But it is more time consuming to this when completely switching from one task to another. This is known as task-switching.

Task- switching is switching from one task to another (cite). Could you use real world examples? When performing a task- switch, ultimately a task-switching cost will occur. The Task switching cost is when people are performing a task, then switches to another task, which ultimately cost them

more time to perform than, maintaining the initial task they were initially performing. Before, there can be a task switch, first there has to be a task set. A task set is a procedural schema or mental representations, which is triggered by external stimuli (cite). These mental representations changes when there is a switch between tasks. When triggered, our mental resources tell us what has to be implemented to achieve the appropriate goal (Monsell, 2003.) One hypothesis that explains why this occurs is the task- set reconfiguration theory (cite).

The task set reconfiguration hypothesis explains that performance time will be worse when there is a switch of task than when a task is repeated. This is due to the mental representations that allow us to perform a specific task. Therefore the mind has to reset itself to represent the task that has to be performed. Due to this reset of the mind, there is a time switching cost (cite).

Our study main purpose was to demonstrate that it takes more time to perform a task-switch than it does to perform a task that is repeated, therefore a task-switching cost exist when task-switching occurs. On this basis, we hypothesize that reaction time is slower when it’s a task switch than when the task is repeated. Method

Participants Thirty-eight undergraduate students from Cuny Brooklyn College took part in the study. Students participated as a class requirement for an undergraduate class. Students had no prior knowledge of the study and all were tested individually. Procedure

The study used a within-subjects design, with one dependent variable as well as one dependent variable. The independent variable was task repeat vs. task switch and the dependent variable was reaction time.

Using a computer with Metacard software, participants were asked to perform a task which they responded to a target stimulus and determined if it was odd or even numbers. They were also asked to make a judgment based on the magnitude of the number, which was compare to the number five. The task cues were odd/even vs. magnitude. The possible target stimuli consisted of the numbers 1, 2, 3, 4, 6, 7, 8, and 9. One hundred trials were presented, randomly, 50% were odd/even trials and the other 50% were magnitude trials. The fixation cross displayed for 500 milliseconds. The task cue and target were displayed simultaneously until a response was given by the participant. The response key mapping remained on the screen for the entirety of the experiment. To respond accordingly, Z represented an odd number, X represented an even number, N represented a number smaller than 5, and M represented a number larger than 5.

Results In order to understand task- switching and test our hypothesis that reaction time is slower when it is a task switch than when the task is repeated, the data was analyzed, with a paired sample t- test. It was found that participants were significantly faster when the task repeated (M = 1196. 22, SD = 292. 17) than when the task switched (M = 1737. 67, SD = 1694. 05), t (37) = -1. 976, p < 0. 56 (see Figure 1). Therefore there was a task switching cost. Discussion

A significant effect was demonstrated in the experiment that showed that a switching cost occurs when there is a switch between tasks as oppose to when a task is repeated. The reaction time was slower when the task switched because of reconfiguration. For the reason that the brain had to reorganize the task set, it took longer for the task to be completed, which resulted in a slower reaction time. When the task was repeated, the task set is stable within the brain, therefore the mental processes do not have to reconfigure, resulting in a faster time for the task to be completed (Monsell, 2003).

This outcome of this experiment is also consistent with the research of Monsell (2003) with the finding that a task- switching cost occurred based on task- switching and task- repeat. Within this experiment responses took more time on a " switch trial" than on the task repetition trial. Not only did increase in reaction time but it also decreased in accuracy during the task-switch trial.

To further our knowledge of task- switching, researchers may want to explore aspects of what attributes may result in reduction time for task-switching. This would be of importance to many people whose everyday life consist of various multi-tasking situations and want to save time throughout their day to complete other tasks.