Simon task after Tse and Altarriba, 2014

In this task, the stimulus display consisted of a white fixation point + + + on the screen and white arrow stimuli (measuring approximately 4 cm in length and 2 cm in height) presented on a black background. The peripheral locations of the arrow (left and right) were situated 4cm on the horizontal plane from the central fixation. The participants were told that they would be presented with an arrow on each trial. The arrow appeared on the left or right half of the screen, or in the centre of the screen. They were told to ignore the arrow’s location on the screen and respond according to the arrow’s direction by pressing either ‘m’ (right) or ‘z’ (left) key on the keyboard. In the congruent condition, the arrow’s direction corresponded to the arrow’s location (e.g., left-pointing arrow on the left side of the screen). In the incongruent condition, the arrow’s direction was opposite to the arrow’s location (e.g., left-pointing arrow on the right side of the screen). In the neutral condition, the arrows would point either left or right, but were always located at the centre of the screen.

Each trial began with a 500-millisecond (ms) central fixation point, followed by the onset of an arrow that stayed on the screen until the participant made a response or until 4s had elapsed. The program recorded participants’ RT and accuracy. Following a 750-ms blank-screen intertrial interval, another trial began. Congruent and incongruent trials were in equal proportion and randomly intermixed, so there were 40 congruent 40 incongruent and 40 neutral trials (120 trials in total), with the left- and right-pointing arrows appearing on the left or right side of the screen equally often. Prior to actual trials, participants were given 12 practice trials, where feedback was given for correct and incorrect responses. There was a self-paced break midway through the task (i.e., after 60 trials).

Simon Switching:

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| --- | --- |
| 6 | Switching simon images/Direction congruent left.jpeg |
| 6 | Switching simon images/Direction congruent right.jpeg |
| 6 | Switching simon images/Direction incongruent right.jpeg |
| 6 | Switching simon images/Direction incongruent left.jpeg |
| 6 | Switching simon images/Location congruent left.jpeg |
| 6 | Switching simon images/Location congruent right.jpeg |
| 6 | Switching simon images/Location incongruent left.jpeg |
| 6 | Switching simon images/Location incongruent right.jpeg |
| 24 | switch |
| 24 | non-switch |
| 48 |  |

The stimuli and presentation procedures were identical to those in the Simon task, except that there were two types of trials. When the arrow was presented in green (direction trials), participants judged the arrow’s direction (by pressing either the left or the right key on the response box). When the arrow was presented in red (location trials), they judged the arrow’s location (by pressing either ‘m’ (right) or ‘z’ (left) on the keyboard). In this experiment there were no neutral trials. Arrows were either presented to the left or to the right of the fixation.

There were three blocks of trials. In the first and second blocks (i.e., pure block), participants received only 48 direction and 48 location trials, respectively. These were counterbalanced among participants. In the third block (i.e., mixed block), which was always presented third, participants received 24 direction and 24 location trials, which were presented in a pseudorandomised order. This block contained a total of 24 switch trials (12 for direction and 12 for location) and 24 non-switch trials (12 for direction and 12 for location). This paradigm allows for a comparison of performance on switch trials with performance on non-switch trials (cf. Rogers and Monsell, 1995). We compared the switch and non-switch trials within the same block to yield the local switch cost and compared the non-switch trials in the mixed block and all trials in the pure block to yield the global switch cost. Prior to actual trials in each block, participants were given 16 practice trials, where feedback was given. There was a self-paced break between each block (i.e., after 48 trials).

Version A: Location – Direction – Mixed.

Version B: Direction – Location – Mixed.