Contribution to the Field

Task-switching is commonly used to investigate working memory and attentional control processes. The present study uses the Consonant-Vowel/Odd-Even task to assess the effects of predictive and random task-switching on these processes. Participants first completed pure-task blocks (i.e., no task change) before completing switch blocks in which tasks changed predictably or randomly. We then assessed changes in mean error rates, response latencies (RTs), and local and global switch costs as functions of presentation sequence. We further explored changes in RTs through Vincentile and ex-Gaussian analyses. Overall, local RT switch costs (i.e., switch vs. nonswitch trials) are inflated when switching is random, indicating that task-set reconfiguration processes are particularly taxed when an upcoming trial type is unknown. However, global RT switch costs (i.e., nonswitch vs. pure trials) increased when switching was predictive, suggesting that task-set maintenance processes are additionally burdened when participants must also monitor their progress through a predictive trial sequence. We argue that increased global switch costs from predictive switching reflect a working memory burden, as participants must monitor their progression through the task-sequence. However, increased local costs on random switching reflect slowed responses on switch trials and speeded performance on non-switch trials.