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The role of Task Set Inhibition in Cued and Voluntary Task Switching

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Task set inhibition consists of actively suppressing interference from recently executed tasks. Previous research has demonstrated that returning to a previously abandoned task (e.g. ABA) is more difficult than switching to less recently performed tasks (e.g. CBA) in terms of slower reaction times (RTs) and higher error rates. Though consistently observed in cued task-switching paradigms, it remains elusive whether this mechanism operates during voluntary task selection. To fill this gap, we investigated the potential overlap of the processes underlying task set inhibition in both cued and voluntary task switching.
Thirty-six participants performed two task-switching paradigms. In the cued version, participants were required to switch between three tasks (parity, size, distance) according to the presented cue. In the voluntary version, participants chose randomly which of these three tasks to perform, avoiding consecutive repetitions. Preliminary results from the voluntary switching paradigm revealed slowest RTs for the distance task and fastest for the parity task. Additionally, slower RTs for ABA than after CBA sequences. No interaction effect was found between task and sequence. Complementarily, the choice proportion of ABA sequences was lowest for the distance and highest for the parity tasks. Relatedly, in the cued version ABA RTs were slower than CBA RTs and RTs for the distance task slower than those for the other two tasks. Different cross-paradigm correlation patterns of task-dependent inhibition were observed.
These preliminary findings highlight task set inhibition features in cued and voluntary task switching paradigms. Further research could focus on generalizing findings to different settings and populations.

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