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Abstract

Alternating between completing two simple tasks, as opposed to completing only one task, has been shown to produce costs to performance and changes to neural patterns of activity, effects which are augmented in old age. Cognitive conflict may arise from factors other than switching tasks, however. Sensorimotor congruency (whether stimulus-response mappings are the same or different for the two tasks) has been shown to behaviorally moderate switch costs in older, but not younger adults. In the current study, we used fMRI to investigate the neurobiological mechanisms of response-conflict congruency effects within a task switching paradigm in older ($N=75$) and younger ($N=62$) adults. Behaviorally, incongruency moderated age-related differences in switch costs. Neurally, switch costs were associated with greater activation in the dorsal attention network for older relative to younger adults. We also found that older adults recruited an additional set of brain areas in the ventral attention network to a greater extent than did younger adults to resolve congruency-related response-conflict. These results suggest both a network and an age-based dissociation between congruency and switch costs in task switching.

1. Introduction

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