

Effects of ageing on cognitive control and visual search

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The current study aims to investigate how the relationship between attentional function and cognitive control changes across age groups. We compared the performance of young (N=20) and elderly (N=22) participants in a majority function task (MFT) and a visual search task (VST). In both tasks, reaction time as a function of uncertainty (in MFT) or number of search items (in VST) was estimated with a linear regression model, of which slopes reflect the processing efficiency of the search strategy being used and, intercepts indicate speed of basic sensorimotor function or post-search decisional process. The results showed that across all participants, the intercepts, but not the slopes, of these two tasks were significantly correlated, suggesting that the locus of functional overlap between two tasks was at the non-searching stage(s). Interestingly when the two age groups were examined separately, the elderly, but not the young, showed significant positive correlation between intercepts of the two tasks, especially in feature search condition and target absent trials. In contrast, the slopes of the two tasks were not significantly correlated in either age group. In sum: 1) across all participants, when performing the two different types of load-dependent operations in MFT and VST, different mental processes were involved during the “search” stage; 2) cognitive decline related to ageing might be more sensitively detected by tasks examining cognitive control than visual search. The current results concur with the proposal that cognitive ageing is manifested in the reduction of cognitive dimensions.

