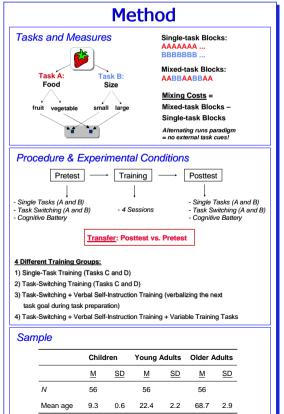
# Age Differences in the Transfer of Executive Control Training

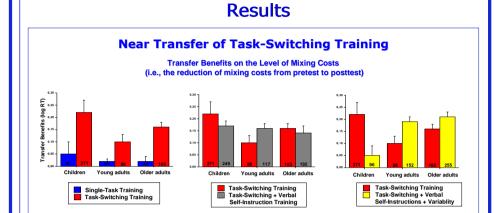
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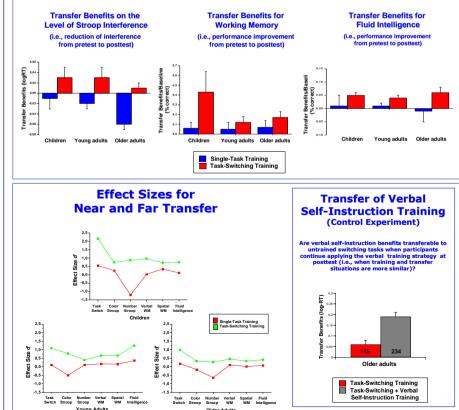
### Introduction

Although executive functions can be improved by training. little is known about the extent to which these training-related benefits can be transferred to other tasks, or whether this transfer can be modulated by the type of training in different age groups. The aim of this study was to investigate age differences in the transfer of task-switching training across the lifespan. We examined near transfer to structurally similar switching tasks and far transfer to structurally dissimilar executive tasks (such as the Stroop task and working-memory), and to another task domain (fluid intelligence). In addition, we assessed whether transfer can be promoted by the type of training, that is, by means of variable task-switching training (i.e., different tasks in each training session) or the use of verbal self-instructions.





#### Far Transfer of Task-Switching Training



Older Adults

### Summary

(1) All age groups show near transfer of task-switching training to a structurally similar switching task at posttest (i.e., a larger reduction of mixing costs from pre- to posttest after task-switching training than after single-task training). This near transfer is most pronounced for children and older adults.

(2) There is no near transfer of the verbal self-instruction benefits to a structurally similar switching task after training. However, when the verbal strategy is not only applied during training, but also at posttest, older adults are able to transfer the verbalization-related training benefits to a new, similar task (control experiment).

(3) Training variability increases the transfer of task-switching training in both young and older adults, but impairs it in children.

(4) All age groups show far transfer from task-switching training to other 'executive' tasks, that is, to interference control in the Stroop task and to working memory abilities.

(5) All age groups show far transfer from task-switching training to another task domain, namely fluid intelligence.

## Conclusion

Thus, task-switching training resulted in the transfer of relatively general executive control abilities, such as goal maintenance, task-set selection, and the inhibition of task-irrelevant information. These findings suggest that the extensive training applied in this study yielded transfer of global, higher-level cognitive control processes and not of lower-level task-specific processes, pointing to its relevance for a number of clinical and educational applications.

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