

The Free and Cued Selective Reminding Test detects episodic memory impairment in the presymptomatic period of familial frontotemporal dementia within the GENFI cohort

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Introduction

Episodic memory impairment is increasingly reported in frontotemporal dementia (FTD) and it has been suggested to differ between genetic forms of FTD. However, systematic investigations of episodic memory in familial FTD, and specifically the presymptomatic stage, are scarce. This cross-sectional study investigates performance on the Free and Cued Selective Reminding Test (FCSRT) in the Genetic Frontotemporal Dementia Initiative (GENFI), a large familial FTD cohort.

Methods

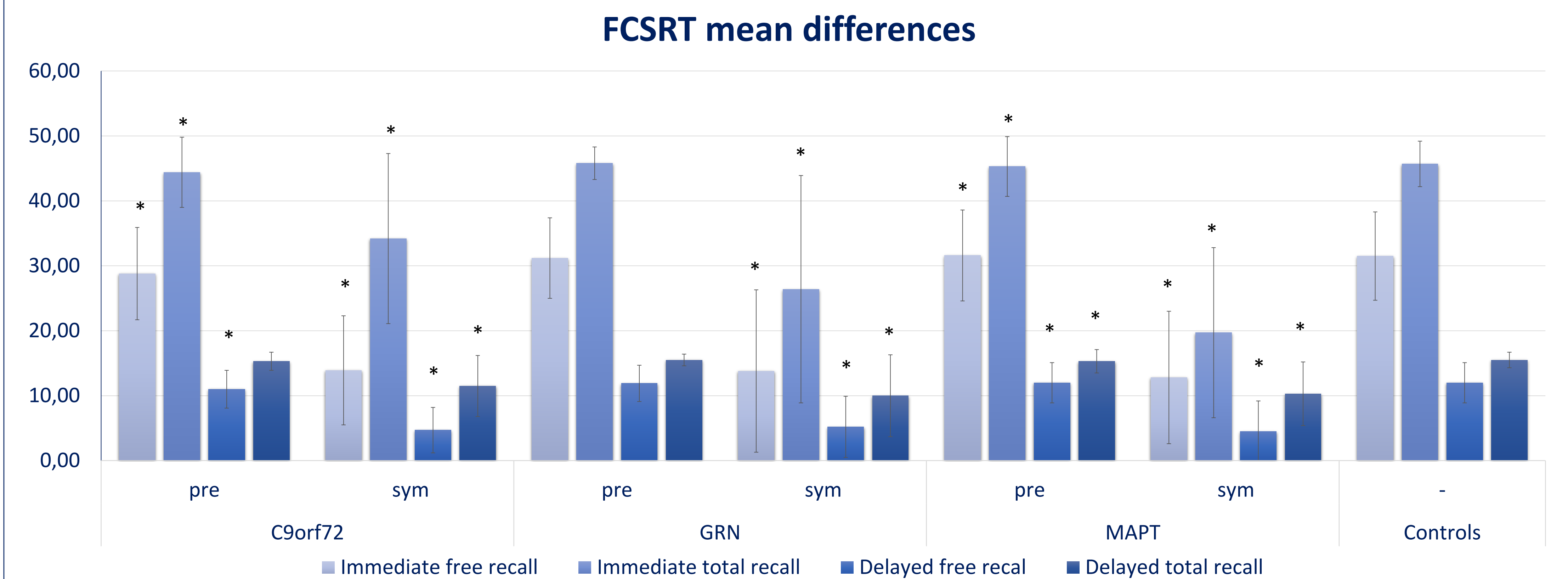
Study population: 181 *C9orf72* mutation carriers (129 presymptomatic and 52 symptomatic), 163 *GRN* mutation carriers (136 presymptomatic and 27 symptomatic), 73 *MAPT* mutation carriers (56 presymptomatic and 17 symptomatic) and 290 non-carriers were tested with the FCSRT.

Procedure: The FCSRT consists of 16 words that need to be learned. There are three successive trials of free recall. Each trial is followed by selective semantic cuing of the words that were not spontaneously retrieved. After 20 minutes, another delayed free recall and cued recall trial are administered.

Data analysis: group comparisons were performed with mixed effects models corrected for age, education, language and family clustering with 95% bias-corrected bootstrapped confidence intervals. Spearman rank correlation were used to investigate the correlation between the FCSRT scores and other neuropsychological tests.

Results

- All symptomatic mutation carriers performed worse than controls and presymptomatic carriers on all four FCSRT scores
- Presymptomatic *MAPT* mutation carriers performed worse than controls on all four FCSRT scores
- Presymptomatic *C9orf72* mutation carriers performed worse than controls on FCSRT immediate free recall, immediate total recall and delayed free recall



* $p < 0.05$ compared to controls

- All four FCSRT scores had a medium to strong association with verbal fluency, Trail Making part B and Stroop ink naming card in *C9orf72* mutation carriers
- All four FCSRT scores had a medium to strong association with Benson figure recall, Boston Naming Test, animal fluency, Trail Making part B and Stroop ink naming card in *MAPT* mutation carriers

Conclusions

1. The FCSRT detects memory impairment in presymptomatic *MAPT* and *C9orf72* mutation carriers
2. *MAPT* mutation carriers are impaired on both free and total recall scores, suggesting a “pure” episodic memory impairment
 - Strong correlation with other memory test and semantic tests
 - Due to atrophy temporal areas?
3. *C9orf72* mutation carriers are impaired on free recall scores but not delayed total recall suggesting that impairment might be due to dysexecutive functioning
 - Strong correlation with executive tests, but not other memory tests
 - Due to atrophy frontal areas?