Outcomes related to the extent of memory deficits in ADNI

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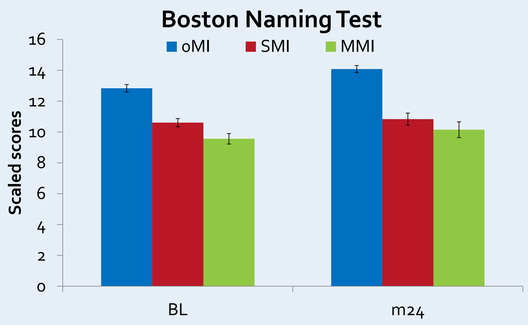
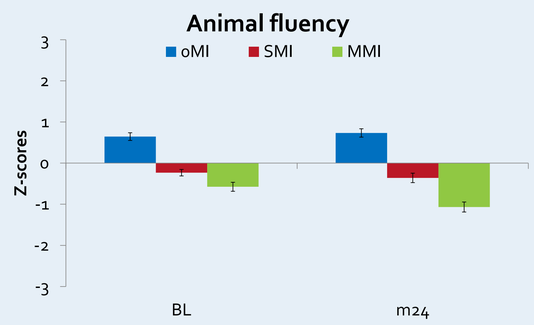
BACKGROUND. The Alzheimer's Disease Neuroimaging Initiative (ADNI) is a rich database for the study of people with mild cognitive impairment (MCI), a high-risk group for dementia progression. MCI status in ADNI is based on impairment on a single memory test, Logical Memory II (LM-II), without accounting for other memory or non-memory deficits. Yet, pooling patients who are impaired on one test with those who are impaired on many tests increases cohort heterogeneity, making it more difficult to know who is at highest risk for progression to dementia. To improve prediction models for ADNI subjects, we compared cognitive/imaging baseline and outcomes in 326 MCI subjects.

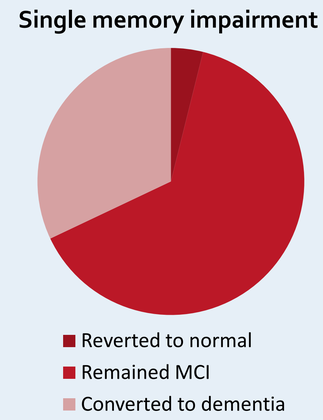
METHODS & PARTICIPANTS

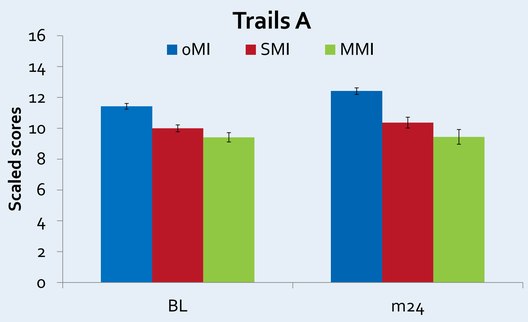
- 205 MCI impaired on LM-II only (single memory impairment, SMI)
- 121 MCI impaired on LM-II and the delayed recall or recognition conditions of the Rey Auditory Verbal Learning Test (multiple memory impairments, MMI)
- 192 healthy elderly controls (no memory impairment, oMI)
- Impairment was defined as >1.5 SD below normative data
- All were followed for two years
- Analyses were age-corrected
- The groups did not differ on education

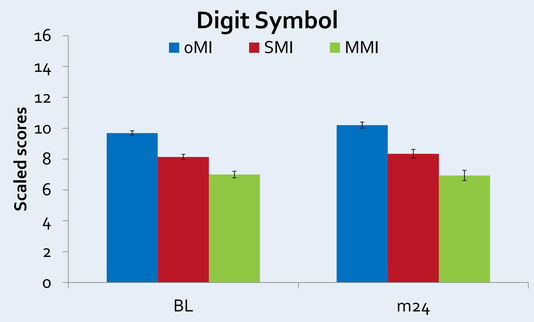
Logical Memory Test (Story A). A short story is read aloud once to the participant. After a 30- to 40-minute delay, the participant is asked to recall the story as exactly as possible.
Rey Auditory Verbal Learning Test. A list of 15 words is read aloud to the participant five times. After a 30-minute delay, the participant is asked to recall as many words as possible.

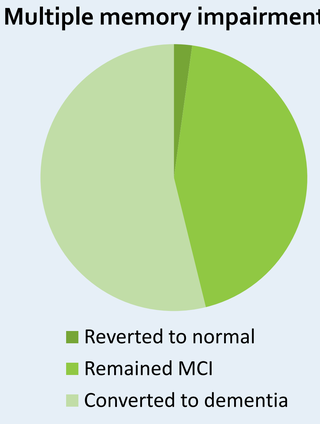


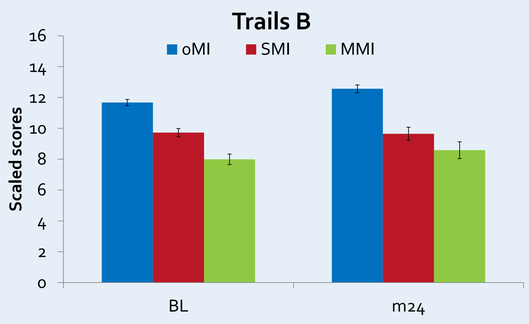


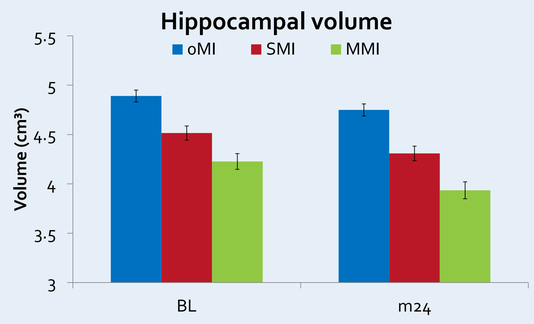












RESULTS. MMI subjects performed below SMI subjects on baseline language and executive function tests. Baseline hippocampal volumes differed between MMI (4.2 ± 0.7 cm^3) and SMI (4.5 ± 0.8 cm^3), $p<.05$, and both were lower than in oMI (4.9 ± 0.7 cm^3, $p<.001$). SMI (-0.2 ± 0.2 cm^3) showed more hippocampal atrophy progression at two years than oMI (-0.1 ± 0.2 cm^3, $p<.05$) but less than MMI (-0.3 ± 0.2 cm^3, $p<.05$). At two years, 24% of SMI subjects and 40.5% of MMI subjects had converted to dementia.

CONCLUSION. In this study, those with impairment on two tests had higher rate of progression to probable AD.

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