

Prospective Memory Predicts Everyday Functioning Over and Above Retrospective Memory in Mild Cognitive Impairment

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BACKGROUND

- Prospective memory (PM), the ability to remember to carry out a planned action in the future (e.g., taking medication before or after a meal), is important for maintaining independence in everyday life.¹
- Retrospective memory, which involves recalling information from the past, also impacts everyday functioning in mild Alzheimer’s disease.²
- Individuals with mild cognitive impairment (MCI) often experience difficulties with PM.³
- The current study examines the role of PM subtypes in everyday functioning, beyond retrospective memory, in healthy aging and MCI.

METHODS

PARTICIPANTS

Participants included healthy older adults ($n = 58$) and persons with MCI ($n = 52$). There were no significant group differences in age, $F(1, 108) = .71, p > .05$, or education, $F(1, 108) = .11, p > .05$.

PROCEDURES

- Before completing a neuropsychological battery, participants were told to request a specific number of pills after each individual test was completed.
- Simple PM was measured by participants requesting a pill after each test.
- Complex PM was calculated by the correct number of times participants requested one pill after a memory task and two pills after a non-memory task.
- A composite score for Retrospective Memory was created using the long-delayed recall trials of the California Verbal Learning Test-II (CVLT-II) and the Brief Visuospatial Memory Test-Revised (BVM-T-R).
- Everyday functioning was measured using the Everyday Cognition Scales (ECog). The ECog organizes everyday functioning into seven domain-specific factors: memory, language, visuo-spatial, planning, organization, divided attention, and information processing speed abilities, as well as total everyday functioning abilities.

RESULTS

- Multiple regression analyses were conducted to determine the roles of PM and retrospective memory in everyday functioning.
- In MCI, only simple PM predicted total everyday functioning, $F(2, 38) = 3.34, p = .04$, and everyday visual-spatial, $F(2, 47) = 5.88, p = .005$, organizational, $F(2, 42) = 7.20, p = .002$ and planning abilities, $F(2, 45) = 4.69, p = .01$ (see Table 1).

RESULTS Cont.

- In healthy older adults, simple PM predicted everyday language, $F(2, 51) = 6.62, p = .003$ planning, $F(2, 51) = 5.33, p = .008$, divided attention, $F(2, 53) = 7.15, p = .002$, and information processing speed, $F(2, 51) = 5.33, p = .008$ (see Table 1). Complex PM predicted everyday planning, $F(2, 53) = 4.49, p = .02$, and language abilities, $F(2, 51) = 3.03, p = .004$ (see Table 1).
- Further, in healthy older adults, retrospective memory uniquely predicted everyday visual-spatial abilities, $F(2, 52) = 5.60, p = .005$ (see Table 1).

Table 1 Retrospective Memory, Simple PM, and Retrospective PM on Everyday Functioning							
Ecog Domain	Diagnosis	RM		Simple PM		Complex PM	
		β	t	β	t	β	t
Total Everyday Functioning	Healthy Older Adults	-0.10	-0.70	-0.33	-2.19	-0.31	-1.99
	MCI	0.04	0.25	-0.39	-2.58*	-0.01	-0.05
Everyday Executive Functioning: Planning	Healthy Older Adults	-0.05	-0.34	-0.40	-3.05*	-0.42	-3.09*
	MCI	0.08	0.58	-0.43	-3.05*	0.07	0.45
Everyday Executive Functioning: Organization	Healthy Older Adults	0.07	0.50	-0.28	-1.85	-0.32	-2.07
	MCI	-0.04	-0.28	-0.50	-3.62**	-0.10	-0.65
Everyday Language	Healthy Older Adults	-0.16	-1.22	-0.39	-2.99*	-0.39	-3.03*
	MCI	-0.06	0.40	-0.33	-2.27	-0.07	0.45
Everyday Executive Functioning: Divided Attention	Healthy Older Adults	-0.05	-0.36	-0.45	-3.54**	-0.28	-2.00
	MCI	-0.05	-0.33	-0.21	-1.41	0.06	0.43
Everyday Information Processing Speed	Healthy Older Adults	-0.12	-0.93	-0.33	-2.51*	-0.25	-1.80
	MCI	0.05	0.37	-0.34	-2.33	-0.01	-0.05
Everyday Visual-Spatial Abilities	Healthy Older Adults	-0.39	-3.02*	-0.16	-1.28	-0.31	-2.23
	MCI	-0.10	-0.79	-0.35	-2.58	0.12	0.83
Key: * $p < .05$, ** $p < .001$							

DISCUSSION

- In healthy older adults, retrospective memory, simple PM, and complex PM all play a role in multiple areas of functioning.
- In MCI, when older adults are exhibiting subtle cognitive deficits, it is simple PM that plays a salient role in everyday functioning.
- In both groups, PM predicted functional abilities over and above retrospective memory performance.
- PM may be considered as a potential indicator of decreased functional abilities in early cognitive decline.

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