



Early cognitive intervention for mild cognitive impairment: Does it work?

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Early Intervention for Mild Cognitive Impairment (MCI)

- MCI is a public health problem as common & a significant risk for Alzheimer's disease (AD)
- People presenting to memory clinics with amnesic MCI progress to AD at a rate of 10-15% per year & 30-50% over 3-years.
- **Early profiling of MCI difficulties creates opportunity for management strategies to prolong independent functioning**

Amnesic Mild Cognitive Impairment

- Subjective memory complaint
- Objective memory impairment on neuropsychological tests
- Relatively normal general cognition
- Relatively normal activities of daily living
- Failure to reach criterion for clinical dementia (NINCDS-ADRDA guidelines)

Grundman et al, 2004; Hodges et al, 2006; Petersen et al., (2001)

Why undertake an early cognitive intervention?

- Active management through medication remains equivocal; families seeking interventions that maintain independence & quality of life.
- Physical exercise benefits cognition (Lautenschlager et al, 2008)
- Cognitive training may extend capacity in everyday activities ; also a low-cost intervention.
- Families taught memory management skills

What did we expect?

Primary outcome

- Improved performance (through better knowledge and use of memory strategies) in tasks of everyday living (prospective memory).

Secondary outcome

- Improved knowledge of memory strategies by families who often need to become carers.
- Improved psychological well-being for the family

Approach to cognitive intervention

- Memory training can provide benefits in cognition for healthy older adults
- Limited research on benefit for aMCI, especially for daily activities
- Target the disability rather than impairment
- Prospective memory (remembering to carry out intended actions) a useful approach to measuring everyday memory competence.

Characteristics of the intervention

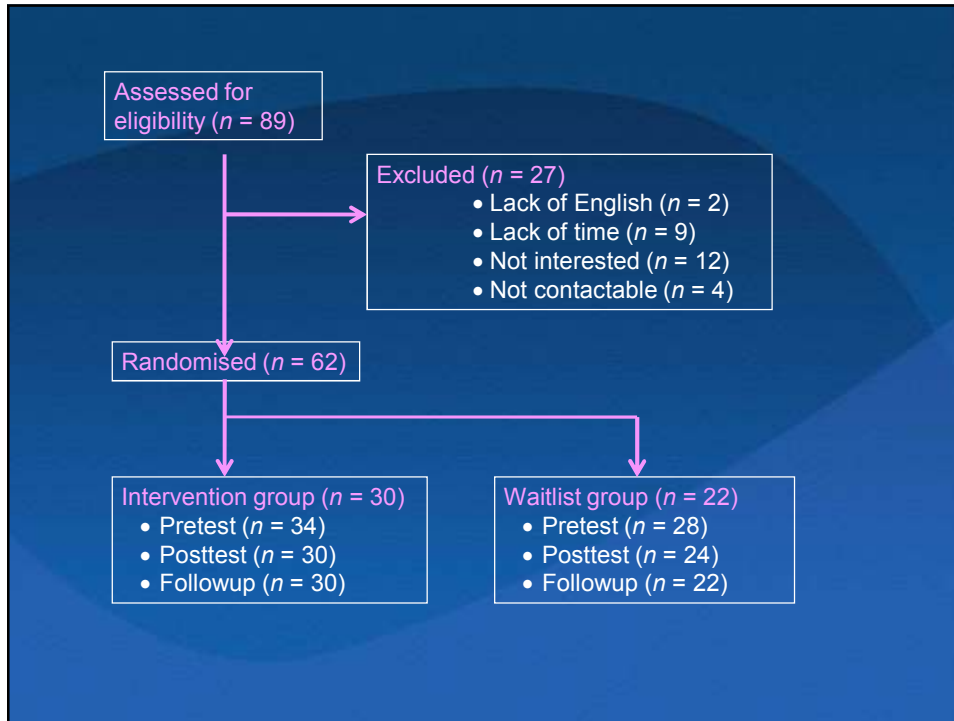
- To promote understanding of memory; assistance in learning compensatory strategies; and, guidance in how to implement these strategies into everyday life (see Belleville, 2006; Camp, 2005; Clare, 2002; Craik, 2007; Troyer, 2001)
- 5-week group for patients & families; 4-6 family dyads each group; led by experienced neuropsychologists
- Semi-structured, interactive format; **based in current scientific research in memory.**
- Weekly handouts and assignments.

How did we carry out the study?

- Recruitment of families from **two memory clinics**
- **Random assignment** to either the intervention memory group or a waiting list control group.
- **5-week intervention** of memory group
- **Assessment** at pre- and post-intervention and four month follow-up.

OUTCOMES

- **Memory Impairment**
Hopkins Verbal Learning Test - Revised
- **Memory Disability**
Prospective Memory: Prompt, Envelope
Self-report: MMQ-Ability
- **Memory Strategies**
Strategy Use: MMQ-Strategy
Strategy Knowledge (participant & family)
- **Emotional Status**
Memory Satisfaction: MMQ-Contentment



Sample Characteristics: Participants with MCI

	Waiting-List	Intervention
	<i>n</i> = 22	<i>n</i> = 30
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Gender (M : F)	9 : 13	14 : 16
Age*	74.73 (6.10)	78.87 (5.58)
Education (yrs)	11.68 (3.58)	13.03 (4.68)
Estimated IQ	105.41 (7.19)	106.80 (10.43)
MMSE (total)	26.82 (1.82)	26.10 (2.60)
MMSE (word recall)	1.05 (1.05)	1.33 (1.06)

* Waiting-List group were slightly younger than Memory group

Memory Impairment: HVLT-R

- **As expected** there were no significant differences between the groups following intervention on the standard measures of the HVLT-R – total recall, delayed recall, % recall, discrimination index
- However, whether we find differences on strategic organisation indices (semantic clustering etc) remains to be analysed (cf. results for healthy older adults - Craik et al, 2007).

Memory impairment



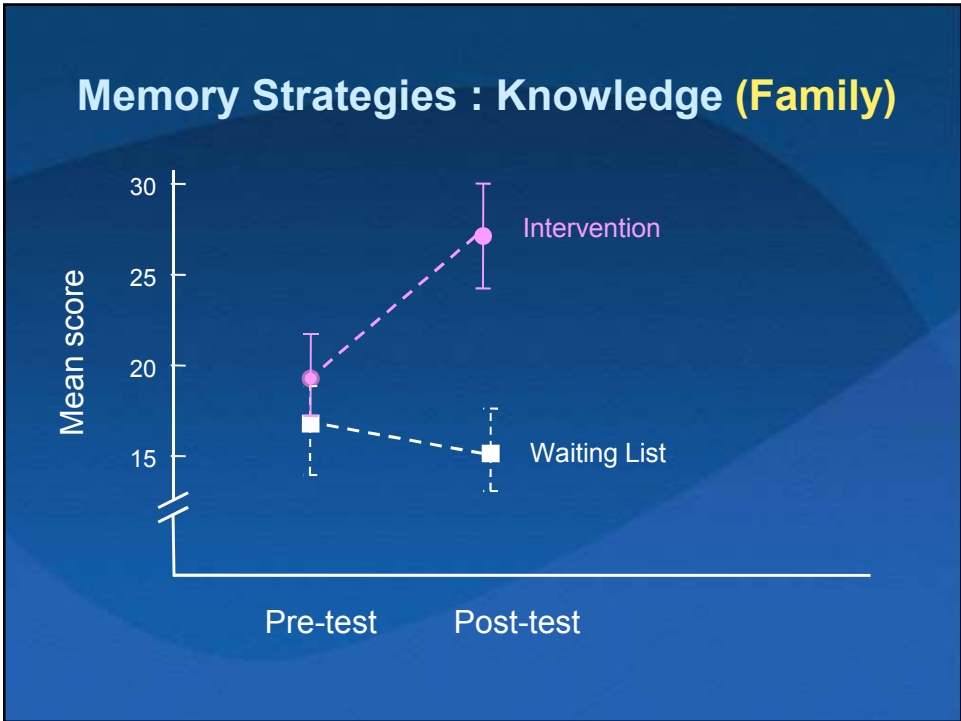
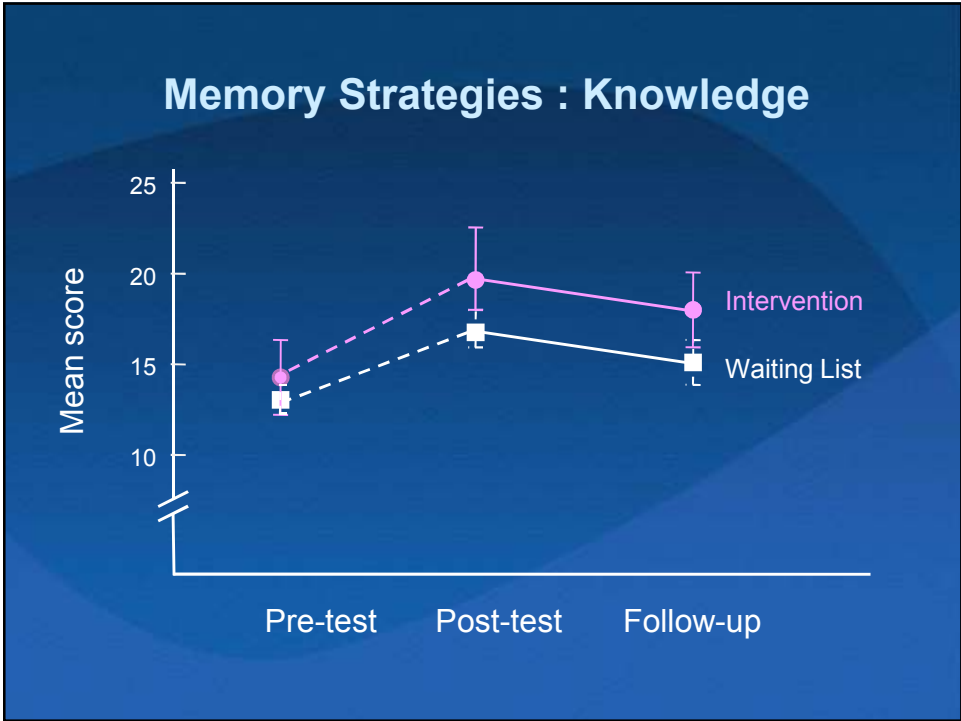
Mean (+/- SEM) percent correct responses on the delayed recall trial (% retained) of the HVLT-R task.

Memory Disability: Prospective Memory

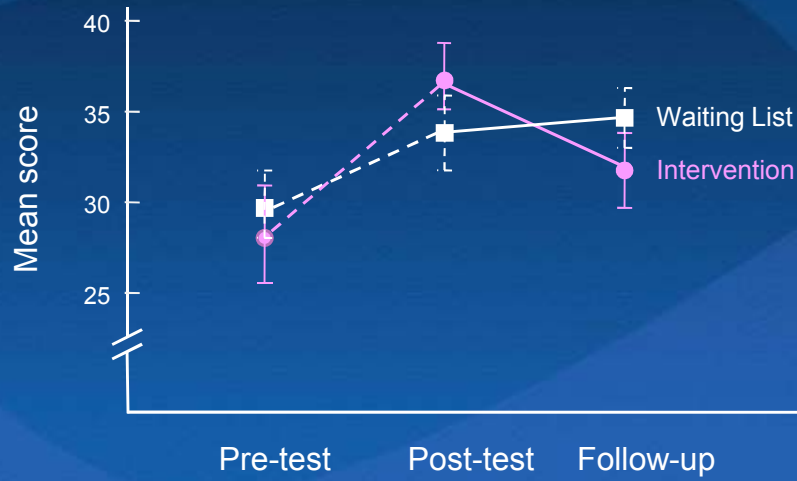


Memory Disability: Self-report (MMQ-Ability)

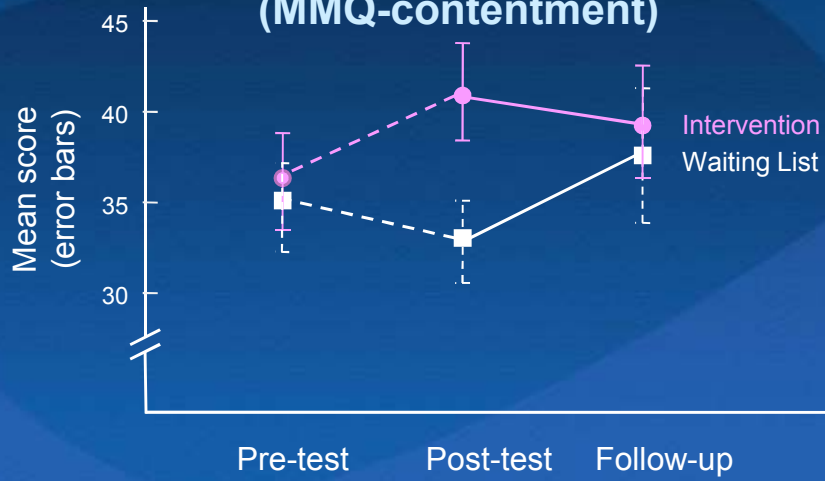
- **Contrary to expectation**, using a repeated measures ANOVA with age and pre-test performance as covariates there was no group effect ($p = .533$, partial eta effect .008) nor interaction.
- Whether this is **an absence of generalised change in everyday situations vs. a problem of self-report** needs investigation.
- Lack of relationship between self-appraisals and objective memory performance may arise from several sources (cf Troyer & Rich, 2002).



Memory Strategies: Use in everyday situations (Self-report – MMQ-strategy)



Emotional Status: Self-report (MMQ-contentment)

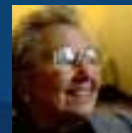


Does intervention help? Probably

- **Memory Disability** – increase in prospective memory performance, although not in self-report
- **Memory Strategies** – *increase in knowledge (and family) and increase in use of strategies*
- **Memory Impact** – *increase in memory contentment*

Issues that emerged during the study

- Families are not carers
- Measurement of everyday behaviour – how to move out of the office but maintain reliability?
- Chronic memory difficulties – bad habits



Translating research into practice

- **Need to establish not only whether intervention works but for whom**
- **Medicare rebates** for intervention
- Effective, sustainable chronic disease management requires skills in **cognitive intervention strategies as much as assessment.**