

ABSTRACT

Objectives: Goal of the present study was to investigate the patterns of incidental memory performance and intentional memory performance in cognitively intact individuals and in patients with MCI. **Methods:** Thirty five healthy participants ($57.8 \pm SD = 12.8$ years) and 31 neuropsychologically confirmed amnesic-MCI patients ($67.7 \pm SD = 9.1$ years), underwent a comprehensive neurological/neuropsychological assessment in which intentional memory was assessed by Hopkins Verbal Learning Test-Revised (HVLT). They also carried out a driving simulator experiment right after which incidental memory was assessed with a questionnaire regarding elements from their driving task, without previous notice. **Results:** The MCI group had a significantly poorer performance in incidental memory than the cognitively intact group ($t(64) = 2.19$, $p = .032$, $d = .54$) as well as in intentional memory ($t(64) = 7.25$, $p < .001$, $d = 1.82$). **Conclusions:** Incidental memory appears to follow a similar pattern of decline with the one observed in the case of effortful episodic memory, as assessed by classical neuropsychological tests. Nonetheless, the effect size (d values) indicates that incidental memory is less impaired than intentional memory in patients with MCI.

INTRODUCTION

Episodic memory has two components:

Intentional memory refers to those situations that individuals are instructed to memorize material presented in a specific context and time. Intentional memory is considered an effortful procedure that engages attentional and executive resources and is believed to be an efficient way for memorizing new information (Vingerhoets, 2005, Karrasch et al., 2010).

On the contrary, encoding of information can be achieved **incidentally** without the intention to memorize. Incidental memory is an unintentional effortless procedure and is believed to be a more prominent function in everyday life (Vingerhoets, 2005).

Previous research has revealed that **MCI patients did not differ from the control group in an incidental memory task** focusing on semantic definitions (Grönholm-Nyman et al, 2010)

Although there have been some attempts to investigate incidental memory, the latter along with intentional memory has not been systematically researched in clinical populations.

PATIENTS & METHODS

- Thirty one amnesic MCI patients (mean age: $67.7 \pm SD = 9.1$ years) and 35 healthy participants ($57.8 \pm SD = 12.8$ years) were currently included in the study.
- Participants participated in a **driving simulation experiment** and were evaluated through a comprehensive **neuropsychological battery**.
- Each participant was examined by a neurologist and a neuropsychologist to verify the diagnosis of MCI according to the Petersen criteria (2005).
- Incidental memory was assessed with an **8-item questionnaire**, developed by our research group, including elements from their driving task, without warning (Table 1).
- Intentional memory was measured by Hopkins Verbal Learning Test-Revised (HVLT-R).

Table 1. Incidental Memory Questionnaire – Free Recall task

Incidental Memory Questionnaire – Free Recall questions

1. What was the speed limit in the rural area?
2. What kind of animal or animals crossed the road in the rural area?
3. How many lanes were in each direction in the rural area?
4. What was the speed limit in the urban area?
5. What was the color of the ball that crossed the road with a child in the urban area?
6. What kind of animal was shown in the sign in the rural area?
7. What was the maximum number of lanes that you met in the urban and rural area?
8. What was in the pond in rural area?

RESULTS

Chart 1. Means in Incidental and Intentional memory for Control and MCI groups

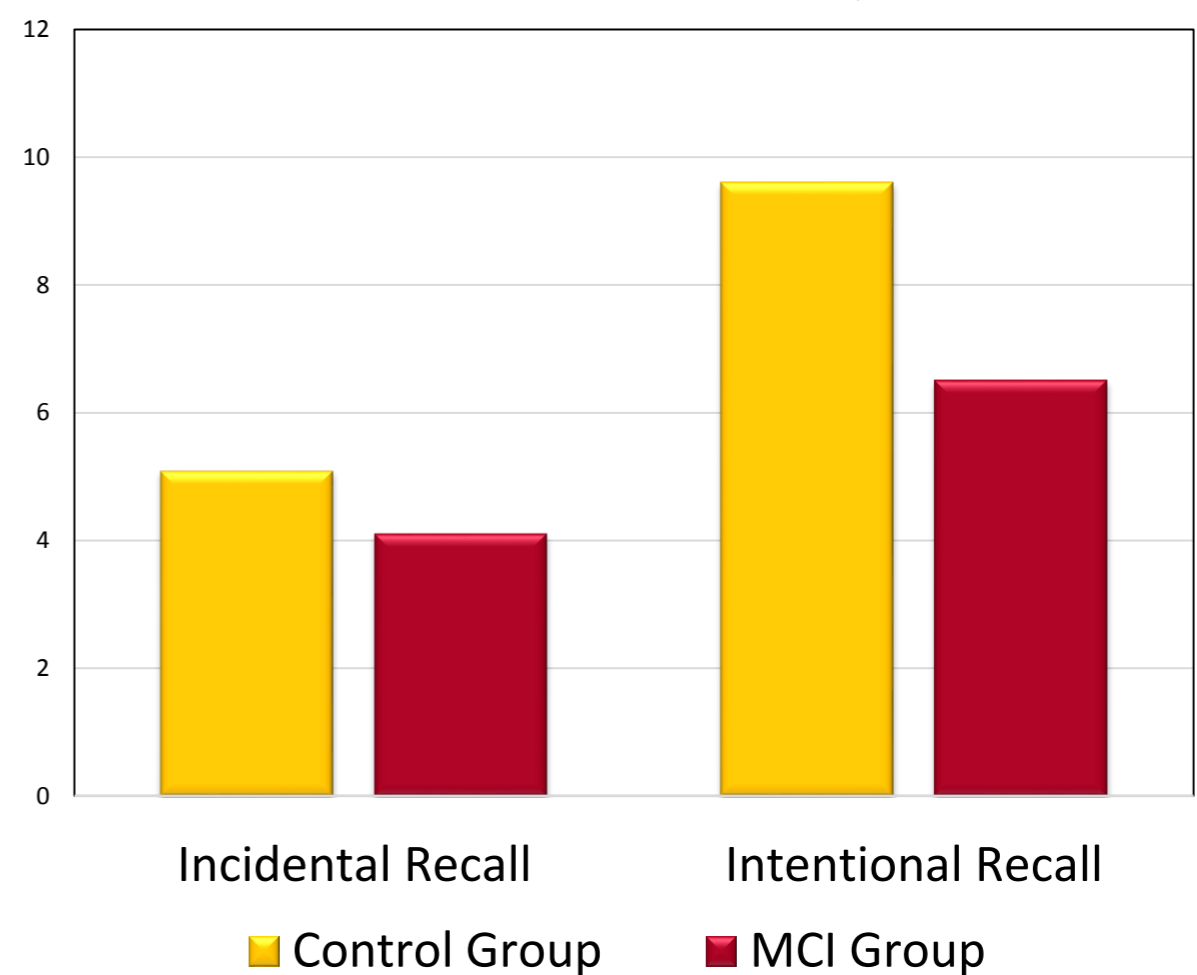


Table 2. Independent t-test for Control and MCI groups in Incidental and Intentional memory

Tasks	t	p	d
Incidental Recall	2,19	,032*	,54
Intentional Recall	7,25	,000**	1,82

DISCUSSION/CONCLUSION

- Incidental memory appears to follow a **similar pattern of decline** with the one observed in the case of effortful episodic memory, as assessed by classical neuropsychological tests.
- Nonetheless, the **effect size (d values)** indicates that incidental memory is **less impaired than intentional memory in patients with MCI** when compared with the performance of cognitively intact individuals with similar age
- Longitudinal research could explore and compare the capacity of intentional and incidental memory tests to **predict the transition to Alzheimer's disease**
- Further research is warranted for exploring the generalizability of the findings and whether the observed pattern of results is independent of the methods applied for assessing incidental and intentional episodic memory

SUMMARY

- Significant differences in the episodic memory measures, incidental and intentional, were observed between the MCI and the control group
- Independently of the type of the episodic memory measure, controls outperformed the MCI group
- The measures of the effect size indicate greater differences in the intentional memory task

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