Assessing incidental memory in cognitively intact individuals versus patients with Mild Cognitive Impairment (MCI)

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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 attention 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 amnestic MCI patients (mean age: 67.7 ± SD= 9.1years) and 35 healthy participants (57.8 ± 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

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

RESULTS

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

<table>
<thead>
<tr>
<th>Tasks</th>
<th>t</th>
<th>p</th>
<th>d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incidental Recall</td>
<td>2.19</td>
<td>.032*</td>
<td>.54</td>
</tr>
<tr>
<td>Intentional Recall</td>
<td>7.25</td>
<td>.000**</td>
<td>1.82</td>
</tr>
</tbody>
</table>

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.

REFERENCES/Acknowledgement

• Karrasch et al. (2010). The diagnostic accuracy of an incidental memory modification of the Boston Naming Test (m-BNT) in differentiating between normal aging. The Clinical Neuropsychologist, 24(2), 135.3-1364.


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