Impact of depression on semantic processing in Alzheimer’s disease: Results from an affective priming protocol

Cognitive Psychology and Neuropsychology Department, UMONS, Belgium
isabelle.simoesloureiro@umons.ac.be

Introduction

In Alzheimer’s disease (AD), memory breakdown is an early symptom characterized by episodic disorders, but also by semantic memory (SM) impairment. This SM alteration appears through modifications in the lexico-semantic network and can be observed with a semantic priming paradigm. Moreover, mood disorders may also be noted in AD. It is well known that depression can have a significant impact on memory performances. Nevertheless, there are few studies that clarify the deleterious impact of depression on SM in AD. Therefore, the aim of this study is to analyse this impact on priming effect in AD with an affective priming protocol.

Methodology

1. POPULATION

<table>
<thead>
<tr>
<th>Population (N=36)</th>
<th>Depressed AD (D-AD) (N=8)</th>
<th>Non-Depressed AD (ND-AD) (N=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>81.8 (6.8)</td>
<td>85.8 (4.4)</td>
</tr>
<tr>
<td>MMSE</td>
<td>28.4 (1.2)</td>
<td>24.1 (0.9)</td>
</tr>
<tr>
<td>GDS</td>
<td>4.1 (1.6)</td>
<td>5.6 (4)</td>
</tr>
<tr>
<td>QAG</td>
<td>34.7 (1.2)</td>
<td>33.6 (4)</td>
</tr>
<tr>
<td>PPTT</td>
<td>94.8 (3.2)</td>
<td>85.6 (4.1)</td>
</tr>
</tbody>
</table>

Mean and standard deviation: MMSE = Mini-Mental State Examination; GDS = Geriatric Depression Scale; QAG = Questionnaire of general anxiety; PPTT = Pyramid and Palm Trees Test

2. TASK

4 experimental conditions

1) Positive affective valence (PV+)

2) Negative affective valence (NV-)

3) Neutral semantic condition (NSc)

4) Unrelated control condition

Results

Comparison of PE

Repeated-measures ANOVA

| Group (G) effect | (F=41.526; p<.001) |
| Condition (C) effect | (F=5.453; p=.008) |

Interaction effect G*C

(F=3.082; p=.025)

Discussion and conclusions

These results demonstrate, as expected, priming effects for semantic and emotional conditions in all our groups. However, we showed a specific hyperpriming effect for the negative valence condition in the AD group with depression comparatively to positive valence and neutral condition. On the contrary, control participants and non-depressed AD present more important priming effect for the positive condition compared to neutral and negative ones. We propose that a negative mood has an impact on the processing of negative information, shown by a specific hyperpriming effect in AD patients with depression, in line with an easier processing. This facilitation effect can be viewed as a difficulty to inhibit negative thoughts, probably linked to a disorganized semantic network, as demonstrated by the hyperpriming effect in subjects with depression.