Qualitative impairment of the recollective experience for self-related information in AD patients: Evidence from probed verbal reports in a recognition paradigm.

Sarah GENON, Eric SALMON, Fabienne COLLETTE & Christine BASTIN.
Introduction
memory recognition & SRRE

- **Recognition memory: dual process theories**
  - **Recollection:**
    Controlled and *conscious* retrieval of information including the recovery of *details from the encoding context*.
  - **Familiarity:**
    Relatively automatic process of *global assessment of memory strength* or stimulus fluency without controlled access to the associated contextual information.

- **Self reference recollection effect (SRRE)**
  self referential processing at encoding promotes *recolletion-based* processes at retrieval such as subjective experience of remembering and *source memory* (Conway and Dewhurst, 1995; Conway et al., 2001; Carroll et al., 2001; Van den Bos et al., 2010)
Introduction
impaired recollection-based retrieval in Alzheimer

- **Remember/Know paradigms**
  - Impaired subjective remembering with relatively preserved knowing in AD patients (Dalla Barba, 1997; Piolino et al., 2003; Rauchs et al., 2007).

- **Associative memory tasks**
  - Impaired retrieval of associations in AD patients (Gallo et al., 2004; Wolk et al., 2011; Hanaki et al., 2011; Algarabel et al., 2012; Genon et al., 2013)

- **Qualitatively altered autobiographical retrieval in AD patients** (Irish et al., 2011a, 2011b).
Objectives

- SRRE in AD patients?
  - Remember/Know paradigm
    - Validity in memory-impaired patients (e.g., Baddeley et al., 2001)?
    - Quality of recollective experience?

- Inclusion of probed verbal report
  - Remember/Know for self-related information
  - Quality of recollective experience for self-related information
METHODS
## Methods

### Participants:

<table>
<thead>
<tr>
<th></th>
<th>OC</th>
<th>AD</th>
</tr>
</thead>
<tbody>
<tr>
<td>N(male/female)</td>
<td>20 (10/10)</td>
<td>18 (11/7)</td>
</tr>
<tr>
<td>Age</td>
<td>76.2 (±5.0)</td>
<td>76.0 (±5.8)</td>
</tr>
<tr>
<td>Education</td>
<td>11.0 (±2.3)</td>
<td>11.0 (±3.8)</td>
</tr>
<tr>
<td>GDS</td>
<td>2.5 (±2.1)</td>
<td>2.8 (±2.6)</td>
</tr>
<tr>
<td>MDRS</td>
<td>139.1 (±3.1)</td>
<td>126.6 (±7.7)*</td>
</tr>
</tbody>
</table>

* *p < .001
Exercice: « Are you? »

Exercice: « Is Albert-II? »

Exercice: « Have you seen? »

Other relevance

Honest

Yes
No

Self relevance

Jealous

Yes
No

Genon et al., Cortex, 2014
Have you seen?

**jealous**

YES  NO

Do you remember precisely in which context?

**YES**

Do you remember:
1) In which condition?
2) The answer you had given?
3) A thought or a mental image?
4) Anything else?

**NO**

Experiencing of familiarity feeling but do not remember anything

**NO**

Chance or guessing?
RESULTS
Results

Recognition performance

Retrieval processes

Genon et al., Cortex, 2014
Results

Remembered details

<table>
<thead>
<tr>
<th>Condition</th>
<th>Answer</th>
<th>Thought</th>
<th>Condition</th>
<th>Answer</th>
<th>Thought</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD</td>
<td></td>
<td></td>
<td>OC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Genon et al., *Cortex*, 2014
**Results**

**False remembered details**

Genon et al., *Cortex*, 2014
DISCUSSION
Results summary

- Modified R/K paradigm with probed verbal reports in a memory recognition task:
  - Replication of previous findings: impaired recollection with relatively preserved familiarity in mild AD patients
  - Impaired SRRE in AD patients
  - Qualitatively impaired retrieval of self-related information
  - False source remembering in AD patients

Genon et al., Cortex, 2014
Discussion

- Retrieval of self-related memories is less associated with recollective experience

- Lack of contextual details for self-related memories

// lack of contextual details for autobiographical memories (Irish et al., 2011a, 2011b)

→ Impaired interaction between self and memory in AD patients

→ Impaired autobiographical self (Damasio, 1999; Northoff et al., 2006) in AD patients
Discussion

- False source remembering in AD patients

Source-based false recognitions in AD patients (Pierce et al., 2008)

False recognitions in AD patients are associated with medium to high levels of confidence (Gallo et al., 2010)

→ modified recollection process in AD patients

False memories in AD patients related to executive dysfunction (Plancher et al., 2009)

→ monitoring process of source verification may be impaired in AD leading to false remembering during episodic retrieval.
Thank you for your attention
Methods

- **Measures:**

  - **Hits**
    \[
    \text{Hits} = \frac{[\text{Remember} - \text{FA}_\text{Remember}] + [\text{Know} - \text{FA}_\text{Know}]}{\text{total old}}\]

  - Familiarity estimates under the assumption of independence (F)
    \[
    \text{pc}(\text{Hits}_\text{Know}) = \frac{p(\text{Hits}_\text{Know})}{(1-p(\text{Hits}_\text{Remember}))}
    \]
    \[
    \text{pc}(\text{FA}_\text{Know}) = \frac{p(\text{FA}_\text{Know})}{(1-p(\text{FA}_\text{Remember}))}
    \]
    \[
    F = \text{pc}(\text{Hits}_\text{Know}) - \text{pc}(\text{False alarms}_\text{Know})
    \]

  - **Remembered details**
    - Remembered detail = Remembered detail/N remember
    - False remembered detail = false remembered detail/N remember