



# Discrepancy between subjective autobiographical reliving and objective recall: The past as seen by Alzheimer's disease patients

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## ARTICLE INFO

### Article history:

Received 13 July 2016

Revised 27 January 2017

Accepted 28 January 2017

Available online 5 February 2017

### Keywords:

Alzheimer's disease

Anosognosia

Autobiographical consciousness

Autobiographical memory

Subjective reliving

## ABSTRACT

This paper investigated whether Alzheimer's disease (AD) patients may demonstrate a discrepancy between subjective autobiographical reliving and objective recall. To this end, 31 AD patients and 35 controls were asked to retrieve three autobiographical memories. For each memory, participants were asked to rate its subjective characteristics (e.g., reliving, travel in time, visual imagery...). Besides this subjective assessment, we analyzed recall objectively with regard to specificity. Results showed poorer subjective autobiographical reliving and objective recall in AD patients than in controls. A discrepancy (i.e., higher level of subjective reliving than of objective recall) was observed in AD but not in control participants. Despite a compromise in their objective recall, AD patients seemed to attribute a high value to their subjective autobiographical experience. This discrepancy can be attributed to a potential genuine consciousness experience in which mild AD patients can, to some extent, experience some subjective features of the past.

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## 1. Introduction

Autobiographical memory or memory for personal information (Conway, 2005; Rubin, 2005) has been found to be compromised in Alzheimer's disease, and this compromise is thought to induce a diminished sense of self and identity in the disease (Addis & Tippett, 2004; El Haj, Antoine, Nandrino, & Kapogiannis, 2015; Klein, Cosmides, & Costabile, 2003; Martinelli, Anssens, Sperduti, & Piolino, 2013) as well as impaired psychological wellbeing in caregivers (Kumfor et al., 2016). Autobiographical compromise in AD has been typically demonstrated by studies showing a reduced ability to produce specific (i.e., episodic) personal events in AD patients (Barnabe, Whitehead, Pilon, Arseneault-Lapierre, & Chertkow, 2012; El Haj, Antoine, Nandrino, Gely-Nargeot, & Raffard, 2015; El Haj, Fasotti, & Allain, 2012; El Haj, Postal, Le Gall, & Allain, 2011; Graham & Hodges, 1997; Greene, Hodges, & Baddeley, 1995; Irish, Lawlor, O'Mara, & Coen, 2011; Ivanoiu, Cooper, Shanks, & Venneri, 2006; Leyhe, Muller, Milian, Eschweiler, & Saur, 2009; Muller et al., 2013; Seidl, Lueken, Thomann, Geider, & Schroder, 2011). Bearing in mind the autobiographical compromise in the disease, our paper investigated a potential discrepancy between this compromise, as reported by the literature, and subjective autobiographical reliving, as may be reported by AD patients.

Discrepancy between subjective autobiographical reliving and objective recall in AD can be investigated in light of research demonstrating failures to appreciate the presence or severity of memory distortions in the disease. This lack of

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awareness, or anosognosia, has been observed in studies reporting discrepancies between evaluative judgements of AD patients about their memory performance and real performance (for a review, see [Clare, Marková, Roth, & Morris, 2011](#); [Mograbi & Morris, 2013](#); [Morris & Mograbi, 2013](#)). More precisely, this discrepancy has been described in terms of an overestimation of memory performance in comparison to objective performance ([Antoine, Nandrino, & Billiet, 2013](#); [Avondino & Antoine, 2015](#); [Barrett, Eslinger, Ballentine, & Heilman, 2005](#); [Clare, Whitaker, & Nelis, 2010](#); [Cosentino, Metcalfe, Butterfield, & Stern, 2007](#); [Graham, Kunik, Doody, & Snow, 2005](#); [Hannesdottir & Morris, 2007](#); [Leicht, Berwig, & Gertz, 2010](#); [Mograbi, Brown, Salas, & Morris, 2012](#)). Although these findings suggest a potential discrepancy between subjective autobiographical reliving and (objective) autobiographical retrieval in AD, our paper differs from the “anosognosia” literature in that we assess the difference between real autobiographical performance and subjective reliving of memories as reported by AD patients and not the difference between real autobiographical performance and performance as estimated by patients. By doing so, we investigated whether AD patients may report high subjective experience of autobiographical memories despite compromise of the latter.

Since our paper assesses subjective autobiographical reliving, a brief recall of the literature on this issue is warranted. As mentioned above, AD patients tend to demonstrate difficulties in producing specific autobiographical memories. This autobiographical overgenerality is thought to compromise autonoetic consciousness, i.e. the ability to mentally transport oneself back in subjective time to relive past events. Autonoetic consciousness in AD has been widely assessed with the “Remember/Know” paradigm ([Wheeler, Stuss, & Tulving, 1997](#)) in which participants are typically asked to provide a “Remember” response if they are able to recover a specific event with its encoding context, or a “Know” response if they just know a particular event happened to them but cannot retrieve any contextual detail about it. Research using this paradigm has demonstrated a diminished ability to mentally relive past events in AD ([El Haj, Moroni, Samson, Fasotti, & Allain, 2013](#); [Hudon, Belleville, & Gauthier, 2009](#); [Piolino et al., 2003](#); [Rauchs et al., 2007](#)). Compromised subjective reliving in AD was also observed in a study in which AD participants had to retrieve autobiographical events and to rate subjective reliving of these events with questions assessing vividness, viewer perspective, rehearsal, emotion, mental time travel, and overall re-experience ([Irish, Lawlor, O'Mara, & Coen, 2011](#)). Results demonstrated a diminished subjective reliving as well as a significant disruption of objective autobiographical performance (i.e., specificity, as assessed by the authors) in the disease. Findings were similar in another study assessing objective autobiographical performance (i.e., specificity) and subjective reliving in AD ([El Haj, Kapogiannis, & Antoine, 2016](#)). Subjective reliving was evaluated by asking AD participants to retrieve autobiographical memories and to rate characteristics such as travel back in time, realness, visual and auditory imagery, emotion, importance, rehearsal and spatiotemporal specificity. Results demonstrated a diminished phenomenological reliving as well as a significant disruption of objective recall (as assessed by the authors) in AD. Together, research to date suggests a compromise of both subjective autobiographical reliving and objective recall in AD. However, to our knowledge, no previous study has assessed whether there is a discrepancy between subjective autobiographical reliving and objective recall in the disease. Such an assessment is of particular value as it may provide insight into the degree to which AD patients estimate their consciousness experience of autobiographical memories.

### 1.1. Objective and hypothesis

The main aim of this paper was to assess the potential gap between subjective autobiographical reliving and objective recall in AD. The literature suggests the existence of a compromise in both subjective autobiographical reliving ([El Haj et al., 2013, 2016](#); [Hudon et al., 2009](#); [Irish, Lawlor, O'Mara, & Coen, 2011](#); [Piolino et al., 2003](#); [Rauchs et al., 2007](#)) and objective recall in the disease ([Barnabe et al., 2012](#); [El Haj et al., 2015, 2011, 2012](#); [Graham & Hodges, 1997](#); [Greene et al., 1995](#); [Irish, Lawlor, O'Mara, & Coen, 2011](#); [Ivanou et al., 2006](#); [Leyhe et al., 2009](#); [Muller et al., 2013](#); [Seidl et al., 2011](#)). However, we expected a discrepancy between subjective autobiographical reliving and objective recall in AD (i.e., high subjective reliving and low objective recall), a hypothesis that was based on research suggesting overestimation of general memory performance in the disease ([Antoine et al., 2013](#); [Avondino & Antoine, 2015](#); [Barrett et al., 2005](#); [Clare et al., 2010](#); [Cosentino et al., 2007](#); [Graham et al., 2005](#); [Hannesdottir & Morris, 2007](#); [Leicht et al., 2010](#); [Mograbi et al., 2012](#)).

## 2. Method

### 2.1. Participants

Thirty-one participants with a clinical diagnosis of probable mild AD (22 women and 9 men;  $M$  age = 71.76 years,  $SD$  = 5.38;  $M$  years of formal education = 8.45,  $SD$  = 2.39) and 35 control older adults (23 women and 12 men;  $M$  age = 69.29 years,  $SD$  = 7.54;  $M$  years of formal education = 9.43,  $SD$  = 2.63) voluntarily participated in the study. The AD participants were recruited from local retirement homes. Probable AD diagnosis was made by an experienced neurologist or geriatrician according to the criteria developed by the National Institute on Aging and the Alzheimer's Association criteria for probable Alzheimer's disease ([McKhann et al., 2011](#)). The control participants were often spouses or companions of AD participants, were independent and living at home. These participants were matched with the AD patients according to age [ $t(64) = 0.16$ ,  $p > 0.10$ ], sex [ $\chi^2(1, N = 66) = 0.21$ ,  $p > 0.10$ ] and educational level [ $t(64) = 0.12$ ,  $p > 0.10$ ].

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