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The subjective experience of recollection and familiarity in Alzheimer's Disease.

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Abstract

While the Integrative Memory model for Alzheimer's disease is interesting, it may benefit from incorporating the subjective experience of recollection. We therefore offer complementary lines of interpretation to explain how recollection and familiarity in Alzheimer's disease can be dissociated based not only on accounts of their neural correlates but, critically, on the subjective experience of memory in patients.

The Integrative Memory model, as proposed by Bastin et al., is theoretically and clinically relevant as it provides a framework for the chronological pattern of recollection and familiarity processes in Alzheimer's Disease depending on the brain regions most affected at each stage of the disease. That being said, the framework can be extended to include the subjective experience of both recollection and familiarity and their abnormalities in patients with Alzheimer's Disease. Recollection and familiarity have been associated with distinct subjective experiences; recollection is typically associated with a subjective experience of "mental time travel", in which we experience the conscious sensation of travelling back in time to relive the original event and to see it in our mind's eye, whereas familiarity is typically associated with a feeling of knowing characterized by a vague and unspecific experience of remembering (Tulving, 2002). Regarding Alzheimer's disease, patients typically demonstrate a shift from the ability to mentally relive past events (i.e., a shift from recollection) to a general sense of familiarity that may be expressed by the patients as a sense of "having experienced this before" (El Haj, Antoine, Nandrino, & Kapogiannis, 2015).

The decline of recollection in Alzheimer's disease can be attributed to decline in specific processes of the recollective experience. This decline has been pointed out by research demonstrating decline in the recollective experience during retrieval of past personal events in patients with Alzheimer's disease, including decline in subjective processes, such as

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reliving, travel in time, remembering, realness, rehearsal, and visual imagery (El Haj, Kapogiannis, & Antoine, 2016). Among these subjective processes, decline of visual imagery seems to play a key role in the decline of recollective experience in patients with Alzheimer's disease. The decline of visual imagery in Alzheimer's disease seems to deprive patients from the ability to retrieve and manipulate mental images during retrieval, and also deprive them from visual cues that mediate and/or accelerate their search through memory stores (El Haj, Gallouj, & Antoine, 2019; El Haj, Moustafa, Gallouj, & Robin, 2019).

The relationship between decline of visual imagery and decline of the recollective experience in Alzheimer's disease can be understood by highlighting research using the Field/Observer paradigm, which has been widely used to assess the subjective experience of recollection and familiarity in general populations (Nigro & Neisser, 1983; Rice & Rubin, 2011). In one study in Alzheimer's disease, patients were invited to retrieve past personal events and, after a delay, provide a "Field" response, if they can visualize the event through their own eyes, or an "Observer" response if they can visualize themselves in the scene as a spectator would (El Haj, Moustafa, et al., 2019). Results demonstrated increased "Field" and decreased "Observer" responses in patients, suggesting a diminished ability of patients with Alzheimer's disease to construct vivid images when recollecting the past.

In summary, the decline of the recollective experience during retrieval can be associated with declines in several components of the subjective experience, such as reliving, travel in time, remembering, realness, and rehearsal. Critically, decline of visual imagery seems to deprive patients from the ability to construct mental images when recollecting the past. We propose that these processes should be taken into account by The Integrative Memory model, as proposed by Bastin et al., to better account for recollection deficits in patients with Alzheimer's disease. We believe that a decline in the subjective experience during retrieval in patients with Alzheimer's disease leads to a decline of recollection and, consequently, to the emergence of a general sense of familiarity that is typically associated with a sense of "having experienced this before". As pointed out by Bastin et al., the Integrative Memory model is not comprehensive and should evolve to incorporate other mechanisms. Therefore, we propose that the Integrative Memory model by Bastin et al is sufficiently flexible to include these subjective processes and may be enriched by this inclusion.

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