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## Disordered recognition memory: Recollective confabulation

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## ABSTRACT

Recollective confabulation (RC) is encountered as a conviction that a present moment is a repetition of one experienced previously, combined with the retrieval of confabulated specifics to support that assertion. It is often described as persistent déjà vu by family members and caregivers. On formal testing, patients with RC tend to produce a very high level of false positive errors. In this paper, a new case series of 11 people with dementia or mild cognitive impairment (MCI) and with déjà vu-like experiences is presented. In two experiments the nature of the recognition memory deficit is explored. The results from these two experiments suggest – contrary to our hypothesis in earlier published case reports – that recollection mechanisms are relatively spared in this group, and that patients experience familiarity for non-presented items. The RC patients tended to be overconfident in their assessment of recognition memory, and produce inaccurate assessments of their performance. These findings are discussed with reference to delusions more generally, and point to a combined memory and metacognitive deficit, possibly arising from damage to temporal and right frontal regions. It is proposed that RC arises from a metacognitive error; an attempt to justify inappropriate feelings of familiarity which leads to false recognition.

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## 1. Introduction

In this article, I report a case series of patients who experience almost constant false recognition for unfamiliar materials such as television premieres, new places, and events in the news. These patients present with striking delusion-like features, such as calling a TV repairman because the television is constantly repeating, or claiming that other people – strangers – have very regular habits, doing things at the same time in the same place every day. Carers, spouses and medical practitioners refer to these experiences as like near-persistent déjà vu.<sup>1</sup> Two recognition memory tasks are used to explore the cognitive basis of

these forms of false recognition, and the extent to which recollection and familiarity processes contribute to the breakdown of recognition memory is evaluated.

Recognition memory concerns our ability to differentiate new stimuli (which are novel or not previously experienced) from those which are old (which have been previously experienced). Several authors (e.g., Mandler, 2008; Yonelinas, 2002) suggest that endorsements of prior experience can be made on the basis of recollection (which involves retrieval of a definite prior episode and 'mental time travel') or familiarity (which is an assessment of prior experience which is devoid of contextual information and the retrieval of specifics).

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<sup>1</sup> Although we used the term déjà vécu in our previous work, in order to align ourselves with the reports of carers which emphasise déjà vu, it should be noted that these experiences are very different from healthy déjà vu experiences in two key ways. First, they are not brief transitory sensations which are quickly resolved, and second, the patient is not aware of the false recognition. Here then, I avoid the use of the term 'déjà vu experience' and refer instead to RCs.

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Moulin et al. (2005) reported two patients with dementia who presented with what were described as having constant déjà vu<sup>2</sup> and who made a very high number of false positives accompanied with the subjective report of ‘remembering’ on tests of recognition memory. These patients (AKP and MA) exhibited striking behaviour in everyday life, withdrawing from almost all novel activities, complaining that they had experienced them before (for descriptions of further cases see O’Connor et al., 2010). One feature of the experience was the detail and justification given, typified by the response AKP made to the question of why he thought he had been previously interviewed for a radio show, when it was actually the first time:

“The surroundings are the same, and that – without being offensive – your sight against the filing cabinets and so on, and the heater, it looks familiar. Since then, [my] memory got slightly worse, that’s all. Besides, you asked the same questions. Why I remember them, and whether they are really the same, I don’t know, but it seems like it”.

We termed these types of memory error and false recognition as ‘recollective confabulation (RC)’. This term is used to denote the reproduction of false information from a non-existent study phase when used to justify the false recognition of a person, place or event. It is in this way different from other forms of confabulation (for reviews see Schneider, 2008; Kopelman, 1987), although it may be described as a ‘momentary confabulation’ or ‘provoked confabulation’ in response to having to justify the false recognition.

We also noted that these patients made false positives for low frequency words, such as dirge or puck, an unusual error given their distinctiveness (Gardiner and Richardson-Klavehn, 2000). False recognition was also more pronounced for more distinct events in daily life, e.g., a funeral announcement, a radio interview, a striking piece of world news, seeing a woman have a fit whilst on holiday, or finding money. These errors for such distinctive events were not consistent with the view that it was pre-existing familiarity that was driving the sensation, but the opposite – novelty. Based on these experimental findings and observations, we suggested that the deficit was not driven by a mere confusion of familiarity with a defined previous event.

Our previous work claimed that RC is a critical feature of this false recognition condition. Our argument was that since veridical recollection is associated with a subjective feeling of having experienced an event before combined with the retrieval of contextual information and experiences at study, then the false recollection of erroneous contextual details pointed to this being caused by an underlying erroneous feeling of recollection.

Another explanation of our patients’ RC is that they have reduplicative paramnesia, a ‘rare memory disorder characterized by the subjective conviction that a place, person or

event is duplicated’ (Pisani et al., 2000). Feinberg and Shapiro (1989) describe a form of reduplication where ‘the patient maintains that his current experiences are a repeat of past experiences’. They suggest that reduplicative syndromes occur where an unfamiliar environment or event appears in a ‘pathologically familiar form’, such as when a hospital room is mistaken for a patient’s home; they even specify that reduplicative paramnesias may resemble déjà vu. Delusions more generally are not uncommon in dementia, with estimates of incidence as high as 30–40% (Sultzer et al., 2003). Capgras’ delusion, which is the delusion that a familiar person has been replaced by a double, is thought to occur in about 2–30% of patients with Alzheimer’s disease (e.g., Lyketsos et al., 2002). More specifically, Mendez (1992) cases of dementia with delusional misidentification syndromes, one of whom ‘... had episodes of déjà vu, e.g., saw a person on a bicycle and claimed that “I have seen all this before”’ (p. 415) and another ‘... had episodes of unfamiliar events appearing familiar, e.g., driving on unfamiliar streets she said “that car is always here every time we go by here”’ (p. 415).

There are considerable overlaps between our concept of RC and temporal reduplication. Reduplicative paramnesias are thought to arise due to a misconnection or disruption to fronto-temporal circuits, particularly following damage to right frontal areas which overlaps with our interpretation of AKP & MA. Feinberg and Shapiro (1989) specify that a right frontal disruption leads to a disturbance of familiarity, and that this leads to an illogical attempt – a confabulation – of why the ‘familiar is experienced as strange or vice versa’ (p. 46). Interestingly, in confabulation more generally, a deficit in temporal memory has been cited as a causal factor (e.g., Schneider, 2008), although confabulating patients do not report that the current moment is a repetition of a previous moment: presumably because in general, confabulating patients do not have false recognition, and are not given to producing high levels of false positives on recognition memory tests.

Critically, reduplicative paramnesias are usually described as deriving from inappropriate familiarity, whereby the core delusion is driven by a lack of subjective familiarity, which is then interpreted by intact long-term memory systems which apply justifications to the underlying sensation. For instance, a patient with Capgras will be able to recognize his wife, but will nonetheless find her unfamiliar. To reconcile this clash in evaluations, the patient will justify this mismatch with the belief that the wife has been replaced by a double – such that it appears like her, but is not her. In the case of reduplication the underlying sensation is familiarity rather than unfamiliarity (Pick, 1903). Critically, delusional misidentifications of people, places and time, have been hypothesized as stemming from memory-like disruptions to feelings of familiarity (Feinberg and Roane, 2005).

By this view, RC would not be caused by a deficit in recollection per sé, but the use of somewhat intact recollection processes to justify erroneous feelings of familiarity. This notion has some parallels with how recollection and familiarity are suggested to operate in concert in a healthy memory system. One prominent idea is that familiarity operates as a trace strength mechanism, by which the intensity of memory can be gauged. Items generating high levels of familiarity should normally be able to be recollectively experienced. Some researchers suggest that an initial assessment of familiarity is

<sup>2</sup> There have been various attempts to classify different forms of déjà vu experiences, such as separating it into déjà vu and déjà vécu (O’Connor and Moulin, 2010). Where I use ‘déjà vu’ here I wish to use it as a generic term which is theory-neutral, which captures the patients’ sense of life repeating. This idea is developed a little in the discussion.

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