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## Accounting for the strangeness, infrequency, and suddenness of déjà vu

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### Abstract

Barzykowski and Moulin argue that déjà vu is a natural product of autobiographical memory retrieval. Their proposal fails to account for three salient properties of déjà vu experiences: Their strangeness, their infrequency, and their characteristically sudden onset. Accounting for these properties is necessary for proper integration of déjà vu into autobiographical memory research.

Aiming to provide a means of integrating research on the two phenomena, Barzykowski and Moulin (B&M) propose an approach to involuntary autobiographical memory and déjà vu as natural products of memory retrieval. Their proposal must, if it is to achieve this aim, have a level of detail sufficient to account for the core functional and phenomenological properties of the target phenomena. Focusing on déjà vu, this commentary shows that the proposal does not have the requisite level of detail. We argue, after identifying three core properties of déjà vu experiences, that each of these leads to a problem that the proposed account, in its current form, is unable to resolve.

The first property that we will consider is strangeness. Déjà vu experiences are regularly characterized as strange, weird, or even eerie by both subjects and theorists (e.g., Brázdil et al., 2012). In the kind of experience on which we will focus here – sometimes referred to as “déjà vécu” (O’Connor, Lever, & Moulin, 2010) – the strangeness of the experience is due to the fact that it concerns a singular event and not merely a repeatable item, “as if time had slipped a cog and were now repeating itself” (Woodworth, 1940: 357). The second property is infrequency. While most people experience déjà vu, they do so very rarely – on the order of few times a year (Brown, 2003). The final property is suddenness. Triggered by a variety of situational factors, déjà vu experiences typically begin abruptly, last no longer than a few seconds, and end just as abruptly as they began (Brown, Porter, & Nix, 1994).

Consider *strangeness* first. According to B&M’s proposal, the distinctive phenomenology of déjà vu results from the combination of incomplete memory retrieval, which produces a sense of familiarity, with metacognitive appraisal of that familiarity as implausible. The strangeness of déjà vu, however, is due not merely to the *implausibility* of familiarity with a repeatable item – that is, with a type – but also, in cases in which déjà vu amounts to déjà vécu, to the felt *impossibility* of familiarity with the currently experienced token event. In order to account for the strangeness of déjà vu, then, the proposal needs to explain not only why incomplete retrieval produces a sense of familiarity with an item (a feeling that the current event resembles something experienced in the past) but also why, at least in some paradigmatic cases of déjà vu, unexpected familiarity is not simply brushed off as arising from limited access but is instead taken to indicate event repetition (a feeling that this very event has already been experienced). If the distinctive phenomenology of déjà vu results from a metacognitive assessment of plausibility, in short, then what should be assessed is not the plausibility of event resemblance but of event repetition.

For a similar reason, B&M’s proposal cannot account for the *infrequency* of déjà vu. According to the proposal, incomplete retrieval – producing familiarity but not specific memory content – should be relatively frequent. This is required to explain the relative frequency of tip-of-the-tongue experiences (Brown, 1991).

Now, if our argument above is on the right track, the metacognitive assessment of plausibility responsible for generating déjà vu pertains to event repetition, not to mere event resemblance. Since event repetition is impossible, however, familiarity unaccompanied by specific memory content should typically, if not invariably, be assessed as impossible or at least highly implausible. But this entails that déjà vu experiences should be relatively frequent, which strongly contradicts the available data. Thus, if it is to account for both the strangeness and the infrequency of déjà vu, the proposal will have to invoke a wider range of (meta)cognitive processes. We will not attempt to determine here with it is feasible for a modified form of the proposal to do so.

The *suddenness* of déjà vu also presents a problem for the proposal. B&M contrast the rapidity of content retrieval in involuntary memory with the gradual intensification of familiarity in déjà vu. The onset of familiarity is sudden, but the epistemic feeling characteristic of déjà vu is a result of the conflict between familiarity and metacognitive expectation, which triggers additional search. Hence, as the authors suggest, the feeling of unexpected familiarity in déjà vu should gradually intensify until it is resolved or explained. (Compare to the gradual intensification, and persistence, of familiarity in tip-of-the-tongue experiences.) But déjà vu experiences have a characteristically sudden onset: Not only do they begin abruptly, but often the strangeness that characterizes them is strongest in the first moments of the experience. The proposal, at least in its current form, does not account for this property of déjà vu.

Before concluding, we note that the strangeness, infrequency, and suddenness of déjà vu have sometimes been viewed as pointing to an underlying neural or cognitive malfunction (e.g., Critchley, 1989). Their characterization of déjà vu as a *natural* product of memory retrieval suggests that B&M intend to argue against such views. If, on the one hand, their intention is to argue that déjà vu results from properly functioning retrieval processes, much more evidence is required to support their claim. If, on the other hand, they do not mean to argue for a claim about function, then their characterization of déjà vu as “natural” adds little to their proposal. Greater clarity about this issue would be welcome.

B&M might respond by arguing that our focus on déjà vu for token events (i.e., on déjà vécu) is unjustified, suggesting that future work, and the development of more detailed models, will shed more light on this particular phenomenon. While we sympathize with this sentiment, we worry that operationalizing déjà vu as any form of inappropriate familiarity (cf. Neppe, 1983) obscures much of what is puzzling, and indeed difficult to explain, about the phenomenon. We thus maintain that integrating déjà vu into autobiographical memory research will require tackling the problems that we have highlighted head-on.

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## Neuropsychological predictions on involuntary autobiographical memory and déjà vu

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### Abstract

I strongly support Barzykowski and Moulin in their proposal that common retrieval mechanisms can lead to distinct phenomenological memory experiences. I emphasize the importance of one of these mechanisms, namely the attribution system. Neuropsychological studies should help clarifying the role of these retrieval mechanisms, notably in cases of medial temporal-lobe lesions and cases of dementia.

A fundamental tenet in Barzykowski and Moulin’s (B&M) proposal is the idea of common retrieval mechanisms leading to distinct phenomenological memory experiences depending on the success/failure and degree of involvement of these mechanisms. In both involuntary autobiographical memory and déjà vu, there is a rapid cue-generated automatic search in memory, a feeling of familiarity and attribution processes that come into play. I agree with B&M that a key difference lies in the content reactivation, with content that comes successfully to mind in the case of involuntary autobiographical memories and failure to find any content in the case of déjà vu. However, more emphasis could be made on the fact that the two types of memory experiences critically differ in the extent of contribution of the attribution system. Of note, the notion of attribution system refers here to the cognitive appraisal of the result of the memory search to generate an output (Bastin et al., 2019). In other words, this corresponds to the set of inferential and monitoring processes that evaluate retrieved contents before deciding about the old/new status of the information or expressing a subjective feeling of memory. In involuntary autobiographical memories, the retrieval cue leads to the rapid reactivation of some content that is compatible with expectations that there is indeed a memory trace. Here, the match between content reactivation and feelings of familiarity is satisfactory and not surprising, so that attribution processes take the form of relatively automatic and unconscious inferential processes. In contrast, in déjà vu, some cues generate expectation of