



Memory identification and its failures

Fabrice Teroni^a  (fabrice.teroni@unige.ch)

Abstract

When we remember, we often know that we do. How does this memory identification proceed? After having articulated some constraints on an attractive account of memory identification, this paper explores three types of accounts that respectively appeal to features of memory content, of memory as an activity, and of memory as an attitude. It offers reasons to favour an attitudinal account giving pride of place to the feeling of familiarity.

Keywords

Episodic memory · Memory · Neurocognition · Propositional attitudes

This article is part of a special issue on “Successful and Unsuccessful Remembering and Imagining”, edited by Ying-Tung Lin, Chris McCarroll, Kourken Michaelian, and Mike Stuart.

1 Introduction

A well-functioning memory allows us to retrieve stored information when needed and does so in a way that is identifiable. This is why we can describe many situations as memory failures. First, memory sometimes fails because we cannot access previously stored information – e.g., one cannot remember what the capital city of Guinea is or what one did last Sunday. These failures as *absence*, so to say, can be temporary or permanent. Second, information can be incorrectly retrieved – one is mistakenly convinced that Accra is the capital city of Guinea or that one was in the countryside with friends. This is failure as *error*. A third and much discussed kind of cases takes place when we fail to realize that information is correctly retrieved. Suppose that you are asked what the capital city of Guinea is and draw a blank. A few hours later, [Conakry]¹ pops up in your mind. You may fail to realize that this is the name of Guinea’s capital city and wonder what, if anything, it

^a Department of philosophy, University of Geneva.

¹ Here and in what follows, I use square brackets to single out the contents of mental states.



designates. A famous case of the same kind (Martin & Deutscher, 1966) features an artist who depicts a complex scene without realizing that he witnessed it as a child. These are failures of *identification*.² The description simply underscores the fact that the subject retrieves information, yet fails to appreciate that this is the case. In this paper, I wish to focus on failures of identification and explore some ways of understanding them.

Why are failures of memory identification interesting? Observe that we are quite successful at distinguishing memory from other types of mental states that share important properties with it. Consider first propositional memory. We may remember, suppose, imagine or merely entertain [that Conakry is the capital city of Guinea]. While these mental states share at least part of their content³, we often know whether we remember, suppose, imagine or entertain. Consider now episodic memory. We may remember [a scene we witnessed years ago] or imagine [a similar scene]. Yet we often know whether we are remembering or imagining the scene. The capacity to identify memory is vital for proper cognitive functioning: when failures of identification occur, retrieved information does not play the role it is meant to play, e.g., as a premise in reasoning.

How does memory identification proceed? Attempting to answer this question leads one into a minefield: there are widely different answers to it and it is a result difficult to find any clear common assumptions from which to proceed. What is more, philosophers have often focused on accounts of memory rather than on accounts of memory identification *per se*, so that many answers to our question are implicitly contained in theories of memory rather than explicitly put forward as accounts of memory identification.⁴ In fact, one guiding thought of the present paper is that a convincing theory of memory should generate an attractive account of memory identification. The discussion is structured as follows. In section 2, I articulate three constraints on an attractive account of memory identification: it should be directly based on aspects of what happens when we remember (this is the guiding thought I just mentioned), apply to a wide range of cases, and leave room for many mistakes. On this backdrop, I explore some accounts of memory identification. My aim is not to develop a new view, but rather to argue in favour of the classic claim that memory identification is based on a feeling of familiarity (see Russell, 1921, for instance). I shall do so by explaining why prominent alter-

² As transpires in the foregoing, identification failures occur in propositional and episodic memory. I shall lay out below my preferred way of distinguishing them. In the meantime, I rely on a preliminary understanding of the difference as that between the preservation of propositional content (propositional memory, which is at play in the Conakry case) and the preservation of experiential content (episodic memory, at play in the painter case).

³ The nature of the distinction between the respective contents of propositional memory and these other mental states depends on one's specific approach to propositional memory. We shall come back to some ways of drawing this distinction below.

⁴ Memory identification was sometimes explored as the issue of whether a "memory indicator" exists (Teroni, 2017). More recently, Michaelian (2016, Chapter 9) has described it as the "process problem".

native accounts of memory identification are less attractive and by arguing that we should understand the feeling of familiarity as a feature of the attitude of remembering, as opposed to remembered contents. Section 3 is devoted to accounts that claim that it is based on aspects of memory content. In section 4, I turn my attention to an account according to which it is based on memory as an activity. Finally, in section 5 I lay out my own preferred account according to which memory identification is based on the attitude of remembering, which takes the shape of a feeling of familiarity towards a content. I end by trying to shed light on this feeling by examining its relations to (the feeling of) fluency and affective states.

2 Constraints

Before we can evaluate accounts of memory identification, we must lay out some constraints that an attractive account should meet. This section is devoted to laying out three such constraints.

2.1 The immediacy constraint

The immediacy constraint has it that memory identification must be based quite directly on intrinsic properties of the mental state we are in when we remember. It is best motivated by explaining the sort of identification it is meant to rule out.

Consider the following line of thought. Take any content, say [that Conakry is the capital city of Guinea]. This could be the content of different mental states. What turns it into a memory content, the thought goes, is its *etiology*. To simplify, if the content was entertained (previous awareness condition) and is now entertained because it was entertained (grounding condition), then it qualifies as a memory content – i.e., as something the subject remembers as opposed to imagines, supposes, merely entertains, etc.⁵ Now, the thought continues, this etiology cannot be read off from what happens when we remember. At that time, we just find ourselves with a content occurring in our mind. If we identify it as a memory, this is because the idea that we now entertain it because we entertained it before strikes us as the best explanation of why this content occurs. This is a paradigmatic type of memory identification that is *not* based directly on the intrinsic properties of what happens when we remember and that the immediacy constraint is meant to exclude.⁶

⁵ This is a simplified formulation for at least two reasons. First, the previous awareness condition needs some relaxing to accommodate simple inferences from what one learnt (one remembers that the clepsydra was invented after the wheel if this conclusion follows obviously from what one learnt). Second, according to the grounding condition, cases in which one tells a friend that p, forgets that p and relearns it thanks to that friend's testimony qualify as memory, which is questionable. As far as I can see, working with this simplified formulation does not threaten the points I shall make. For a detailed discussion of the underlying issues, see Bernecker (2010).

⁶ As we shall see, some views of episodic memory content have it that it features an identification component. For that reason, they disagree with this last claim: according to them, the identi-

There is no denying that we sometimes identify memory in this way. If [Conakry] pops up in your mind a few hours after having been asked what the capital city of Guinea is, the fact that you must have learnt this name at school may strike you as the best explanation of its now crossing your mind. The same is true of episodic memory. An experience of a birthday party comes to your mind, say, and you conclude that this is because you witnessed such a party as a child. This is the sort of inference that Martin and Deutscher's painter does not make, perhaps because he has forgotten so much of what happened during the relevant period of his life that a memory explanation does not suggest itself to him.

The immediacy constraint is motivated by the fact that memory identification does not typically proceed in this roundabout way. To claim that it does betrays the immediacy with which we often know that we remember: this cannot be reconciled with the claim that we need to take a step back and determine the best explanation of what currently crosses our mind. According to the immediacy constraint, memory identification is less roundabout than this, since it is more directly based on aspects of the mental state we are in when we remember.⁷ This is intentionally un-specific, since we must leave room for various accounts of memory identification. For now, the thought is only that identifying a mental state as a memory is often not a purely etiological affair, the identification being guided by what happens when we remember.

2.2 The comprehensiveness constraint

Our second constraint concerns the range of cases that an account of memory identification should cover. It asserts that, other things being equal, an account is more attractive the more cases of propositional and episodic memory it covers. To explain what is at stake here, we first have to be explicit about the contrast between propositional and episodic memory.

While there are many ways of understanding how propositional and episodic memory differ, I shall presuppose here a specific approach. According to it, propositional memory consists in the preservation of propositional contents.⁸ Thanks

fication component is part of the content of memory, so that the etiological identification of memory content counts as intrinsic. I shall examine accounts of memory identification built on such views in section 3.1.

⁷ This presupposes that the capacity to identify memory is not *groundless* in the sense that it does not rest on any cue accessible at the personal level (Naylor, 1985). I take it for granted here that memory identification is not groundless in this sense.

⁸ There are good reasons to think that memory processes, and episodic memory processes in particular, have reconstructive aspects (Michaelian, 2016). Depending on one's position regarding how much reconstruction is compatible with memory content, the notion of preservation that I use here and in what follows will have to be specified in more or less stringent ways. While I am sympathetic to a stringent view (see Bernecker, 2010, for instance), nothing important will turn on this. Still, observe that, if one thinks that there is *no* constraint on memory content, a consequence according to the attitudinal account to be explored in section 5 is that a mental state counts as a memory exclusively if it features the relevant attitude.

to propositional memory, which underlies our knowledge of historical, geographical and mathematical propositions, contents that we have judged or merely entertained remain available for thought. Propositional memory also underlies knowledge of many events in our own past, which we do not remember episodically. In episodic memory, by contrast, what is preserved is not (merely) propositional content, but rather a past acquaintance or cognitive contact with the relevant entities (Byrne, 2010; Martin, 2001). Episodic memory licenses talk of memory images, because it is for the subject “as if” she is in a given perceptual contact with the relevant entities – one may episodically remember a visual scene, a melody, a wine, etc.⁹

A propositional memory content is a preserved propositional content that comes back to mind, and an episodic memory content is an image preserving past cognitive contact with the relevant entities that comes to mind.¹⁰ Propositional contents that concern historical ([that Napoleon died in his bed]) or mathematical facts ([that Pi is roughly 3,14]) as well as those that concern specific events ([that I met Giulia on the Piazza Maggiore]) or phases ([that I was regularly in the Alps]) in our lives all qualify as propositional memory contents provided they satisfy our previous awareness and grounding conditions. As to the imagistic contents of episodic memory, they can be about specific events ([the dispute at that party]), event-types ([skiing in Veysonnaz]) or persons ([one’s paternal grandmother]).

The comprehensiveness constraint states that, other things being equal, an account of memory identification is more attractive the more cases of propositional and episodic memory it covers. It is motivated by two types of considerations. The first are obviously considerations of theoretical parsimony. We identify many memories with various types of contents – other things being equal, we should be more attracted to an account that applies to more of these identifications. The second considerations are phenomenological and as such more controversial and elusive. In any case, here is how they unfold. Memory identification does not strike us as being based on aspects that vary as a function of what we remember.¹¹ Consider propositional memory. From the first-person perspective, identifying [that Napoleon died in his bed], [that I was regularly in the Alps] or [that I met Giulia on the Piazza Maggiore] as memory contents do not seem to have different bases. Moreover, contents of these different types often occur in clusters when we propositionally remember – when they do, we do not seem to change our method of identification. Consider now episodic memory. It also seems that we neither identify different episodic memory contents in different ways, nor change our method of

⁹ See Teroni (2017) for a discussion of this way of contrasting propositional and episodic memory.

¹⁰ As I shall use it here, the notion of a memory image only refers to the specific phenomenology of episodic memory. It is not meant to imply that an image functions as a surrogate of the past event or object and is compatible with direct realist views of episodic memory that we shall meet in section 3.1.

¹¹ Observe that this is not the case of the inferences to the best explanation that we discussed above, which are indeed based on different aspects of what we remember.

identification when imagistic contents occur in clusters, as when a generic image of a person is part of the episodic memory of a particular event (Noordhof, 2022).

One natural reaction is to grant all this but insist that a plausible comprehensiveness constraint should *not* refer to both types of memory. As the brief characterization above made clear, propositional and episodic memory differ in significant respects, so why think that an account of memory identification is, other things being equal, better if it covers both? While we certainly should remain open to the possibility that memory identification is fragmented (we shall have the opportunity to explore some forms of fragmentation below), there is something in the experience of memory that militates in favour of the more ambitious wording of the comprehensiveness constraint. Often, reminiscing combines elements of propositional and episodic memory, as when a memory image is complemented by the propositional memory that the event occurred at this specific time and place, or that one was sad because of a recent dispute with a friend. In these “hybrid” cases too, it does not seem that we rely on different identification methods. All in all, then, theoretical parsimony and phenomenology support our comprehensiveness constraint.

2.3 The co-omission constraint

We are good at identifying memories, but this comes nowhere near infallibility. Sometimes, we fail to identify memories. This is what happens when [Conakry] occurs in your mind and in Martin and Deutscher’s painter case: these memories are misidentified as figments of imagination. In other situations, we do not identify the mental state as a memory or as anything else. Let us call these errors of *omission* – this simply underscores the fact that we fail to identify a memory. There are also errors of *commission*, which occur when we misidentify other mental states (and episodes of imagination in particular) as memories. You are told by a witness about an event you completely forgot and think you remember what you actually picture in light of his descriptions, for instance. The co-omission constraint states that an attractive account of memory identification should be compatible with these two types of errors, and ideally shed light on them.

While the co-omission constraint is straightforward, the situation is complicated by two issues. The first is that “remember” is factive: if you remember that *p*, then *p*.¹² This is why we deny that a mental state is a memory when we think that it is incorrect. If [Accra] comes to mind after you have been asked what the capital city of Guinea is, you will not describe this as remembering once you check in an atlas and realize that you are mistaken. Yet, if someone told you that Accra is the capital city of Guinea and you retained that information, this seems to qualify as memory. In any case, I shall leave this complication aside and presuppose that

¹² I shall not enter further issues that regard whether remembering that *p* implies knowing or having known that *p*. For detailed discussions, see Bernecker (2010), and Lai (2022).

an account of memory identification should apply to the preservation of mistaken information.

The second issue regards whether errors of omission are due to something amiss with memory. They need not. Suppose that a memory image crossing your mind is so blurry that you discard it as a figment of your imagination. In that case, your omission is based on a failure of memory to retrieve sufficiently rich information. We may also fail to identify a memory without memory being the culprit – the fault is ours, say, in not paying attention to a feature that would put us in a position to identify the memory. Now, whether or not the omission is due to something amiss with memory, I do not wish to describe the misidentification as a *memory* mistake.

This is worth insisting upon, since some approaches build an identification component into memory or episodic memory. Consider the claim that episodic memory differs from sensory imagination in being guided by an explicit intention to explore one's past as opposed to envision possible situations (a view we shall discuss in section 4). If so, there is little distance between episodic memory and its identification – if one does not identify what takes place as memory, then (barring rare delusions about one's explicit intentions) one does not episodically remember. Other approaches (see Dokic, 1997; Owens, 1996, for instance) draw the distinction between episodic and propositional memory by means of a “self-identifying” component: they claim that to episodically remember that *p* is to remember that [*p* and I know that *p* because I learnt that *p* in such and such a way]. There is also little distance here between episodically remembering and its identification – episodic memory identifies itself, so to say, although it is open to us to think that this self-identification is incorrect. This raises substantial and terminological issues. One substantial issue is whether episodic memory differs from sensory imagination only insofar as it is guided by a specific intention. A terminological issue concerns what we decide to call episodic memory: a retained acquaintance licensing talk of images (as we decided to do above) or the sort of self-identifying content just mentioned. I shall have the opportunity to comment on this and other substantial issues below and shall leave terminological issues aside.

In this section, I have articulated three constraints on an account of memory identification: memory identification must be based on intrinsic properties of what happens when we remember, apply to a wide range of cases and leave room for various identification mistakes. On this backdrop, let us now see how some accounts of memory identification fare in light of these constraints. These accounts refer to aspects of memory content, to an activity or to the attitude of remembering, and we shall consider them in this order.

3 Content accounts

I shall concentrate on two influential content accounts. Since we have drawn the contrast between propositional and episodic memory in terms of different contents,

I shall first examine an account that locates the basis of memory identification in the specific imagistic content of episodic memory. After having argued that this view is not convincing, I shall turn to an account according to which memory identification is based on a specific propositional content. This account will not prove more attractive.

3.1 Imagistic accounts

When we remember episodically, it is somehow as if we are experiencing the relevant objects, events, etc. Now, even if some other mental states, such as episodes of sensory imagining, are phenomenologically close to episodic memory, we reliably distinguish them from memory. One strategy for explaining how we manage this identification, which takes its inspiration from discussions in the philosophy of perception, goes as follows.

Think of perceptual experience as a relation with existing objects and of its phenomenology as depending on such a relation, i.e., the phenomenology of perception is that of a variety of objects and their properties making themselves sensorily manifest to us. Other kinds of experiences, such as hallucinations, are not such relations and, because of that, do not have the same phenomenology as perceptual experiences (Fish, 2010; Martin, 2002). Usually, we are in a position to appreciate these differences, but in some special circumstances of philosophical lore (think perfect hallucinations, demon worlds, etc.) we are not.

One may apply these ideas to memory and our capacity to identify it. Here is how the application proceeds. According to a notable minority view, episodic memory is a relation with past objects that we have experienced and its phenomenology depends on its being such a relation, i.e., the phenomenology of episodic memory is that of a variety of objects and their properties that we have experienced making themselves manifest to us (Debus, 2008; Hoerl, 2022; and, for discussion, Noordhof, 2022). Other experiences, such as episodes of sensory imagination, are not such relations and, because of that, do not have the same phenomenology as episodic memory. Usually, we can appreciate these differences, but in unusual circumstances we cannot.

This is of course not the place to assess the viability of these approaches to perception and episodic memory. I shall only examine the attempt to derive an account of memory identification from them. As it turns out, such an account is not attractive. First, consider any situation similar to Martin and Deutscher's painter case in which we fail to identify a memory image. It is not convincing to insist that our failure to identify the image is due to a lack of attention to some imagistic aspects of our experience, aspects which would, if properly attended to, disclose its nature as a *memory* image. For it is difficult to understand what we should pay attention to: memory images can after all be as blurry or instable as other images, and they do not come to us with a caption indicating their origin.

At this juncture, advocates of an imagistic account may want to claim that retained acquaintance in episodic memory brings forth a phenomenology of *particularity* (Martin, 2001; Schellenberg, 2010; see also Hoerl, 2022) on which memory identification is based. We should tread carefully here. Suppose Cecilia sensorily imagines her mother travelling to Mars. In such a case, imagistic content makes the particularity of her mother manifest to her – it would be wrong to insist that particularity must be traceable to other factors, such as the specific project in which the image is embedded. Moreover, we have seen that episodic memory encompasses memory of objects (Cecilia remembers [her mother]) and event-types (Marcel remembers [swimming in the pool]); in these cases, manifest particularity in memory does not go beyond what may happen in imagination. This is to say that reference to a phenomenology of particularity distinctive of memory is attractive only if we restrict it to the memory of particular events. For the particularity of imagined events appears to be always traceable to the project in which the image is embedded, never to the image itself.¹³

Let us grant that we have here a viable way of meeting the immediacy constraint: a phenomenology of being related to a particular past event is an intrinsic aspect of the relevant memories on which identification is directly based. Needless to say, we have in the process given up any hope of meeting the comprehensiveness constraint. The account under discussion cannot apply to propositional memory, which is typically not accompanied by images.¹⁴ What is worse, it can no more apply to many episodic memories, which do not purport to be about particular events and so do not come with this phenomenology either. And, if we should remain open to the possibility that episodic and propositional memory identifications have different bases, the claim that the same is true for different contents of episodic memory is harder to countenance. Given that an explanation of our capacity to identify these other episodic memory contents is needed, we should wonder whether this explanation does not carry over to how we identify episodic memories of particular events.

All in all, then, an account of memory identification in terms of features of imagistic content is not attractive. How should the advocate of a content view react?

¹³ See Teroni (2017) for a discussion. Observe also that emphasizing a contrast between the representation of particular experiences (episodic memory) and generic experience (imagination) will not do for the same reasons as those given in the text. For an approach of episodic memory built around this idea, see Martin (2001).

¹⁴ While I think of the phenomenology of particularity in sensory terms, one may contend that it also characterizes propositional memories that have singular propositional contents. For what it is worth, I doubt that there is much of a phenomenological contrast at this level between remembering [that Napoleon crossed the Alps] and remembering [that some French military forces crossed the Alps at various points in time]. The argument need not rest on this intuition, since the resulting account of memory identification is in any case too fragmented.

3.2 Propositional content accounts

The obvious reaction for proponents of a content account is to try to home in on an aspect of memory content that is, as opposed to imagistic content, shared by most memories and apt to tell them apart from other mental states. Which aspect could this be?

One attractive option finds its origin in the “know” vs “remember” paradigm in psychology (Tulving, 1985). Many empirical studies support the idea that, when we claim to remember, as opposed to merely know, this is because we (think that we) can pinpoint a source of a presently entertained content. If you are asked what the capital city of Guinea is and [Conakry] comes to mind, this is something you would claim to know. If you can in addition trace the source of this knowledge to a geography class in primary school, or to the reading of an atlas, you would claim to remember. Why not think that memory identification is based on such a *source monitoring aspect* of its content, i.e., on the fact that memory content has the shape [the information that p is available to me because I learnt that p in such and such a way]?¹⁵ In the present context, the idea is that this source monitoring aspect of content can be joined to a propositional or an imagistic content, thus holding the promise of a unified account of memory identification.

However, the promise turns to be more apparent than real and this account of memory identification does not fare well. First, observe that the source monitoring content can have different etiologies – one can come to think that one has learnt that p at school, say, on the basis of an inference to the best explanation. As we have seen, this is too roundabout an identification to qualify as the basic case. At the minimum, the source monitoring content should impose itself to us more immediately, so to say.

Second, the friend of a content view is ill-placed to add an immediacy condition, since any propositional content can be imagined, supposed or merely entertained. Complex source monitoring contents are no exception to this rule: one can merely entertain the thought [that I learnt at school that Conakry is the capital city of Guinea]. The account under discussion pushes back the problem rather than solve it, since the question of what underwrites memory identification applies to source monitoring contents as well as to any other propositional content.

Third, the account falls short of the comprehensiveness constraint. It certainly applies to a broader range of cases than an imagistic content account, but it is still of too limited application. We often identify propositional contents as memories

¹⁵ Given our purposes, we need not explore the different variants of this approach. Let me simply observe that some accounts have the shape just mentioned (Dokic, 1997; Owens, 1996; Tulving, 1985), whereas others refer to the process thanks to which the information is available, i.e. [the information is available to me now because it stands at the end of a specific causal chain] (Fernandez, 2019; and, for discussion, Noordhof, 2022; Perrin et al., 2020; and Perrin & Sant’Anna, 2022). While nothing will hinge on these differences, observe in light of what we have said in section 2 that conceiving memory content as having a source monitoring component implies, on many accounts of episodic memory, though not the one presupposed here, that an identifiable propositional memory is an episodic memory.

even though we have no clue about the source of our knowledge, as when we identify as memory simpler contents like [that Conakry is the capital city of Guinea] or [that Napoleon crossed the Alps]. Insisting that the identification proceeds in these cases by means of a source monitoring content would locate the basis of identification outside what happens when we remember, thus running afoul of the immediacy constraint. The same is true if we apply the account to episodic memory: memory images may often be accompanied by source monitoring contents, but these contents are not an intrinsic aspect of memory images.

Fourth and finally, and this is perhaps the most basic worry, the account misses its intended target. We are looking for an explanation of how we identify propositional and imagistic contents as memory contents; being told that the identification takes the shape of a source monitoring content does not shed light on the basis of this identification.¹⁶

We have explored two content accounts of memory identification and concluded that they raise important worries. I submit that these worries are symptomatic of a more general problem with content accounts. In a nutshell, the problem is this. Content accounts must anchor memory identification in a feature of memory content apt to distinguish it from the contents of other types of mental states. However, the features of content that these views can appeal to only characterize some propositional or episodic memory contents, which means that the resulting accounts of memory identification do not meet our comprehensiveness constraint. We should look elsewhere.

4 The activity account

According to the activity account, claiming that memory identification is due to an aspect of its content fosters an implausible observational model. We do not “look inward” to determine whether we remember. To insist that we do is to miss the crucial aspect of memory that underscores our capacity to identify it: the fact that it is an activity (Hoerl, 2001, 2014; Urmson, 1971).¹⁷

The key idea motivating the account is that memory is active: we solicit our memory by initiating memory searches which, when everything goes right, terminate with the looked-for answers. One may think of this activity as an ‘internal’ epistemic enquiry which starts with a question (“What is the capital city of Guinea?”), explores some answers that are generated by preserved information (“Accra? – No, this is the capital city of Ghana”, etc.) and reaches its aim when one settles on the right answer.¹⁸ This activity is individuated by the intention, say,

¹⁶ Observe that, if it is on the right track, this line of thought tells against any account of memory identification in terms of source monitoring content, regardless of whether this content is claimed to be remembered (as in the accounts discussed here) or part of a metacognitive state distinct from memory. For discussion, see Perrin & Sant’Anna (2022).

¹⁷ This echoes the famous claim about knowledge of intentions in Anscombe (1963).

¹⁸ I take inspiration here from Friedman’s work (2013) on question-directed attitudes.

to answer a question by means of preserved information. Other mental activities are not constrained in this way. For instance, we may think of imagination as the activity of freely exploring associations between contents, an activity that is not structured around a question one tries to answer.¹⁹ Memory identification would not be based on the observation of mental happenings, but on our knowledge of the constraints we intend our mental activity to be answerable to. I can tell straight off that I *remember* that Conakry is the capital city of Guinea because I intend my mental activity to be answerable to what I learnt about geography.²⁰

Developed along these lines, the activity account should be resisted. While remembering is something that we often try to achieve, the account raises two related worries. First, it does not pay sufficient attention to the contrast between trying to remember and remembering, and as a result does not meet the immediacy and comprehensiveness constraints. Trying to remember is an activity individuated by the aforementioned intention. Remembering is the goal of that activity. Remembering is not (as opposed to winning a race, say) constitutively dependent on an activity that precedes it, however. Often, we just happen to remember – think of all the situations in which something functions as a prompt and inadvertently leads you to remember. This means that memory identification based on the activity that leads to it is extrinsic identification. Moreover, given that we also identify involuntary memories, the activity account creates a profoundly fragmented explanation of memory identification that goes against the comprehensiveness constraint.

Second, once the distinction between memory as an activity and the result of this activity is in our sights, we should realize that the account raises a more fundamental worry. We are trying to discover what underwrites memory identification, something which is *presupposed* by the activity account. How so? While outlining the account, I said that we may think of the activity of remembering as an epistemic enquiry starting with a question, exploring some answers and terminating when one settles on the right one. This makes it clear that a capacity to select, amongst the many possible outcomes of a memory search, relevant from irrelevant answers is presupposed by the activity account.²¹

If these observations are along the right track, then the activity account is not a viable alternative to the previously discussed content accounts.

¹⁹ This should be qualified, as we sometimes try to imagine, fail and try harder. The claim applies when imagination is not constrained by a specific project. On this, see Kind (2016).

²⁰ If applied to episodic memory, this account may be congenial to the influential claim that we deploy basically the same mental capacity in episodic memory and imagination. See Michaelian (2016) and, for discussion, McCarroll (2020).

²¹ The same worry applies to an account that would take its inspiration from Evans' (1982) observations about belief to claim that memory identification proceeds by exploring which reasons favouring a content are available to us. This procedure also presupposes the capacity to identify memory.

5 Attitudinal accounts

The worries raised by content and activity accounts of memory identification provide the motivation to explore accounts that appeal to the psychological mode or attitude of remembering. Some stage setting is needed to clarify these accounts.

There is a distinction between memory contents, on the one hand, and memory as a mode or attitude, on the other hand (Locke, 1971; Matthen, 2010; Teroni, 2019). In the more familiar case of belief, this distinction corresponds to the contrast between what we may describe as believable content (true content or content for which one has sufficient evidence, say) and the attitude of believing (roughly, the attitude of taking a content as true).²² Until now, we have focused on the idea that some contents are memory contents if they meet a previous awareness and a grounding conditions (to this, the accounts that we have discussed added various conditions to explain memory identification). The advocate of an attitudinal account insists that there is another feature of mental states in light of which they qualify as memories: a specific mode or attitude towards a content. How should we think of this attitude? It is characterized by a tendency to endorse the content that it targets. As opposed to someone who entertains a content or supposes that it is true, someone who remembers it inclines to endorse it and will endorse it if he has no reason to doubt that it is true or that he has preserved it (Burge, 1993, p. 465). Of course, this is not very informative and we shall soon see how we can flesh out an attitudinal account.

Before we turn to this, let me emphasize three aspects of attitudinal accounts. First, they draw upon the fact that memory contents and the attitude of remembering vary independently and so must differ. The attitude of remembering sometimes targets contents that are *not* memory contents – in such situations, we are likely to say that what we seem to remember is a figment of our imagination. Moreover, the attitude of remembering may be absent when we entertain memory contents – this is a possibility that the attitudinalist is prone to exploit to explain some errors of omission, as we shall see.

Second, on an attitudinal account, what is psychologically real is typically an attitude-content compound: one believes a given content, supposes or remembers another. This is neither to say that an attitude cannot come unbound to a content, nor that a content cannot come unbound to an attitude. As illustrations of these possibilities, we may think of moods as contentless affective attitudes and of situations where we merely entertain a content as “attitudeless” (on this latter controversial idea, see Textor, 2021).

Third, attitudinal accounts do not take the attitude of remembering to consist in the identification of its content as a memory content. Otherwise, they would explain nothing: we are trying to explain memory identification, and it will not do to just postulate that it happens. This would in any case go against the spirit of attitudinal accounts. Consider belief. The attitude of believing is that of relying

²² This brushes over several debates about the normativity of belief, on which see Fassio (n.d.).

on a proposition as a premise in reasoning, of taking into account evidence for or against that proposition, of reacting with surprise if it turns out to be wrong, etc. (see Schwitzgebel, 2002) Belief does not identify itself as such – many creatures incapable of such identification have beliefs, for instance. The relation between the attitude of belief and identification is weaker: one may for instance think that the attitude provides a basis for identification if one has the relevant concepts.²³ Attitudinal accounts endorse the same considerations about the attitude of remembering: memory does not identify itself but provides the basis for its identification.

How should we characterize the attitude of remembering? While various accounts of this attitude are possible, we can narrow down the options as follows. On the one hand, a convincing account should explain why we typically endorse the contents that the attitude targets, so that they play the role memory contents do. On the other hand, in light of our constraints, the attitude of remembering should be a basis for memory identification (the immediacy constraint), apply to many cases of memory (the comprehensiveness constraint) and explain various identification mistakes (the co-omission constraint). Faced with these explanatory requirements, I think that the most attractive move consists in adopting the classic idea (Audi, 1995; Pollock, 1974; Russell, 1921; Teroni, 2019) that the attitude of remembering takes the shape of a *feeling of familiarity* towards a content.²⁴ For the attitude of remembering to target a content is for that content to feel familiar.²⁵ Why feelings of familiarity instead of, say, feelings of pastness? Russell (1921) appeals to feelings of both types, but feelings of pastness have not proven popular and most scholars will probably agree with Byrne's observation that "while the 'feeling of familiarity' is, well, familiar, surely the 'feeling of pastness' is not." (Byrne, 2010, p. 23).²⁶ But can the feeling of familiarity meet these explanatory requirements? And is it possible to shed light on its nature? Let us take these questions in this order.

It is difficult to deny that we often endorse contents because they feel familiar. This happens, for instance, when we are convinced that we found what we were trying to remember – one content ([Conakry], say) feels familiar, so we endorse it as the right answer. More generally, the feeling of familiarity explains our tendency

²³ Even this weaker claim is controversial, and I only use it as an illustration.

²⁴ While Audi's (1995) and Pollock's (1974) approaches insist on the phenomenology of memory, their focus is on the justification of memory beliefs and not on memory identification. Audi refers to a sense of "familiar truth" in memory without being forthcoming about the nature of familiarity feelings. As to Pollock, he does not speak of familiarity but articulates a closely related view according to which propositional memory is a distinct phenomenological state.

²⁵ Depending on how one prefers to individuate attitudes, their relations to what takes place at the personal level can vary. While I favour an approach in purely personal terms in which the attitude of remembering is constituted by a feeling of familiarity, this should not be read as implying that there are no other, subpersonal features of the attitude. Below, I shall for instance explain how we can understand the relations between feelings of familiarity and fluency.

²⁶ For a more general discussion of various candidate feelings for developing an account of the attitude of remembering, see Teroni (2017).

to endorse contents and, when we acquire the relevant concepts, to believe that these contents were previously entertained (previous awareness condition) and are now entertained because they were previously entertained (grounding condition) (Noordhof, 2022; Russell, 1921).²⁷

Let us now turn to the role of the feeling of familiarity in memory identification. On an attitudinal account, the feeling of familiarity is a feature of the attitude of remembering – so, memory identification based on this feeling is based on an intrinsic feature of the mental state that occurs when we remember. As we have seen, the advocate of an attitudinal account is prone to insist on the distinction between memory contents and the attitude of remembering, as well as on the fact that what is psychologically real are typically attitude-content compounds. So, when one remembers, a given content feels familiar. This means that an attitudinal account is ideally placed to meet the immediacy constraint, since identifying memory via feelings of familiarity is a way of identifying memory based on what happens when we remember, i.e., when we have the attitude of remembering towards a content. Even so, observe that, on this account, memory identification is based on the attitude of remembering, which can vary independently from memory content.

Consider now the comprehensiveness constraint. An attitudinal account bases memory identification on a feature of the attitude of remembering and has it that this attitude can take various contents, amongst which propositional and imagistic contents. The content [that Conakry is the capital of Guinea] can feel familiar, as well as imagistic contents about a given place, person, or event. Contents at any levels of generality or particularity can feel familiar.²⁸ As opposed to the accounts of memory identification discussed above, an attitudinal account easily meets the comprehensiveness constraint.

Let us now turn to the co-omission constraint. Consider first errors of commission. These errors are often based on the feeling of familiarity, which may target contents that are not memory contents. For instance, a content that never crossed one's mind feels familiar because, say, it resembles a content that did.²⁹ More complex errors occur when a content feels familiar because it was indeed previously entertained, but this leads the subject to form a mistaken source monitoring belief – as when one ends up believing that one perceived something on the basis of a memory image that originates in a past episode of imagining. An account of memory identification giving pride of place to the feeling of familiarity can thus shed light on paradigmatic errors of commission. What about errors of omission? According to an attitudinal account, there are many reasons why one may fail to identify a memory. As is the case with many feelings, the feeling of familiarity

²⁷ See also Audi (1995), who insists in the same spirit that feelings of familiarity should not be identified with beliefs that something is familiar.

²⁸ Feelings of familiarity can also target perceptual contents, as when a room we see feels familiar. According to the attitudinal account under discussion, these cases provide additional reasons to distinguish the attitude of remembering from memory contents.

²⁹ Further possible explanations of these errors may closely resemble the explanations of déjà vu experience presented in Brown (2003).

may be elusive, the subject may not pay sufficient attention to it, or may mistake it for another feeling. In all these cases, memory occurs in the absence of identification. Perhaps more importantly, the distinction between memory contents and the attitude of remembering motivates the following attractive idea. Many errors of omission are due to the fact that a memory content is not, for whatever reason, accompanied by a feeling of familiarity. This may be what happens to Martin and Deutscher's painter: he has a memory image of a childhood scene, but it is not accompanied by any psychological attitude. He is for that reason not likely to classify that content as a memory content – except, that is, if he can rely on information that is extrinsic to what happens when he entertains this image. This is, I submit, an attractive explanation of errors of omissions. All in all, the attitudinal account fares well in relation to our co-omission constraint.

Finally, let us see whether we can shed some light on the feeling of familiarity. This issue is best tackled by examining the relation between the feeling of familiarity and fluency, which is often discussed in connection with the way memory content is processed (Jacoby & Dallas, 1981). Fluency is the ease with which a content is processed and there is a close connection between fluency and the feeling of familiarity; for instance, manipulating fluency generates illusions of familiarity (Whittlesea, 1993). These data support the conclusion that the feeling of familiarity is not sensitive to aspects of the content of memory, but to the way (memory or, in case of illusions of familiarity, non-memory) content is processed (Perrin & Sant'Anna, 2022). In other words, this is a clear indication that we are dealing with an aspect of the attitude of remembering as opposed to its content.³⁰

This may foster the following line of thought. The feeling of familiarity is just a conclusion that we have previously entertained a content, a conclusion based on the felt ease with which this content is processed. While such a memory identification still qualifies as intrinsic, this is not an attractive way of developing an attitudinal account. Past entertainment being one amongst many potential explanations of fluent processing, the move from fluency to past entertainment indeed looks suspiciously like an inference to the best explanation. And we have built our immediacy constraint to avoid such gaps between what takes place when we remember and memory identification.

Moreover, there is no need for those who insist on the role of fluency in memory identification to adopt an unconvincing eliminativism about the feeling of familiarity. For there is, I suggest, a more attractive understanding of the connection between fluency and familiarity. Explaining it requires a little detour via emotion theory.

³⁰ If this is along the right track, we should reject accounts of the feeling of familiarity according to which it is sensitive to aspects of memory content (see in particular Fernandez, 2019; and, for criticism, Perrin et al., 2020; and Perrin & Sant'Anna, 2022). These accounts are not only in tension with the empirical evidence, they are also led to anchor the feeling of familiarity to aspects of memory content that, as I have argued in section 3, do not deliver convincing accounts of memory identification. In my opinion, this provides additional motivation for friends of the feeling of familiarity to understand it as a characteristic of the attitude of remembering.

Commonsense acknowledges the existence of intimate relations between different types of emotions and different thick values: anger is connected to the offensive, amusement to the funny, shame to the shameful, pride to our successes, etc.³¹ Philosophical approaches often follow suit and a dominant view is that this connection is due to the fact that emotions are experiences of the relevant thick values: anger would be the experience of the offensiveness of a remark, say, amusement the experience of the funniness of a situation (Milona, 2016; Tappolet & Tappolet, 2016). According to this view, the phenomenology of a given thick value characterizes emotional experience. Now, it is quite common in psychology to claim that emotions are underscored by appraisal processes that evaluate the relevant stimuli (the remark you are offended by, the situation that amuses you) along a variety of dimensions: novelty, relevance to our interests, capacity to cope, etc. (Scherer, 2001, for instance). This need not lead one to deny the existence of evaluative phenomenology in emotion. For one attractive way of understanding the relations between computations along these dimensions and this phenomenology has it that these computations are typically conducted at the subpersonal level, and that the personal level is (partly) characterized by the experience of a given thick value (Teroni, 2023).

I suggest that this is an attractive model for understanding the relations between fluency and the feeling of familiarity. Emphasizing the role of fluency should not foster eliminativism about the feeling of familiarity. It should rather lead one to insist that computations of fluency typically occur at the subpersonal level and sometimes give rise, when combined with further subpersonal computations, to the feeling of familiarity.³² This model is attractive for the following reasons. First, converging evidence supports the claim that the feeling of familiarity is positively valenced.³³ Since valence is often understood as a necessary and sufficient condition of affective states, this motivates applying the aforementioned model to the feeling of familiarity: a feeling of familiarity characterizes the personal level when subpersonal computations of novelty combine with other computations. Second, feelings of familiarity share another fundamental property with emotions: they vary in degree (Yonelinas et al., 2010). Third, many appraisal approaches claim that the typical sequence of appraisals starts by assessing whether the stimulus is novel (Scherer, 2001). We may thus insist that a similar appraisal process underscores emotions and feelings of familiarity; in the latter case, a content is appraised as old. Fourth and finally, assimilating feelings of familiarity to emotions may shed

³¹ On this idea, which is common territory amongst many approaches to the emotions, see Deonna & Teroni (2022).

³² One aspect of such computations may concern expectations of fluency, as there are reasons to think that the feeling of familiarity is not elicited by absolute fluency, but by fluency that is higher than expected (Leboe-McGowan & Whittlesea, 2013). I am indebted to Andre Sant'Anna for this reference and discussion of this issue.

³³ See for instance the conception of the feeling of familiarity as a positive attitude in Garcia-Marquez & Mackie (2000), and the data in Winkelman & Cacioppo (2001), which support the claim that processing facilitation elicits positive affect.

light on the apparently paradoxical fact that a feeling of familiarity is more likely to target contents that we have not considered for a long time than contents that we have considered repeatedly and which are in that sense more familiar – to an historian of the Napoleonic wars, the content that Napoleon crossed the Alps may not feel like much. The fact that regular exposure wears off affect may dissolve this apparent paradox.

For these reasons, an attitudinal account built around the feeling of familiarity constitutes an attractive account of memory identification.

6 Conclusion

After having laid out three constraints on an account of memory identification, I explored accounts that base this identification on memory content, on the activity or on the attitude of remembering. I have argued that content and activity accounts face substantial challenges and have presented some reasons to favour an attitudinal account.

Acknowledgments

I am grateful to Miloud Belkoniene and Kourken Michaelian for discussion, as well as to two anonymous reviewers for their detailed comments on a previous version of this paper.

References

- Anscombe, G. E. M. (1963). *Intention*. Blackwell.
- Audi, R. (1995). Memorial justification. *Philosophical Topics*, 23(1), 31–45.
- Bernecker, S. (2010). *Memory: A philosophical study*. Oxford University Press.
- Brown, A. S. (2003). A review of the déjà vu experience. *Psychological Bulletin*, 129(3), 394–413. <https://doi.org/10.1037/0033-2909.129.3.394>
- Burge, T. (1993). Content preservation. *The Philosophical Review*, 102(4), 457–488. <https://doi.org/10.2307/2185680>
- Byrne, A. (2010). Recollection, perception, imagination. *Philosophical Studies*, 148(1), 15–26. <https://doi.org/10.1007/s11098-010-9508-1>
- Debus, D. (2008). Experiencing the past: A relational account of recollective memory. *Dialectica*, 62(4), 405–432. <https://www.jstor.org/stable/42970958>
- Deonna, J., & Teroni, F. (2022). Emotions and their correctness conditions: A defense of attitudinalism. *Erkenntnis*. <https://doi.org/10.1007/s10670-022-00522-0>
- Dokic, J. (1997). Une théorie réflexive du souvenir épisodique. *Dialogue: Canadian Philosophical Review / Revue Canadienne de Philosophie*, 36(3), 527–554. <https://doi.org/10.1017/S0012217300017042>
- Evans, G. (1982). *The varieties of reference*. Oxford University Press.
- Fassio, D. (n.d.). *Belief, aim of* | internet encyclopedia of philosophy. Retrieved November 20, 2023, from <https://iep.utm.edu/aim-of-belief/>
- Fernandez, J. (2019). *Memory. A self-referential account*. Oxford University Press.
- Fish, W. (2010). *Philosophy of perception. A contemporary introduction*. Routledge.
- Friedman, J. (2013). Question-directed attitudes*. *Philosophical Perspectives*, 27(1), 145–174. <https://doi.org/10.1111/phpe.12026>
- Garcia-Marquez, T., & Mackie, D. (2000). The positive feeling of familiarity: Mood as an information processing regulation mechanism. In H. Bless & J. Forgas (Eds.), *The message within: The role of subjective experience in social cognition and behaviour* (pp. 240–261). Psychology Press.

Teroni, F. (2024). Memory identification and its failures. *Philosophy and the Mind Sciences*, 5, 28. <https://doi.org/10.33735/phimisci.2024.10386>



- Hoerl, C. (2001). The phenomenology of episodic recall. In C. Hoerl & T. McCormack (Eds.), *Time and memory* (pp. 315–338). Oxford University Press. <https://philarchive.org/rec/HOETPO-2>
- Hoerl, C. (2014). Remembering events and remembering looks. *Review of Philosophy and Psychology*, 5(3), 351–372. <https://doi.org/10.1007/s13164-014-0191-6>
- Hoerl, C. (2022). A knowledge-first approach to episodic memory. *Synthese*, 200(5), 376. <https://doi.org/10.1007/s11229-022-03702-1>
- Jacoby, L. L., & Dallas, M. (1981). On the relationship between autobiographical memory and perceptual learning. *Journal of Experimental Psychology: General*, 110(3), 306–340. <https://doi.org/10.1037/0096-3445.110.3.306>
- Kind, A. (2016). Imagining under constraints. In A. Kind & P. Kung (Eds.), *Knowledge through imagination* (pp. 145–159). Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780198716808.003.0007>
- Lai, C. (2022). Remembering is not a kind of knowing. *Synthese*, 200(333). <https://doi.org/10.1007/s11229-022-03814-8>
- Leboe-McGowan, J. P., & Whittlesea, B. W. A. (2013). Through the SCAPE looking glass: Sources of performance and sources of attribution. In B. W. A. Jason P. Leboe-McGowan (Ed.), *The oxford handbook of cognitive psychology* (pp. 243–266). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780195376746.013.0017>
- Locke, D. (1971). *Memory*. Doubleday & Co.
- Martin, C. B., & Deutscher, M. (1966). Remembering. *Philosophical Review*, 75, 161–196. <https://doi.org/10.2307/2183082>
- Martin, M. G. F. (2001). Out of the past: Episodic recall as retained acquaintance. In C. Hoerl & T. McCormack (Eds.), *Time and memory* (pp. 257–284). Oxford University Press.
- Martin, M. G. F. (2002). The transparency of experience. *Mind & Language*, 17(4), 376–425. <https://doi.org/10.1111/1468-0017.00205>
- Matthen, M. (2010). Is memory preservation? *Philosophical Studies*, 148, 3–14. <https://doi.org/10.1007/s11098-010-9501-8>
- McCarroll, C. J. (2020). Remembering the personal past: Beyond the boundaries of imagination. *Frontiers in Psychology*, 11. <https://www.frontiersin.org/articles/10.3389/fpsyg.2020.585352>
- Michaelian, K. (2016). *Mental time travel: Episodic memory and our knowledge of the personal past*. The MIT Press. <https://doi.org/10.7551/mitpress/10591.001.0001>
- Milona, M. (2016). Taking the perceptual analogy seriously. *Ethical Theory and Moral Practice*, 19(4), 897–915. <https://doi.org/10.1007/s10677-016-9716-7>
- Naylor, A. (1985). In defense of a nontraditional theory of memory. *The Monist*, 68(1), 136–150. <https://doi.org/10.5840/monist198568123>
- Noordhof, P. J. P. (2022). Relationism about memory? In A. Berninger & I. Vendrell Ferran (Eds.), *Philosophical perspectives on memory and imagination* (pp. 94–123). Routledge. <https://eprints.whiterose.ac.uk/194683/>
- Owens, D. (1996). A lockean theory of memory experience. *Philosophy and Phenomenological Research*, 56(2), 319–332. <https://doi.org/10.2307/2108522>
- Perrin, D., Michaelian, K., & Sant’Anna, A. (2020). The phenomenology of remembering is an epistemic feeling. *Frontiers in Psychology*, 11. <https://www.frontiersin.org/articles/10.3389/fpsyg.2020.01531>
- Perrin, D., & Sant’Anna, A. (2022). Episodic memory and the feeling of pastness: From intentionalism to metacognition. *Synthese*, 200(109). <https://doi.org/10.1007/s11229-022-03567-4>
- Pollock, J. (1974). *Knowledge and justification*. Princeton University Press.
- Russell, B. (1921). *The analysis of mind*. Routledge.
- Schellenberg, S. (2010). The particularity and phenomenology of perceptual experience. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition*, 149(1), 19–48. <https://www.jstor.org/stable/40606341>
- Scherer, K. (2001). Appraisal considered as a process of multilevel sequential checking. In Klaus R. Scherer Angela Schorr & T. Johnstone (Eds.), *Appraisal processes in emotion: Theory, methods, research* (Vol. 92, pp. 92–120). Oxford Academic. <https://doi.org/10.1093/oso/9780195130072.003.0005>
- Schwitzgebel, E. (2002). A phenomenal, dispositional account of belief. *Noûs*, 36(2), 249–275. <https://www.jstor.org/stable/3506194>
- Tappolet, C., & Tappolet, C. (2016). *Emotions, values, and agency*. Oxford University Press.
- Teroni, F. (2017). The phenomenology of memory. In K. M. S. Bernecker (Ed.), *The routledge handbook of philosophy of memory* (p. 21). Routledge. <https://archive-ouverte.unige.ch/unige:112854>
- Teroni, F. (2019). On seeming to remember. In D. Debus; K. Michaelian & D. Perrin (Ed.), *New directions in the philosophy of memory* (pp. 329–345). Routledge.
- Teroni, F. (2023). Evaluative theories in psychology and philosophy of emotion. *Mind & Language*, 38(1), 81–97. <https://doi.org/10.1111/mila.12374>
- Teroni, F. (2024). Memory identification and its failures. *Philosophy and the Mind Sciences*, 5, 28. <https://doi.org/10.33735/phimisci.2024.10386>



- Textor, M. (2021). The nature of the question demands a separation?: Frege on distinguishing between content and force. *Australasian Journal of Philosophy*, 99(2), 226–240. <https://doi.org/10.1080/00048402.2020.1742748>
- Tulving, E. (1985). Memory and consciousness. *Canadian Psychology / Psychologie Canadienne*, 26(1), 1–12. <https://doi.org/10.1037/h0080017>
- Urmson, J. O. (1971). Memory and imagination. *Mind*, 80(1), 70–92. <https://doi.org/10.1093/mind/lxxx.320.607>
- Whittlesea, B. W. A. (1993). Illusions of familiarity. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 19(6), 1235–1253. <https://doi.org/10.1037/0278-7393.19.6.1235>
- Winkelman, P., & Cacioppo, J. (2001). Mind at ease puts a smile on the face: Psychological evidence that processing facilitation elicits positive affect. *Journal of Personality and Social Psychology*, 81(6), 989–1000.
- Yonelinas, A. P., Aly, M., Wang, W.-C., & Koen, J. D. (2010). Recollection and familiarity: Examining controversial assumptions and new directions. *Hippocampus*, 20(11), 1178–1194. <https://doi.org/10.1002/hipo.20864>

Open Access

This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made.

