Phenomenology and the Cognitive Sciences (2024) 23:925–945
https://doi.org/10.1007/s11097-022-09881-z

The Simulation Theory of Memory and the phenomenology of remembering

Andrea Rivadulla-Duró[1,2]

Accepted: 8 December 2022 / Published online: 24 December 2022

Abstract
The Simulation Theory of Memory states that to remember an episode is to simulate it in the imagination (Michaelian, 2016a, b), making memory thus reducible to the act of imagining. This paper examines Simulation Theory's resources to account for our ability to distinguish episodic memory from free imagination. The theory suggests that we can reliably do so because of the distinctive phenomenology episodic memory comes with (i.e., a *feeling of remembering*), which other episodic imaginings lack. I will raise two objections to how the feeling of remembering is engineered in the theory, followed by an exhaustive exploration of the theory's resources to ground the mechanism underlying the elicitation of such feeling. I will conclude that the Simulation Theory cannot simultaneously defend the simulational character of episodic memory and ground our ability to discriminate between memories and imaginings.

Keywords Episodic memory · Simulation Theory · Phenomenology · Feeling of remembering · Feeling of pastness

1 Introduction

Our mental life relies heavily on visual experiences. The relevance of these visual experiences goes beyond the here and now that characterizes perception. Not only can we *see* a trapeze artist somersaulting at the circus, but we can also visualize it "in the mind's eye" when *remembering* it. And even if we have never seen a trapeze artist, we can *imagine* them. Due to its episodic and almost sensory form, these phenomena have been named quasi-perceptual memory and imagination (Macpherson & Dorsch, 2018)[1]. Traditionally,

[1] As the example used shows, the memory and imagination that concern us here are episodic and experiential rather than propositional. An episodic memory (e.g., the memory of *swimming* in the River Ouse on a summer morning in 1994) can be contrasted with a propositional or semantic memory, which does not include imagery and consists of the retention of a particular belief (e.g., the belief that the River Ouse

✉ Andrea Rivadulla-Duró
andrea.rivadulla@gmail.com

[1] Present Address: Centre for Philosophical Psychology, University of Antwerp, Antwerp, Belgium

[2] Universitat de Barcelona, Barcelona, Spain

this kind of memory and imagination has been considered two distinct kinds of mental activity (Bernecker, 2008). Recent theories, however, claim that the difference between them is of degree, not of kind (Michaelian, 2016a, b; De Brigard, 2014a; Hopkins, 2018). According to Michaelian's Simulation Theory (2016a, b; Simulationism or STM henceforth), to remember an episode is to simulate it in imagination. This raises the following question: when an individual is entertaining certain imagistic content, how can she tell whether she is remembering or engaging in free imagination? This paper will address the ability of STM to give a proper answer to this crucial question.

The traditional answer to this question in the literature has been to appeal to the distinctive phenomenology of memory. Episodic memory and experiential imagination are said to *feel* different, even though both imply the visualization of a scene *in the mind's eye*. STM also appeals to this phenomenological character of episodic memory. Michaelian claims that episodic memories come with a distinctive phenomenology, a *feeling of remembering*, that accompanies the episodic representation and allows the subject to identify memories as such (2016a: 235). Nonetheless, appealing to this *feeling* from a simulationist stance demands a more thorough explanation. If the process that brings memories and *other* imaginings to mind has the same features, how could memory have a distinctive phenomenology? I will first evaluate how STM addresses this issue. Then, I will explore the resources available to Simulationism to account for the distinctive phenomenology of memory without undermining its central ontological claim: to remember is to imagine. The question to be answered is the following: Can Simulationism ground a phenomenological difference between episodic memories and (*other)* imaginings?

Section 2 reviews the central claims of Simulationism. Section 3 focuses on the phenomenology of memory as stated by STM. In Section 4, I raise two objections to the way memory's phenomenology is described by STM. To amend its shortcomings, Section 5 explores possible underlying causes of the feeling of remembering in a simulationist paradigm. As a preview of the results, I find that none of the suggestions constitute a solution to the problems raised. I will then conclude that, unless amendments are made, Simulationism cannot simultaneously defend its central claims and ground the ability to distinguish episodic memory from "other episodic imaginings."

2 The Simulation Theory of memory

According to Simulationism episodic memory is the result of our imaginative capacities put to the purpose of constructing—i.e., simulating—a representation of an episode of one's personal past. In Michaelian's words (2016a: 60).

Footnote 1 (continued)
crosses the county of East Sussex). Something similar happens in the case of imagination, which has an experiential and propositional variant (e.g., imagining *submerging* in the River Ouse vs. imagining a state of affairs being actual, such as that Caesar's troops crossed the River Ouse during the Gallic War -something that, in fact, never happened).

> Fundamentally, on this view, remembering is generative, not preservative: it is not a matter of preserving a representation but rather of constructing, on the basis of stored information originating in a variety of different sources, as well as information available in the subject's current environment, a *new* representation of a past episode. In short, remembering is a matter of imagining or simulating the past.

The theory is empirically motivated by two well-established discoveries. First, in attempting to remember an episode, we often combine it with information obtained from other episodes (e.g., Brainerd & Reyna, 2005; Loftus, 2005) and from other sources (e.g., testimonial information; Meade & Roedinger, 2002). Because of this, episodic memory is seen as more constructive than was initially posited by preservationist models, which described it as a process of storage and retrieval (Dummet, 1994; Audi, 1995). The second discovery is that remembering and imagining share a common neurocognitive structure (Addis et al., 2007; Szpunar et al., 2007, Mullally et al., 2014). Both phenomena motivate the postulation of the *Episodic Construction System*, devoted not only to the simulation of past episodes but also to a wide range of imagined episodes. Among these are episodic future thought (Szpunar, 2010) and episodic counterfactual thought (episodic imaginings about what could have happened in the past; De Brigard, 2014a). Episodic memory, therefore, is one example among many episodic imaginings (Michaliean, 2016a: 111). ST states that a subject S remembers an episode *e* if and only if (2016a: 107):

1) *S* now has a representation R of *e*.
2) R is produced by a properly functioning episodic construction system which aims to produce a representation of an episode belonging to *S*'s personal past.

In emphasizing the constructive character of memory, the theory dispenses with two classical requirements in the philosophy of memory. For the simulationist, an episodic memory can be entirely constituted by information originating in similar episodes or coming from testimonial sources, if it represents an event of the personal past, and it is produced by a properly functioning episodic construction system. In this regard, STM discards the Causal Condition for memory (Martin & Deutscher, 1966), in which remembering requires a continuous causal connection from the subject's original experience of the event to her retrieved representation of the event. STM dispenses with this condition for the following reason. Knowing as we do that remembering involves the reconstruction and incorporation of information from many sources beyond experience, it is unjustified to stipulate that a minimum percentage of this information must come from the original experience of the episode via an appropriate causal link.[2] In the following case, according to STM, Felicia would be remembering:

[2] Additional requirements in the literature concerning the Causal Condition are the fact that the causal chain is appropriate only if it goes via a memory trace. For simplicity, here I will focus on the most important conditions denied by Simulationism.

[1] Forgetful Felicia and an afternoon at the circus: At the age of six, Felicia goes to the circus with her parents and brother. Due to an accident, she loses all her memories of this event. Years later, she is told about the episode by her brother. Later, she forgets having been told and based on the testimonial information given by her brother, she imaginatively represents the event in her mind: the trapeze artist dancing on an elephant, the smell of popcorn mixed with the smell of animals; her excitement at all.

As in **[1]**, STM claims that we can remember experienced episodes fully based on non-experiential information: episodic memories do not need to draw on information originating in the experience of the remembered episode *at all*.[3] Moreover, a second classical requirement for memory that STM discards is the Previous Experience Condition. This condition states that for a subject S to remember an episode *e*, S needs to have experienced *e*. On the contrary, according to Simulationism, we can remember episodes that we have not experienced. This surprising claim is explicitly stated by Michaelian: "the recreative character of remembering requires us to abandon the idea that things remembered must be things formerly perceived or known" (2016a: 60). According to that, **[2]** would be an instance of episodic memory:

[2] Felicia at the age of two: Suppose a case identical to [1], with the only exception that, in this case, Felicia went to the circus at the age of two, too young to count as having *experienced* [4] the episode. She is later told about this episode by her brother, forgets about having been told, and lately, on the mere basis of the testimonial information given by her brother, she imaginatively represents the event in her mind.[5]

Note that, for the simulationist, no percentage of the content of an episodic memory has to be retrieved from the original experience—as it happens in [1] and [2]. Michaelian claims that in these cases episodic memory generates new beliefs along with its content (as it happens in perception). In his terms, episodic memory is a *radically generative* epistemic source: it can not only justify beliefs but also be the very source of this justification by providing the contents that justify the formation of these beliefs.

In what follows, three central claims of STM will be of use throughout this paper (1) that to remember is to imagine our personal past, (2) that memory is produced by the episodic construction system, and (3) that episodic memory is a radically generative epistemic source. Let us now focus on Michaelian's answer to our initial question regarding people's ability to distinguish memory and imagination.

[3] By 'non-experiential information', I mean information that we have not acquired first-hand, such as testimonial information. To remember, according to STM, it is sufficient that the episode we represent belongs to our personal past: we need not have experienced it.

[4] Michaelian adopts a narrow notion of experience in [2], but these need not concern us here.

[5] The counterinitiative fact that cases such as [1] and [2] are counted as instances of episodic memory has recently been discussed in the literature (McCarroll, 2020) and will not be the subject of debate here (a response from Simulationism can be found in Michaelian, 2022). These examples are given to characterize the theory and I will use them in this paper.

3 Tracing back phenomenology in simulationism

Despite emphasizing the non-reproductive character of episodic memory, Michaelian defends its overall reliability, namely, its epistemic status as a process through which subjects form accurate beliefs about the past. He claims that phenomenology is crucial in ensuring that episodic memory is reliable, even though it is constructive, frequently based on non-experiential information, and sometimes concerning non-experienced episodes. One of the reasons why he sees the constructive character of episodic memory as no threat to the reliability of remembering is the following: when the episodic construction system generates an episodic memory, this memory comes with a *feeling of remembering*. This feeling is exclusive to episodic memory, and the other range of episodic constructions (e.g., daydreaming, episodic counterfactual thought, or episodic anticipation) lack it. This *feeling of remembering* is what allows us to reliably distinguish remembering from *other* imaginings.

It is in virtue of identifying the imagistic contents as episodic memories ("I am remembering") that subjects form beliefs about the contents represented ("This happened"). For example, when entertaining the images of grandma disguised as a dinosaur at a Carnival party, if I take this construction to be a memory, I will form the belief "Grandma came to that Carnival party" when visualizing the scene. If, on the contrary, I take it to be a product of free imagination, I would not form this belief. It is a desideratum of any theory of memory that defends the overall reliability of memory to account for reliable memory belief-formation. The recognition of memories as such is an indispensable last step for them to play the functional role they play, and the system producing memories should explain part of this recognition process. According to STM, it is in virtue of the phenomenology of memory that we can reliably distinguish remembering from *other* imaginings and form beliefs accordingly [6].

Appealing to the phenomenology or subjective character of mnemonic contents—to the way they *feel*—as the marker that allows us to identify memories first-personally is common in the literature. This qualitative feature or *what-it-is-likeness* of episodic memories has received many characterizations. All of them have in common the idea that, when remembering, the contents of episodic memories come with a feeling that makes it seem like we are relieving such episodes. James (1890: 650) refers to this qualitative feature of memories as a "*feeling of warmth and intimacy*". Russell (1921: 163) describes the feelings accompanying the contents of episodic memories as a *feeling of familiarity* and a *feeling of pastness*. Tulving (2002: 6) emphasizes that when we remember, we seem to *re-experience past episodes*. Other characterizations include Dokic's "*feeling of knowing*" (Dokic, 2014), Fernàndez's "*feeling of ownership*" (2019), and Martin and Hoerl's "*feeling of particularity*" (Martin, 2001; Hoerl, 2001). For Simulationism, the content of this *feeling* emerges in consciousness as "*this representation is a representation of an event from my past*" (Michaelian, 2016a: 235).[7]

[6] This claim does not preclude that, on some occasions, subjects will erroneously judge that they are remembering when they are imagining (and vice versa).

[7] The debate concerning the best characterization of the phenomenal marker that allows subjects to distinguish remembering from imagining is still alive (Byrne, 2010; De Brigard, 2017; Teroni, 2017), although for our purposes in the paper we need not engage in this debate.

However, if episodic memory and imagination result from the same constructive and additive process and the system producing them is the same, why would the process elicit the *feeling of remembering* only when the represented episodes are part of our personal past? What is the mechanism underlying the qualitative distinctiveness of episodic memories? If Simulationism wants to ensure the reliability of memory despite its imaginative nature, it must give a detailed account of how the *feeling of remembering* originates. In the words of Michaelian, the feeling originates as follows (2016a: 232):

> Given its simulational character, remembering would be unreliable and therefore maladaptive absent the subjective dimension, for agents would be unable to reliably distinguish among different forms of episodic imagination. If an episodic constructive process is classified as self-oriented, past-oriented, and actual rather than counterfactual, it is judged to be an instance of remembering—the agent has a *feeling of remembering*

In short, according to STM the phenomenology of memory emerges if the episodic construction is self-oriented (i.e., autonoesis), past-oriented (i.e., chronesthesia), and taken to be actual (i.e., actuality). If these three conditions are met, the episodic representation brings, in conjunction with the contents represented, the feeling of remembering (see Fig. 1). In virtue of this phenomenology, the subject judges that she remembers and, therefore, that the episode represented took place in her past.

Concerning the characterization of these conditions, some clarifications are necessary. The first condition, *autonoesis* [8] refers to the fact that the episode needs to be self-oriented. One can experientially imagine oneself seeing the Pyramid of Khafre, but one can also imagine being Howard Carter seeing that pyramid: only in the first case is the episode self-oriented. The second condition, *chronestesia* concerns the temporal orientation of the episode, which needs to be past-oriented as opposed to present- or future-oriented. One can imagine oneself at the age of six exploring nature with one's brother, but one can also try to anticipate the future and imagine oneself at the age of 60 exploring nature with one's grandson; only in the first case, the episode is past-oriented. Concerning the last condition, *actuality*, the representation needs to be taken as actual (as having occurred) instead of counterfactual (something that could have occurred). An example of an *actual* event is one's memory of yesterday morning at the beach; an example of a counterfactual simulation is imagining what would have happened if one had gone to the park instead.

Due to the allusion to necessary precursors to the feeling of remembering, I will label this explanation the "Phenomenological Precursors Strategy". In the next section, I will give two arguments to show that this strategy fails to ground the feeling of remembering.

[8] Michaelian uses autonoesis to describe the episode as self-oriented (represented from the perspective of the subject). Other, more compromised, uses of the term can be found in the literature (e.g., Tulving, 1985).

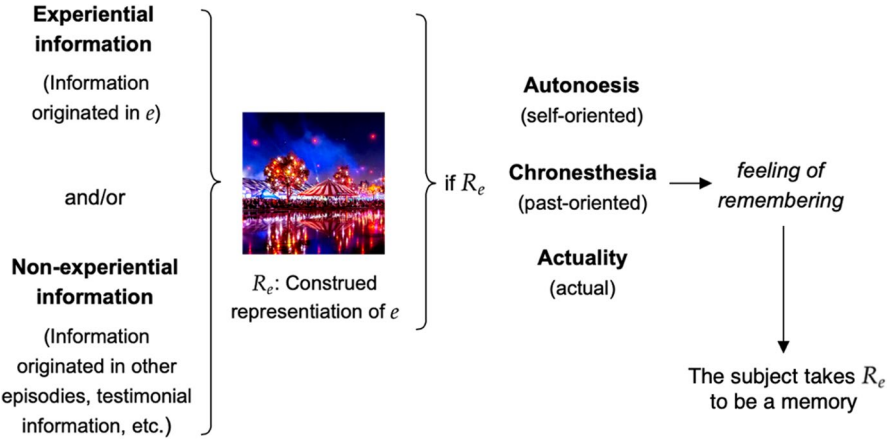

Fig. 1 The genesis of the *feeling of remembering*, as stated by Simulationism (*e* stands for the event of the personal past that is being remembered)

4 Two objections against the phenomenological precursors strategy

We have just seen how STM attempts to explain how the feeling of remembering arises. I will now argue that the decomposition of the feeling of remembering into its alleged three precursors does not amount to an explanation of the mechanism that produces it. I will show this using two different arguments. The first concerns the fact that the Phenomenological Precursors Strategy begs the main question we are trying to answer here (Section 4.1). The second suggests that the three precursors are insufficient for the feeling of remembering to emerge (Section 4.2).

4.1 Actuality: an unexplained explainer

Michaelian acknowledges that episodic memory and other forms of episodic imagination partially share their phenomenology. This fact sits well with the predictions of the Simulation Theory. Given that memory and imagination are produced by the same episodic construction system, phenomenological similarity between them is to be expected. For instance, the self-oriented condition (i.e., autonoesis) and the past-oriented condition (i.e., chronesthesia) can be present in other episodic imaginings apart from episodic remembering. The following episodic counterfactual imagining provides an example:

> **[3] Felicia and her counterfactual past**: One Sunday afternoon, Felicia entertains herself by imagining how her visit to the circus as a child would have been if, instead of going with her parents, she had gone with her more permissive grandparents. Probably, they would have let her climb on the elephant. She imagines things from up there: how close she would be to the head of the giraffe, the touch of the elephant's back; and so on.

In [3], Felicia constructs an episode that is self-oriented (autonoesis) and past-oriented (chronesthesia). The fact that she takes the representation to be counterfactual

rather than actual, impedes the raising of the feeling of remembering and prevents her from considering the episodic representation to be a memory. This, in turn, prevents her from forming beliefs about the contents represented (such as that she climbed on an elephant at the age of six). Example [3] shows that voluntarism can be claimed about *autonoesis* and *chronesthesia*. It is always possible to add at will the *self-oriented* and *past-oriented* conditions to an imagined episode, converting it into an instance of episodic counterfactual thought. Namely, no matter which episode we entertain in imagination, we can always imagine it happening to ourselves and in the past. That is, any episode can be imagined as a counterfactual event we could have witnessed in the past (even the strangest ones, such as being an alien in our childhood years, can be imagined in a self and past-oriented way).

However, and crucially, according to STM the feeling of remembering cannot be induced at will, since this would mislead the subject about the mnemonic nature of the representation. The *actuality* condition secures this: one cannot take the contents represented as *actual* at will. *Actuality* distinguishes episodic memory from episodic counterfactual thought: both constructions are self-oriented and past-oriented, but only the contents of the former *e* are classified as *actual*. This shows that the modal condition (actuality), absent in [3], is the crucial condition in accounting for the rise of the feeling of remembering. Despite this, the Simulation Theory remains silent about how episodic representations are classified as *actual*.

When and how are the episodic contents taken as *actual*? What is it that invites the subject to consider them as such? STM posits the *actuality* condition as part of the explanation for the emergence of the feeling of remembering, but the origin of this crucial condition is not described in the theory, remaining an *unexplained explainer*. The decomposition of the feeling of remembering into its alleged precursors—autonoesis, chromesthesia, and actuality—leaves an explanatory gap, since the origin of the crucial precursor, *actuality*, remains ungrounded and mysterious, leaving our main question unanswered.[9] Although not considered by Simulationism, in Section 5, I shall explore potential candidates for grounding the phenomenology of memory in STM. Before that, we shall consider the second argument against the Phenomenological Precursors Strategy.

4.2 On the insufficiency of *autonoesis, chronesthesia*, and *actuality*

As seen in [3], we can imagine episodic counterfactual episodes at will. Since these counterfactual episodes are self-oriented (autonoesis) and past-oriented (chronesthesia), it follows that the conditions of autonoesis and chronestesia can be met at will. For example, one can imagine what Joan of Arc saw and felt when leading the siege of New Orleans at the age of seventeen (picturing the battle in

[9] *Autonoesis* and *chronesthesia* are sometimes also unexplained in the way *actuality* is unexplained. This might be an additional problem for Simulationism, however, I focus on *actuality* for two reasons. First, because of its singularity—being utterly independent of the subject's will. Second, because it is the element that distinguishes the phenomenology of episodic counterfactual thought from the phenomenology of episodic memory, making it the crucial component in the emergency of the feeling of remembering.

front, hearing the sound of the horses, and feeling the fear of imminent death). However, one can also orient the episode to oneself (*autonoesis*) and imagine this counterfactual past: one's commanding a siege at the age of seventeen. Luckily, one would not be able to take the contents represented as "actual", and therefore, the feeling of remembering would not emerge when imagining one's belligerent counterfactual past. However, should we not be able to bring up the feeling of remembering at will in some cases? Let us consider the following case:

> **[4] Felicia, the academic.** Having learned that Simulation Theory predicts that if an episodic imagining is self-oriented, past-oriented, and taken as actual, the *feeling of remembering* will arise, Felicia decides to put this to the test. She asks her older brother—whom she takes to be a reliable source about her childhood—to give her detailed information about an event they experienced together when she was two years old, and about which she remembers nothing. After compiling the information, she imagines the episode orienting it to herself (autonoesis) and to the past (chronestesia). Furthermore, she takes it as actual—instead of counterfactual—since she has construed it based on reliable information and believes it to have happened.

In cases like [4], I claim that the three conditions are met (i.e., autonoesis, chronesthesia, and actuality), but no *feeling of remembering* accompanies the episodic representation. The feelings surrounding this kind of constructed episodes are closer to the ones of episodic counterfactual thought.[10] Given that, [4] posits a counterexample to the three precursors as being sufficient for the raising of the feeling.

Simulationists can reply that phenomenological intuitions are slippery, but at least when firstly imagined, experiential imaginings like [4] are accompanied by the same phenomenology of strangeness and remoteness as those of counterfactual imagination in [3].[11] If in [4] Felicia takes the contents to represent an event of her personal past, this is just because she takes her brother as a reliable source, not in virtue of any *feeling of remembering*. This is not an isolated case but rather the norm for cases in which testimonial information is consciously incorporated. Episodes we construe based entirely on the conscious incorporation of new testimonial information (even if we construe them as past-oriented and self-oriented) seem to have a phenomenology more similar to counterfactual imaginings and do not seem to come accompanied by the feeling of remembering.

[10] Mahr (2020: 8) shares this phenomenological intuition: "You might have had too much to drink one night and therefore wake up the next day without remembering anything of what occurred. Your friend, who was with you at the time, however, tells you in a lot of detail what occurred, namely, that you got into an argument with the barman about how many drinks you had. Now, you might be able to simulate fairly accurately this specific, past event, which you will take to have actually occurred and which you will take to have occurred to you personally. You will, however, still not take yourself to remember the event."

[11] It may happen that, after repeatedly imagining an episode from our childhood that has been narrated to us by testimonial sources, we end up generating that phenomenology of memory at the umpteenth attempt. If this is the case, it would be an instance of phenomenon of imagination inflation (Garry et al., 1996), in which we mistake imagination for memory. But this is not the case in [4].

A possible reply from Simulationism is that the episodic construction system is engineered so that the feeling of remembering does not arise when the subject knows that the episode is not construed based on experiential information or when this information is incorporated consciously. According to this, the conscious incorporation of information could block the emergence of the feeling, even when the episode is self-oriented, past-oriented, and taken to be actual. However, if this were the case, the simulationist should explain why the episodic construction system has evolved in this way, preventing the emergence of the feeling of remembering when non-experiential information is consciously incorporated but not when it is unconsciously incorporated. Especially given that the conscious incorporation of information could make the episodic constructive system more reliable, since it would be possible to check the source of the information and the degree of conviction about it (both unpresented checks when information is unconsciously incorporated). Simulationists would consequently need to explain why the system is engineered in such a way, which does not seem trivial at first glance.

The STM advocate might also object that, because [4] is entirely based on the *conscious* incorporation of testimonial information, it is not an instance of episodic remembering. When discussing the incorporation of reliable testimonial information in episodic memories, Michaelian uses only examples in which such incorporation is *unconscious* (namely, the person remembering is not aware of it). For this reason, it could be replied that because in [4] the subject consciously forms a representation that incorporates testimonial information, the representation in question is not the product of the episodic memory system. It could also be denied that in such cases the episodic construction system is functioning properly (Michaelian, personal communication). If this was the case, instances like [4] would not be since the metaphysical conditions of the theory would not be met.

One may reply to this line of thought in two ways. First, even if [4] was not an instance of episodic memory, it would still be a case against the sufficiency of the three precursors as responsible for the emergence of the feeling of remembering. That is, a counterexample to the sufficiency of the three conditions (autonoesis, chronestesia, and actuality) for the feeling to arise. Second and more importantly, from a simulationist stance, it is unmotivated to deny that in cases like [4] the memory system is involved and functioning correctly. If memory is part of the episodic construction system, such system (1) frequently receives inputs that are introduced consciously and (2) frequently construes episodes based exclusively on the conscious incorporation of information. This is the case, for example, of episodic anticipation, in which many times we consciously set up an imagined scenario. Why would the simulationist posit an asymmetry in the functioning of the episodic construction system, accepting as input conscious information in the case of episodic anticipation but not in the case of episodic memory? Positing this input asymmetry seems to go, in fact, against the existence of the system, as the kinds of inputs that a cognitive system is sensitive to are one of the main criteria for individuating it. Cognitive processes and systems tend to be individuated by the tasks they perform (Clark & Chalmers, 1998). In turn, a way of individuating a cognitive task is to identify it as an informational input-output relation (Davies & Michaelian, 2016). That is, we know a cognitive

system is at play when, given a specific input, it brings a particular output. The simulationist might want to claim that the episodic constructive system integrates conscious information as input in episodic anticipation, but it does not integrate information this way in the case of episodic memory. However, in this case, STM should explain the criteria for individuating the episodic constructive system that allows for this input asymmetry between remembering and anticipating. In addition, it is unreasonable to claim that the conscious incorporation of information is less optimal than its unconscious incorporation. The main difference between the two is that, in the case of conscious incorporation, the subject is often able to check the source of information, which can only increase the reliability of the process.

Since the phenomenology of memory is not a necessary condition for remembering according to STM, the previous objection does not affect the metaphysical formulation of the theory. Concerns about how the subjective dimension of episodic memory is engineered in the theory are relevant if it wants to claim that memory, although constructive, is reliable because of its phenomenology. As shown, the theory's predictions concerning the emergence of this *feeling* do not align well with phenomenological facts and fail to do so systematically. The mechanism proposed by STM to underlie the phenomenology of memory has been proven ungrounded (4.1) and its conditions insufficient (4.2). At this point, Michaelian could adopt a skeptical strategy and claim that the phenomenological dimension is not indispensable for the reliability of memory. Let us now see why this is not a suitable solution to the problem.

4.3 On the indispensability of phenomenology for reliability

Faced with the previous objections, STM could leave out the phenomenological dimension of episodic memory. It could be claimed that the theory is committed to memory being reliable, not to memory belief-formation being reliable. That is, it could defend that these kinds of reliability are independent, and that reliable remembering does not imply reliable memory belief-formation. For example, a subject with highly inaccurate metacognition might reject a lot of accurate memories (Michaelian, in conversation). In this case, episodic memory would be reliable, but memory belief-formation would not. Therefore, before exploring some candidates for grounding the phenomenology of memory in Simulationism, I will motivate the indispensability of phenomenology for the reliability of memory.

The following analogy will be helpful in understanding why simulation without appropriate phenomenology would lead to unreliability. Imagine a blind master perfumer whose purpose is to make a perfume of lilies. When she goes to the garden, her hands duly select the lilies, distinguishing them from the roses—most of the time reliably. After carrying out all the proper steps to obtain the lily perfume, the master perfumer smells it. What a great mistake it would be if the lily perfume smelled sometimes of lilies and sometimes of roses! The whole process of distilling the perfume, no matter how careful, would be useless if it

did not end up evoking in the perfumer the phenomenology of the smell of lilies that allows her to identify it as such and consider it finished.

If we could not identify memories as such and distinguish them from free imagination and we were constantly confusing one for the other, memory would be of little use. This faculty would continually mislead us as to what happened in our past and would not be a faculty to trust. Luckily, this is not the case: experience shows that episodic memory is a reliable process most of the time—at least in healthy subjects—, and we continuously turn to it when we want to obtain information about the past. So, explaining how we distinguish episodic memory from other forms of episodic imagination when entertaining certain types of episodic content is unavoidable for the simulationist if he wants to claim that episodic memory is reliable.

In the next section, several candidate mechanisms for grounding the phenomenology of memory will be considered along with their compatibility with the central claims of Simulationism. Unfortunately, the conclusion will be that none of them can be taken by the simulationist without renouncing some central claims of the theory.

5 Grounding memory's phenomenology in simulationism

In the following sections, I shall explore several candidates that the simulationist could appeal to in grounding the phenomenology of episodic memory. These candidates are alternatives to the Phenomenological Precursors Strategy and have been the predominant ones in the literature on memory first-person markers (Byrne, 2010, Teroni, 2017, Perrin et al., 2020). They can be divided into three groups: procedural, doxastic, and intentional. In each case, the postulated mechanism is incompatible with some central claim of Simulationism, leaving the question of what mechanism underlies the distinctive phenomenology of memory unanswered. Without such a mechanism, the reliability of memory defended in STM remains ungrounded, deeply undermining the theory's explanatory power.

5.1 Procedural features

Those who take memory and imagination as different mental processes—*discontinuists*—can easily account for the distinctive phenomenology of memory and imagination: different processes can have different phenomenological outputs. Once an ontological difference between memory and imagination is assumed, the distinctive phenomenological output of memories can be explained by appealing to the nature of the process that gives rise to them. For instance, some causal accounts of memory (Bernecker, 2010) endorse the existence of memory traces that encode and preserve information about an event over time (De Brigard, 2014b; Robins,

2017; Werning, 2020).[12] These memory traces are said to be causally operative in producing a memory representation. This distinct feature of memory—the activation of such traces—, therefore, could lead to the overall phenomenology:

i) Nature of the process or the subpersonal detection of its features: What causes the feeling of remembering is a differential feature—or a subpersonal detection—of the process giving rise to memories.

But according to Simulationism the process that gives rise to episodic memories and other episodic imaginings is the same, and the existence of information originated in the remembered event—or any memory trace of it—is not necessary (as seen previously in cases [1] and [2]). This makes it implausible to ground the *feeling of remembering* in a distinctive feature of the mnemonic process, nor in its subpersonal detection.

However, one counterargument by STM could be that, in grounding the phenomenology of memory, there is no need for the processes that give rise to memory and other imaginings to be different in nature, but rather different in their average features (Michaelian, 2016a: 196). It could be claimed that although the process that simulates episodic memories and *other* experiential imaginings is the same (in both cases constructive and additive), there are average differences in the running of that process. These differences, in turn, are subpersonally detected, and this detection contributes to the overall phenomenology of memory. Authors like Dokic (2014) have proposed that the subpersonal detection and interpretation of average cues such as fluency might have, as a result, the characteristic feelings that accompany memories.[13] Processing fluency concerns the ease with which information is processed (Alter and Oppenheimer, 2008). It is to be expected that memories that are mainly retrieved or contain merely experiential information will be processed more fluently than construed memories in which data from different experiences and information from diverse sources (e.g., testimony) are integrated when remembering. The simulationist could claim that, although the process underlying memories and other imaginings is the same, the procedural fluency of memories is on average higher than that of other imaginings. The phenomenology of memory could be, in the case that concerns us, the result at the personal level of the subpersonal sensitivity to the average features of episodic memory[14]. Hence, a second candidate STM could potentially endorse is the following:

[12] Constructive versions of the Causal Theory, which allow for the incorporation of nonexperiential information, are also in a better position than Simulationism to ground the phenomenology of memory. Given that such theories defend a minimal but necessary causal connection between the experience of an event and an episodic memory, they can appeal to this procedural difference when grounding the phenomenology of memory. For instance, they could ground the feeling of remembering in the subpersonal detection of a memory trace originating in the experience of the episode.

[13] Other features such as the ease of generation have also been proposed to play this role (Wittlesea & Leboe, 2000).

[14] See Whittlesea, 1997: 219 and Koriat, 2007: 298 for similar claims.

ii) Subpersonal detection of average features: What causes the feeling of remembering is the subpersonal detection of average features of the process giving rise to memories (e.g., the higher procedural fluency or ease of generation in episodic memory compared to *other* imaginings).

However, STM could not coherently endorse such a mechanism for several reasons. STM's characterization of memory as a highly reconstructive and additive process is inconsistent with invoking heuristics relying on average differences such as fluency. If the feeling of remembering was the result of the subpersonal detection of the process as fluent, then highly constructed memories—which are taken to be frequent in the simulationist framework—would not be subpersonally detected. Therefore, numerous instances of episodic memory would lack the feeling of remembering. The absence of the feeling of remembering, in turn, would lead the subject to misjudge these memories as counterfactual imaginings or to suspend judgment about them. Since these memories are very frequent, the overall reliability of episodic memory would then be under threat. Such an argument runs as follows (P1 is the candidate under consideration. P2 and P4 concern the nature of procedural fluency. P3 is a central claim from Simulationism and one of its central motivations for its ontological thesis. P5 follows from P3 and P4):

P1) The *feeling of remembering* emerges only when high procedural fluency is subpersonally detected.
P2) High procedural fluency cannot be detected if it is not actually present.
P3) Many episodic memories are highly constructive and additive in nature.
P4) The more constructive and additive an episodic construction is, the less the procedural fluency of the process running it.
P5) Many episodic memories have low levels of procedural fluency (From P3 and P4).
C) Therefore, many episodic memories lack the *feeling of remembering* (From P1, P2 and P5).

As the argument shows, emphasizing the reconstructive and additive nature of memory to the point of equating it with imagination is inconsistent with simultaneously emphasizing memory's fluency as a phenomenological marker.[15] The procedural strategy, both concerning the nature of the process and its average features, is not compatible with some central claims of STM. More specifically, *(a)* clashes with the ontological claim that subsumes memory within imagination, and *(b)* along with STM claims on the nature of episodic memory, lead to the conclusion that many episodic memories lack the *feeling of remembering*, and therefore would not be recognized as such by the subject having them (which undermines the reliability of memory).

[15] The same argument applies, *mutatis mutandis*, if we take ease of generation to be the relevant feature.

5.2 Doxastic coherence

An alternative option from the simulationist standpoint would be the following: the feeling of remembering could emerge after a process of comparison between the episodically represented contents and propositional beliefs about our past. Then, if the content represented in the episodic construction aligns with these propositional beliefs, the *feeling of remembering* will emerge and accompany the episodic representation.[16]

iii) Comparison with propositional beliefs: The feeling of remembering emerges after comparing the episodically represented contents with propositional beliefs about our past.

However, this candidate presents two significant drawbacks for STM. First, it heavily undermines the characteristic immediacy of episodic memory. Second, it makes episodic memory dependent on propositional memory and undermines its authority over propositional belief. There are two things to be said about these consequences. First, it is essential to have in mind that, according to Simulationism, episodic memory is a generative epistemic source. Michaelian is indeed a partisan of radical generativism, according to which "memory can generate justification both by generating a new belief with a pre-existing content and by generating a new belief along with its very content (2016a: 95)". However, claiming that episodic memory can play its epistemic role only by means of a comparison process between its contents and previous beliefs heavily makes it depend on semantic memory, undermining its status as an epistemic source in the strong sense Michaelian claims it to be. Furthermore, it is crucial to remark that an episodic memory often corrects the content of our propositional beliefs. My belief that William did not come to the last seminar might be corrected by the sudden episodic memory of him sitting at the end of the room: "He was there!", I might claim, correcting my previous doxastic state and giving episodic memory authority over belief. Secondly, experience shows that often we do not have the relevant set of propositional beliefs to compare to and determine the status of the represented episodic content. See, for instance, the following case. Suppose that after looking for your keys around the house for a while, you try to visualize what you did last night when you got home. In trying to remember, the following image comes to mind accompanied by the feeling of remembering: the keys falling from the pocket of your coat onto the living room floor. They fell on the ground when you left the coat on the chair; you saw them, but tiredness made you postpone bending over. Based on this sudden image, you form the belief that the keys are on the living room floor. In this case, it seems absurd to say that the identification of the representation as a memory is dependent on a checking process

[16] It is important to note that the present argument also works if phenomenology is left aside. It could be said that this process of comparing episodically represented content with beliefs is the mechanism for determining whether we are dealing with an episodic memory, regardless of whether this comparative process results in a phenomenological output or a mere judgement.

with propositional beliefs, because before the imagery was entertained you did not have any belief about the keys' whereabouts. Therefore, it is not plausible to claim that in such cases, we take episodic constructions as memories after checking its contents with our propositional beliefs about the past. It seems that what makes us endorse them as memories is a much more immediate process.

One possible way to avoid this problem is to suggest that it is not that we compare the represented episodic contents with our propositional beliefs to determine their status, but that the episodic memories are supported by relevant beliefs "about" the contents represented in them. In this line, Debus (2018) claims that episodic memories are "embedded" in a context of relevant beliefs, something that "other" imaginings lack and that let us differentiate between both faculties [17]. Other recent accounts (Redshaw, 2014, Mahr and Csibra, 2018) have also related the phenomenology of remembering with the ability to place the representations in a more general narrative of our past. Therefore, STM could appeal to the following mechanism:

iv) Embedding in beliefs: What causes the feeling of remembering that accompanies episodic memories are propositional beliefs supporting the contents represented in the episodic construction.

Nevertheless, this option is not available for STM either, for two main reasons. First, this mechanism inherits the shortcomings of its predecessor. It does not explain paradigmatic cases of memory's authority over belief (like the one of William at the seminar). Since many times episodic memory "corrects" propositional beliefs, it does not seem that its immediacy and authority are due to being surrounded by a set of propositional beliefs. The simulationist might suggest that *other* beliefs ground the feeling of remembering. For example, the belief that I arrived home yesterday together with the belief that I was wearing the coat might have a causal role in bringing about the feeling of remembering when the mental image of the keys falling from the coat comes to mind. However, there is virtually an infinite number of imaginings compatible with these two beliefs. As a consequence, any of these imaginings could also be associated with a feeling of remembering, since the feeling is grounded in the consistency between the imagining and the beliefs. For example, the subject imagining herself leaving the keys under her coat should also bring about the feeling of remembering. This example illustrates that coherent beliefs with the scene represented are not sufficient to bring about the feeling of remembering since these beliefs are also coherent with several counterfactual imaginings which do not bring about the feeling of remembering. Furthermore, introspection shows that the feeling of remembering can also arise when the episode represented is not scaffolded by beliefs but rather contradicted by them. See, for instance, the following case. When I imagine the dog of my childhood on the beach, the scene comes accompanied by

[17] Debus's account is very different from Michaelian's in its metaphysical and phenomenological claims. I bring it up for debate because of the role it attributes to beliefs in determining from a first-personal perspective whether we are remembering.

the feeling of remembering. Over the years, I have learned from my parents (reliable sources) that we never took the dog to the beach. Although I believe my parents, when I recreate the scene it comes unavoidably accompanied by the feeling of remembering. Neither contradictory beliefs nor the absence of beliefs scaffolding the scene prevents the rising of the feeling. That shows that scaffolding beliefs are neither sufficient nor necessary for the emergence of the feeling of remembering.

Second, many imaginings are also "embedded" in the context of beliefs about actual states of affairs; namely, they are also "scaffolded" by beliefs about our past. For instance, if a subject entertains an episodic counterfactual thought about what she could have said in an interview after doing it, the imagining will also be constrained and embedded in the context of many beliefs (e.g., beliefs about the interviewer, the management of her emotions, the room where the interview took place, et cetera). This is also the case of many anticipatory imaginings: in the attempt to accurately represent the future, we use many beliefs as well. Nonetheless, although these episodic imaginings are "embedded" in a context of relevant beliefs and cohere with them, the feeling of remembering does not accompany them. The simulationist could say that only certain embedding beliefs produce the feeling of remembering. However, it is difficult to predict which beliefs would produce this feeling. Mainly because the embedding beliefs that might produce the feeling in the case of memories should also produce it in the case of episodic imaginings that are compatible with these beliefs. For example, the belief that William was at the seminar might be activated when remembering the episode as it happened. However, the same belief could also be present when entertaining counterfactual scenarios about the seminar in which William figures. In both cases, the belief that William was at the seminar is compatible with the episodic contents, so why would it only produce the feeling of remembering in the first case?

In this section, we have seen that appealing to propositional beliefs about the past to explain phenomenology is not an apt strategy for the simulationist. If so, it would heavily undermine the immediacy and authority of episodic memory, something the simulationist—who sees episodic memory as a radically generative epistemic source—does not seem to be willing to give up.

5.3 Intentions and the aim of the system

Finally, I will consider one last possible candidate for the mechanism underlying the phenomenology of memory: the detection of the aim of the episodic construction system. In STM, the system that produces episodic memories is the same that produces many other episodic imaginings. Nevertheless, the system's aim in doing so is different. In the case of memory, the episodic system aims "to produce a representation of an episode belonging to *S*'s personal past". Thus, a candidate that the simulationist could appeal to for generating the feeling of remembering would be the personal or subpersonal detection of this aim, which is exclusive to memory.

However, what is it for the episodic system to have an *aim* and how could we detect it? It could be the case that the system's aim is the subpersonal dimension of the subject's intention at the personal level. In this case, we could detect the

aim of the system by detecting our intentions at the personal level (to remember vs. to imagine). Then, the detection of our intention to remember could bring to the episodic construction the feeling of remembering. Something along these lines was proposed by Urmson (1967)[18]. According to him, we determine whether we are remembering or imagining in the same way in which we would determine who the subject of a portrait is when making a painting: checking our intentions is enough to know what we are doing. In Urmson's words:

Let us suppose that a child is drawing what is recognizably a human figure. Let us suppose also, for the sake of definiteness, that the drawing looks quite like Winston Churchill and that the child has as a matter of fact seen Churchill. Now how does the child know whether he is drawing (a) just 'a man', nobody in particular, the resemblance to Churchill being coincidental, or (b) Churchill, or (c) his father (say)? I answer that he has merely to have decided what, if anything, will count for him as success or failure in his enterprise. (1967: 86–87).

According to Urmson's criterion, we come to believe that we are remembering by "knowing whether we have or have not chosen to act so that resemblance to actuality is a criterion of the success of our activity" (Urmson 1967: 90). In his view, detecting the criteria of success under which we are entertaining mental images is the crucial element in judging whether we are remembering. This mechanism could be initially endorsed by STM:

v) Detection of intentions - criteria of success: The detection of our own intention to remember and the criteria of success we have established for our activity give rise to the feeling of remembering (or to the judgement that we are remembering).

There are two objections to Urmson's mechanism, which also apply to the potential adoption of this criterion by STM. First, the detection of our intention to remember does not account for the case of unbidden memories: memories that come to mind without having the intention to remember. Sometimes a memory comes to us, and we recognize it as such without having previously having the intention to remember. Therefore, the detection of our intention to remember cannot be in these cases—which are common and abundant—the cause of the *feeling of remembering*.

On the other hand, Urmson has been criticized for mistaking *remembering* with *trying to remember* (Teroni, 2017: 28). It is the case that we can recognize what we are *trying to do* based on our intentions, but this is not enough for us to believe that we are in fact *doing it*. Often, we intend to remember something, and we establish as the criteria for success the rules of recollection. Nevertheless, the images that come to mind in an attempt to remember do not satisfy us, so we do not take ourselves to be remembering. In these cases, despite having and recognizing in ourselves the intention to remember, we identify the episodic constructions as imaginings. In an analogy: it is not the case that by having the intention of finding gold and carrying a gold detector, I will determine that everything I find is gold. At most, I will determine that I am trying to find gold. Intention does not seem to be an adequate candidate for the simulationist to account for our ability to distinguish remembering from freely imagining.

[18] Urmson dispenses with phenomenological considerations; in his case, the first-personal marker of memory is strictly formal.

In the previous sections, we have discarded procedural features and doxastic coherence as mechanisms compatible with STM. Here, we have also discarded intentionality and the system's aims as possible mechanisms. Other conceptions of the "episodic system's aim" and ways to detect it remain open to the simulationist. However, it is difficult to see how the notion of *a system's aim* could be understood besides reducing it to the subject's intention at the personal level. To say that cognitive systems, besides their function, have "aims" personalizes them without shedding light on what this amounts to. A challenge for the simulationist is explaining what it means for the episodic construction system to *aim at representing an episode from the personal past*. This question is treated too briefly in the Theory and demands further clarification.

After objecting to the way Simulationism explains the subjective dimension of episodic memory and having explored the more obvious alternative candidates for playing such role, none of them appear compatible with STM. The mechanism underlying the distinctive phenomenology of memory remains ungrounded in the Simulationist paradigm and, with it, the reliability of memory as stated in the theory.

Throughout the paper, I have focused on phenomenology as the central feature for distinguishing between memory and imagination. Nonetheless, the concerns raised also apply to other non-phenomenological processes by which we might distinguish between remembering and imagining. If an alternative version of STM were to drop phenomenology as the primary mechanism to distinguish between imaginings, it would still need to ground our ability to distinguish imagining from remembering. However, several of the candidates I have examined would also fail to ground this non-phenomenological alternative (e.g., average features of the process, intention, or coherence with beliefs) since they clash directly with essential tenets of simulationism.

6 Conclusion

Any theory of episodic memory must account for our ability to recognize episodic memories as such and distinguish them from imaginative episodes. This requirement is even more significant in STM, which claims that to remember an episode is to simulate it in the imagination. In the present paper, I have raised two objections to how the first-person recognition of memories is described in the theory. I have shown that the *feeling of remembering* as proposed by Michaelian begs the question of whether STM can ground a phenomenological difference between episodic memories and "other" imaginings and leads to incorrect predictions. Here, I have examined potential candidates for the mechanism that allows us to distinguish episodic memories from imaginings. All of them have proven to be either implausible or incompatible with some central claim of Simulationism. In the absence of an explanation of how we distinguish episodic memory from other imaginative episodes, the reliability of memory remains ungrounded in STM. This, in turn, heavily undermines the explanatory power of Simulationism and puts its central ontological assumption under question—namely, that to remember is to imagine. Future development on this issue may concern the revision of some central claims of STM such as the rejection of the Previous Experience Condition or radical generativism about episodic memory. Alternatively, STM could give up or downgrade its commitment to the reliability of episodic memory.

Acknowledgements Thanks for feedback to audiences at the Issues in Philosophy of Memory II Conference at the Université Grenoble Alpes (Center for philosophy of memory), the MLAG Graduate conference at the Universidade do Porto, the Centre for Philosophy of Memory's internal seminar, and the LOGOS Graduate Reading Group at the University of Barcelona. Thanks also to Kourken Michaelian, Marc-Lluís Vives and Andrea Blomkvist for written comments. Thanks also to three anonymous referees whose suggestions and critiques contributed to sharpening the paper. This work was supported by a grant from the Spanish Government (BES-2017-082991) in the framework of the project "The Significance of First-Personal Attitudes" (FFI2016-80588-R).

Declarations

Conflict of interest The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

References

Addis, D., Wong, A. A. T., & Schacter, D. L. (2007). Remembering the past and imagining the future: common and distinct neural substrates during event construction and elaboration. *Neuropsychologia, 45*(7), 1363–1377.

Alter, A. L., & Oppenheimer, D. M. (2008). Easy on the mind, easy on the wallet: the roles of familiarity and processing fluency in valuation judgments. *Psychonomic Bulletin & Review, 15*(5), 985–990.

Audi, R. (1995). Memorial justification. *Philosophical Topics, 23*, 31–45.

Bernecker, S. (2008). *The metaphysics of memory.* Springer.

Bernecker, S. (2010). *Memory: a philosophical study*. Oxford University Press.

Brainerd, C. J., & Reyna, V. F. (2005). *The science of false memory*. Oxford University Press.

Byrne, A. (2010). Recollection, perception, imagination. *Philosophical Studies, 148*(1), 15–26. https://doi.org/10.1007/s11098-010-9508-1

Clark, A., & Chalmers, D. (1998). The extended mind. *Analysis, 58*(1), 7–19.

Davies, J., & Michaelian, K. (2016). Identifying and individuating cognitive systems: a task-based distributed cognition alternative to agent-based extended cognition. *Cognitive Processing, 17*(3), 307–319.

De Brigard, F. (2014). Is memory for remembering? Recollection as a form of episodic hypothetical thinking. *Synthese, 191*(2), 155–185.

De Brigard, F. (2014). The nature of memory traces. *Philosophy Compass, 9*, 402–414. https://doi.org/10.1111/phc3.12133

De Brigard, F. (2017). Memory and Imagination. In Bernecker & Michaelian (eds.), *The Routledge Handbook of Philosophy of Memory* (Chapter 10: 127–140). Routledge.

Debus, D. (2018). Memory, imagination, and narrative. In F. Macpherson & F. Dorsch (Eds.), *Perceptual imagination and perceptual memory.* Oxford University Press.

Dokic, J. (2014). Feeling the past: a two-tiered account of episodic memory. *Review of Philosophy and Psychology, 5*(3), 413–426.

Dummett, M. (1994). Memory and testimony. In B. K. Matilal, & A. Chakrabarty (Eds.), *Knowing from words: western and indian philosophical analysis of understanding and Testimony* (pp. 251–272). Springer.

Fernàndez, J. (2019). *Memory: a self-referential account*. Oxford University Press.

Garry, M., Manning, C., Loftus, E., & Sherman, S. (1996). Imagination inflation: imagining a childhood event inflates confidence that it occurred. *Psychonomic Bulletin & Review, 3*(2), 208–214.

Hoerl, C. (2001). The phenomenology of episodic recall. In C. Hoerl & T. McCormark (Eds.), *Time and memory.* Oxford University Press.

Hopkins, R. (2018). Imagining the past: on the nature of episodic memory. In F. Macpherson & F. Dorsch (Eds.), *Perceptual imagination and perceptual memory.* Oxford University Press.

James, W. (1890). *The principles of psychology* (1st ed.). Macmillan.

Koriat, A. (2007). Metacognition and consciousness. In Z. P. D. Moscovitch & M. Thompson (Eds.), *The Cambridge handbook of consciousness.* Cambridge University Press.

Loftus, E. F. (2005). Planting misinformation in the human mind: a 30-year investigation of the malleability of memory. *Learning & Memory, 12*(4), 361–366.

McCarroll, C. J. (2020). Remembering the personal past: beyond the boundaries of imagination. *Frontiers in Psychology, 12*, 1–10.

Mahr, J. B., & Csibra, G. (2018). Why do we remember? The communicative function of episodic memory. *Behavioral and Brain Sciences, 41*, e1.
Mahr, J. (2020). The dimensions of episodic simulation. *Cognition, 196*, 104085. https://doi.org/10.1016/j.cognition.2019.104085
Martin, C. B., & Deutscher, M. (1966). Remembering. *Philosophical Review, 75*, 161–196.
Martin, M. G. F. (2001). Out of the past: episodic recall as retained acquaintance. In C. Hoerl & T. McCormark (Eds.), *Time and memory.* Oxford University Press.
Macpherson, F., & Dorsch, F. (Eds.). (2018). *Perceptual imagination and perceptual memory*. Oxford University Press.
Meade, M. L., & Roediger, H. L. (2002). Explorations in the social contagion of memory. *Memory & Cognition, 30*(7), 995–1009.
Michaelian, K. (2016a). *Mental time travel: episodic memory and our knowledge of the personal past*. MIT Press.
Michaelian, K. (2016b). Against discontinuism: Mental time travel and our knowledge of past and future events. In K. Michaelian, S. Klein, and K. Szpunar (eds) *Seeing the Future: Theoretical Perspectives of Future Oriented Mental Time Travel* (pp. 62–92).
Michaelian, K. (2022). Radicalizing simulationism: Remembering as imagining the (nonpersonal) past. *Philosophical Psychology*, 1–27.
Mullally, S. L., & Maguire, E. A. (2014). Memory, imagination, and predicting the future: a common brain mechanism? *The Neuroscientist*, *20*(3), 220–234. https://doi.org/10.1177/1073858413495091
Perrin, D., Michaelian, K., & Sant'Anna, A. (2020). The phenomenology of remembering is an epistemic feeling. *Frontiers In Psychology, 11*, 1531. https://doi.org/10.3389/fpsyg.2020.01531
Redshaw, J. (2014). Does metarepresentation make human mental time travel unique? *Wiley Interdisciplinary Reviews: Cognitive Science, 5*(5), 519–531.
Robins, S. K. (2017). Memory traces. In S. Bernecker & K. Michaelian (Eds.), *The Routledge Handbook of Philosophy of memory* (pp. 76–87). Routledge. https://doi.org/10.4324/9781315687315-7
Russell, B. (1921). *The analysis of mind*. Routledge.
Szpunar, K. K. (2010). Episodic future thought: an emerging concept. *Perspectives on Psychological Science, 5*(2), 142–162.
Szpunar, K. K., Watson, J. M., & McDermott, K. B. (2007). Neural substrates of envisioning the future. *PNAS, 104*, 642–647.
Teroni, F. (2017). The phenomenology of memory. In Bernecker & Michaelian (Eds.), *The Routledge Handbook of Philosophy of memory.* Routledge. Chapter 2.
Tulving, E. (1985). Memory and consciousness. *Canadian Psychology/Psychologie Canadienne, 26*, 1–12.
Tulving, E. (2002). Episodic memory: from mind to brain. *Annual Review of Psychology, 53*, 1–25.
Urmson, J.O (1967) Memory and imagination. *Mind*, *76*(301), 83–91
Werning, M. (2020). Predicting the past from minimal traces: episodic memory and its distinction from imagination and preservation. *Review of Philosophy and Psychology, 11*, 301–333. https://doi.org/10.1007/s13164-020-00471-z
Whittlesea, B. (1997). Production, evaluation, and preservation of experiences: constructive processing in memory and performance tasks. *Psychology of Learning and Motivation, 37*(08), 211–264. https://doi.org/10.1016/s0079-7421
Whittlesea, B., & Leboe, J. P. (2000). The heuristic basis of remembering and classification. *Journal of Experimental Psychology: General, 129*, 84–106. https://doi.org/10.1037/0096-3445.129.1.84