ARTÍCULO
DE INVESTIGACIÓN

What makes a mental state feel like a memory: feelings of pastness and presence*

Melanie G. Rosen
Trent University, Peterborough, Canada
E-mail: melanierosen@trentu.ca

Michael Barkasi
York University, Toronto, Canada
E-mail: michael.barkasi@gmail.com

Recibido: 30 de septiembre de 2020 | Aceptado: 21 de mayo de 2021
https://doi.org/10.17533/udea.ef.n64a05

Abstract: The intuitive view that memories are characterized by a feeling of pastness, perceptions by a feeling of presence, while imagination lacks either faces challenges from two sides. Some researchers complain that the "feeling of pastness" is either unclear, irrelevant or isn't a real feature. Others point out that there are cases of memory without the feeling of pastness, perception without presence, and other cross-cutting cases. Here we argue that the feeling of pastness is indeed a real, useful feature, and although this feeling does not define memory ontologically, it is a characteristic marker which helps us easily categorise a mental state first-personally. We outline several cognitive features that underlie this experience, including the feeling of past accessibility, ergonomic significance, immersion, objectivity and mental strength. Our account is distinctly phenomenal, rather than doxastic, although our web of beliefs may contribute to this experience.

Key words: memory, perception, imagination, phenomenology

* This work has been funded by Trent University and York University.

Cómo citar este artículo

Rosen, M. G. & Barkasi, M. (2021). What makes a mental state feel like a memory: feelings of pastness and presence. *Estudios de Filosofía, 64,* 95-122. https://doi.org/10.17533/udea.ef.n64a05

ARTÍCULOS
DE INVESTIGACIÓN

Qué hace que un estado mental se sienta como un recuerdo: sentimientos de pasado y presencia

Resumen: La visión intuitiva de que los recuerdos se caracterizan por un sentimiento de pasado, las percepciones por un sentimiento de presencia, mientras que la imaginación carece de cualquiera de los dos, enfrenta varios desafíos. Algunos investigadores se quejan de que el "sentimiento de pasado" no es claro, es irrelevante o no es una característica real. Otros señalan que hay casos de memoria sin sentimiento de pasado, percepción sin sentimiento de presencia y otros casos transversales. Aquí sostenemos que, aunque el sentimiento de pasado no define ontológicamente la memoria, este es de hecho una característica real y útil y, además, es un marcador característico que nos ayuda a categorizar fácilmente un estado mental. Describimos varias características cognitivas que subyacen a esta experiencia, incluida la sensación de accesibilidad pasada, el significado ergónomico, la inmersión, la objetividad y la fuerza mental. Nuestra perspectiva es claramente fenoménica, más que doxástica, aunque nuestra red de creencias puede contribuir a esta experiencia.

Palabras clave: memoria, percepción, imaginación, fenomenología

Melanie G. Rosen is an assistant professor at Trent University, formerly a Carlsberg distinguished postdoctoral research fellow at Aarhus University. Her research takes an interdisciplinary, philosophy focused approach to altered states of consciousness, perception and memory.

ORCID: 0000-0002-7545-5558

Michael Barkasi is a philosopher of perception who works at the intersection of consciousness, dreams, hallucinations, memory, and neural encoding. He is a former postdoctoral research fellow at the Network for Sensory Research (University of Toronto). Most recently, he was an instructor of philosophy and cognitive science at York University in Toronto.

ORCID: 0000-0003-4070-8196

1 Introduction

A sense of presence and pastness, we argue, are key features that, from a first-person perspective, allow individuals to categorise perception, memory and imagination. Here we argue that sense of presence and pastness should be seen as important phenomenal features of our experience rather than what categorise mental states objectively. While several cognitive features, such as how vivid an experience is, have been argued as the main factors that distinguish our mental states, we assess several of them and conclude that it is likely that none are necessary or sufficient. Rather, a cluster of indicators contributes to the sense of pastness for memory, presence for perception and absence of these features for imagination. We discuss how these contributions come together to form our experience.

One might consider that, from the first-person perspective, memory and imagination are very similar. As Debus (2016, p. 136) says, "considered in isolation and from the subject's own point of view, [memories and imaginings] might be difficult to tell apart." In contrast, some consider memory to be phenomenally like perception. Teroni (2017, p. 23) describes remembering as "as if" perceiving again. This suggests that memory, imagination, and perception share a similar set of property experiences (e.g., Byrne, 2010; Hume, 1739; Matthen, 2010; Nanay, 2016b). Whether you visually see, remember, or imagine an object, you enjoy phenomenally similar experiences of a shared set of colours and shapes. Despite this phenomenal similarity, we normally have little difficulty categorising an experience as a memory, imagination or perception. However, we might be confident about a mental state being in one category but be wrong in our assessment. What accounts for this strong sense of distinctness? While one might say that perception is distinct because it involves no "mental imagery",[1] this cannot be sufficient, since we might mistake mental imagery for perception or vice versa. Our question here is how does the individual distinguish between an experience that is produced by mental imagery, be it memory, imagination or perception, which is not a form of mental imagery? Our answer needs to allow for the fact that we may be wrong about our assessment.

There are three main competing accounts of how memory, perception, and imagination are distinguished. The first, following Hume (1739), appeals to differences in how properties are experienced, such as memories and imagination being less "vivid" than perception. The second, found in James (1892), and more recently in Debus (2016),[2] eschews phenomenology altogether. This view distinguishes memory, perception, and imagination via broader beliefs about our own personal narrative or the production of the state. An experience is recognized as a memory when we acknowledge that it's not produced by the current use of our sensory systems and its content fits within

1 See Nanay, B. (2016b) for a counterargument that (much of) perception does involve mental imagery.

2 Perrin et al. (2020, p. 2) cite Redshaw (2014) and Mahr & Csibra (2018) as other defenders of one version of this view. Perrin *et al.* (2020) offer sustained critique of this view.

broader beliefs about our personal past. The third approach says that memories are marked by a feeling of *familiarity* (Russell, 1921) or metacognitive feelings of *knowing* what happened (Dokic, 2014; Perrin, Michaelian & Sant'Anna, 2020). Proponents of this third view often see it as a way of explaining, or cashing out, the feeling of pastness as a metacognitive feeling of familiarity or knowing.

Russell (1921) tentatively proposed that memory is distinguished by a 'feeling of pastness', although this claim may be interpreted in different ways. According to Russell, 'various factors that concur in giving us the feeling of greater or less remoteness in some remembered event' (Russell, 1921, p. 134). One reading of this is that an event can feel more or less temporally distant depending on how long ago it occurred. Our focus here is not the distinction between further and closer temporal events and whether they have a distinct phenomenology[3] but rather the distinction between memory, imagination and perception. As you episodically recall a past-perceived event, it *feels* as if what you are experiencing happened in the past, while imaging and perceiving lack this feeling (see also Matthen, 2010; Perrin *et al.*, 2020; Tulving, 1985). In contrast, what you perceive, but not what you imagine or remember, feels both temporally and spatially *present* (Dokic & Martin, 2017; Matthen, 2005; Windt, 2018). We argue that this picture is not entirely correct; however, the sense of pastness describes an essential aspect of human cognition regarding what it's like to experience memory.

While we argue that the feeling of pastness is a real and important feature of our mental lives, appeals to feelings of pastness and presence have been challenged from two angles. First, Byrne (2010) and Debus (2016) argue that talk of a "feeling of pastness" is mysterious, dubious, or not reflective of anything introspectively found when remembering. Here we respond to these challenges, arguing that the feeling is pastness is a real aspect of remembering. Second, Nanay (2016b) maintains that imagination can involve the feeling of presence. More broadly, supposed feelings of pastness and presence seem to crosscut the divides between memory, perception, and imagination: some perception lacks the feeling of presence, or some memory lacks the feeling of pastness.

We agree that the feelings of pastness and presence neither *define* memory, perception and imagination nor objectively distinguish these experiences. There are too many plausible counterexamples to specify these features as necessary or sufficient conditions.[4] However, we argue they are important aspects of experience that in normal circumstances, are how we categorize each state from a first-person perspective[5] although these feelings can be misleading. The feeling of pastness is what makes a memory —or a false memory, for that matter— feel like a memory. We further

3 This is certainly an interesting feature deserving separate analysis.

4 Perrin *et al.* (2020) also discuss the feeling of pastness without presuming that it's necessary or sufficient for memory (assuming only that it's characteristic of memory).

5 Fernández (2020, p. 288) makes a similar claim, but further ties the feeling of pastness to how memories *entitle* us to believe their contents. We do not think the feeling of pastness can do quite that much epistemic, justificatory work.

articulate an explanation of the feeling of pastness as a distinctly phenomenal feeling that is the consequence of the coming together of several cognitive markers. These include spatiotemporal feelings of past embeddedness, objectivity and ergonomic significance (Matthen, 2005), that is, the urge to flinch from objects that might hit you and a feeling that nearby objects can be grasped as well as mental strength, our web of beliefs and probability weightings. This is in contrast to recent work analysing the feeling of pastness as an *epistemic* feeling; of familiarity or knowing (Dokic, 2014; Perrin *et al.*, 2020). We go on to discuss how this feeling of pastness is related to vividness (Hume, 1739) or 'mental strength' (Morales, 2018) and metacognitive beliefs (Debus, 2016; James, 1892).

We begin in section 2 by setting out some of the difficulties determining mental states from first and third-person perspectives, then focus in on relevant philosophical debates in section 3. Then, we analyze the plausibility of the sense of presence and pastness in sections 4 and 5 respectively. After arguing that a cluster of phenomenal and cognitive features likely together contribute to the feeling of pastness in section 6, we evaluate several specific features, including mental strength and belief states. We make the case that 'mental strength', a contested feature, is likely relevant to the sense of pastness. We then argue that a doxastic account of the sense of pastness is not plausible, although belief states likely contribute to the experience.

2 First-personal and third-personal investigations into mental states

When discussing memory, we focus on what is normally called *episodic memory*. When you remember an event, you call to mind a previous experience. This act of episodic remembering strikes you as a reliving or "re-experiencing" of the original experience (Tulving, 2002). During the initial perceptual experience, it introspectively felt as if your experience was presently unfolding before your eyes. You can also close your eyes and imagine an event. These are the sorts of paradigmatic cases we have in mind.

At first glance, it seems that we should simply be able to consult our own experiences to answer what it's like to remember. Historically, introspection has been taken to be reliable, if not infallible (Augustine, 1998; Descartes, 1998; Dretske, 1994). Schwitzgebel (2008) notes, however, that introspection can be unreliable, and we are in fact much better at determining what experiences represent than we are at assessing the experience itself. We can easily, quickly and accurately determine that a tree in front of us has green leaves but trying to determine the nature of this representation —say, what exactly makes it perceptual instead of imagistic— is more difficult. The reliability of introspection seems to depend on the circumstances (Overgaard & Mogensen, 2017) and can be improved with training (Bitbol & Petitmengin, 2013; 2016; 2017), but this alone appears unable to get at what distinguishes paradigm cases of perceiving, remembering, and imagining.

Although we find it easy to categorize mental states when they occur, individuals give different answers regarding what these states are like. People disagree on whether there is a clear distinction in vividness and detail between perception, memory and imagination, for example. This difference in opinion may reflect individual differences in the experience itself. For example, there is broad interpersonal variety in imaginative experience, ranging from complete lack of ability to visually imagine (aphantasia) to highly vivid and realistic imagining (hyperphantasia) (Thomas, 2014; Whiteley, 2020). This may also apply to memory, where people with highly sophisticated autobiographical memory (Palombo, 2018) have much more detailed recall experiences, although it is unknown whether this equates to increased vividness or hallucination-like experience (LePort, Stark, McGaugh & Stark, 2017; Patihis, Frenda, LePort, Petersen, Nichols, Stark, McGaugh & Loftus, 2013). However, considering theorists widely disagree on the phenomenology of these states, neither individual introspection nor empirical analysis has settled the issue.

Aspects of perception can be completed by memory or even imagination. This is important as, although we want to set out what makes it, in most circumstances, easy to categorize a mental state, our confidence about these states does not guarantee accuracy. An example of this is the case of apparent colour perception in the peripheries. Peripheral colour cones are not densely packed enough for vivid or perhaps any colour representation (Mather, 2016), although vivid colour appears to be there, and individuals confidently report perceiving colour. When the eyes saccade to foveate on different parts of the visual scene, this may allow for information about the colour of objects in the peripheries to be stored in memory that is then experienced as perceived colour; a top-down cognitive process that might partially explain the apparent colour (Anstis, 2010). However, we seem to experience colour in patches of the visual field that we did not yet saccade to. Thus a predictive processing explanation in which the mind predicts, or in some sense *imagines* what colour might be there in order to fill in the missing information (Butz, 2017) may also explain part of the experience. Assuming memory, imagination and perception are phenomenally distinct, both explanations involve introspective error. In the first, memory is confused with perception. Further, the illusion does not dissipate when we foveate on one area for an extended period of time. The predictive processing explanation error involves failing to distinguish imagined from perceived colour, and we strongly believe what we are experiencing is perception.

An alternative to introspection is which third-personal methods which analyze mental states. Memory, perception and imagination are deeply intertwined neurobiologically and cognitively (Bone, Ahmad & Buchsbaum, 2020; Horikawa, Tamaki, Miyawaki & Kamitani, 2013; Horikawa & Kamitani, 2017a; 2017b; Penfield & Perot, 1963; Schacter & Addis, 2007). For example, emotional memory overlaps with emotional processing (Arntz, de Groot & Kindt, 2005) and imagining bodily motion, such as playing sports (Mizuguchi, Nakata, Uchida & Kanosue, 2012), has several shared mechanisms with

perceiving. This neural overlap may explain the phenomenal similarities mentioned earlier; however, it cannot help to ascertain that there is no phenomenal difference —we can question whether technology will ever be able to answer questions about phenomenology, but this matter aside, our current neuroimaging technology and methods are certainly insufficiently fine-grained to be able to, say, read perceptual states from brain images. Even if we develop sufficiently fine-grained neuroimaging technology, methods and understanding of neural mechanisms, significant differences between individuals' neuroanatomy and between tokens (Elliott, 2020) may mean that the technology will never be sufficient for determining the phenomenology of these states. Neural and phenomenal overlap does not preclude characteristic phenomenal features by which normal, paradigm cases of imagination, memory and perception are distinguished (Perrin *et al.*, 2020). In typical cases, from a first-person perspective, we often easily make such separations, although when asked to introspect or look to the brain to determine what makes them different, we find no clear answer. The ability to first-personally distinguish mental states is our focus here, even though this ability does not solve the difficult issue of how to define such states; we allow that our first-person categorisations can be wrong. In the following, we outline some of the philosophical debates surrounding this issue.

3 Mental images and experiences

The phenomenology of memory, imagination and perception has brought about much debate amongst philosophers. Here we situate our view in relation to other theorists. Going back to at least Hume, memory and imagination, but perhaps not perception, have been considered experiences of so-called "mental images". We agree with Husserl's point that when we remember and imagine, we don't experience pictures *in the head* but we experience the images as if they are of objects that are *out there* (Jansen, 2010). An imagined tree isn't represented as being inside your head. Just as with perceiving, you experience a tree as somewhere in the distance. You *could* imagine a tree literally growing in your brain, but this is not usually what is meant. Relatedly, it's widely held now by philosophers, and we agree, that imagination and memory share temporal and spatial dimensions with perception (Byrne, 2010; Teroni, 2017). All of these types of experiences have a particular first-person perspective from which you experience items or scenes. Husserl (1975) suggests that we imagine and remember objects not by "conjuring up mental images, which would represent those objects, but by simulating experiences of that object" (Jansen, 2010, p. 144).

Following Husserl, contemporary philosophers widely hold that the *content* of perception, memory, and imagination largely overlaps (e.g., Byrne, 2010; Matthen, 2010). While the content might typically vary in terms of detail or "vividness", more or less the same objects and properties could be experienced from the same spatial

perspective. There need not be anything fundamentally different about what it's like to experience the relevant properties, such as colour and shape regarding vision or timbre and pitch regarding audition, when perceiving, remembering or imagining, although such elements, we argue, on average differ. We think that these differences form part of what leads to our experience as memory, imagination, and perception feeling so distinctive.

In our view, these features come together to form important phenomenal differences: a feeling of pastness, presence or lack of these features. However, these phenomenal features themselves do not form part of the content of the experience. Husserl suggests that what distinguishes perception, memory, and imagination is a certain mode. Imaginative experiences are in a mode of 'inactuality' or 'irreality'. We think this idea of a 'mode' is a plausible way of describing the senses of pastness and presence. For Husserl, the content of imagination, memory and future prospection are all forms of quasi-perception whereas for perception, "the object appears to us, so to speak, 'in person,' as itself present" (Husserl, 2006, p. 18). Imagination lacks this feature, appearing "as though it were there, but only as though" (Husserl, 2006, p. 18). This brings up an important distinction between content and mode, or content and attitude (Matthen, 2010). When you remember last night's sunset, in our view, the feeling of pastness isn't a property, such as 'colour', that your memory attributes to the experience. Rather than the feeling being part of the content, it is part of the way the content is presented.[6] Similarly, Arcangeli (2020) notes that it is important that we don't mistake the content of mental imagery with what she refers to as an "attitude" of mental states where "the attitude is how a mental state represents, the content is what a mental state represents" (p. 307). We think that the sense of pastness and presence are modes or the "how" of presentation rather than part of the content of experience. Our goal here is to not only argue for the plausibility of these modes as key features but also to cash out what accounts for them.

Although it's intuitive to say that imagined objects are experienced as merely *possible* occurrences, here we side with Byrne who thinks this is wrong. According to Byrne, "what 'appears to be so', when one imagines a purple polar bear, is that purple polar bears exist, not (merely) that they could have existed. (Of course, one will not believe that things are as they appear)" (Byrne, 2007, p. 135). While we agree that the occurrence of the imagination of the bear appears to be so now, an extra layer is added for objects of memory, the sense of pastness, and perception, sense of presence. You might suggest that when we remember past events, just as with imagination, we experience them *as happening* –we experience, or at least *re-experience* (Tulving, 2002) them as happening now– not as *having happened*. The replaying of the memory of last night's

6 Dokic (2014) and Perrin *et al.* (2020) outline views where the feeling of pastness is a metacognitive element that is not part of the content, nor the attitude taken toward that content, but results from monitoring the memory. In our view, there are a series of components beyond these features, such as mental strength, that are plausible components that are causal factors that lead to a feeling of presence.

sunset or imagining a purple polar bear is experienced as occurring in the *present*. In our view, while the contents of the mental state of all three, perception, memory and imagination, do feel as if they are happening now, only the events represented by the mental states of perception appear as if they are currently occurring, only they have the sense of presence. These features are lacking in imagination. How do we then distinguish between, say, imagining something currently occurring or imagining something happening in the past? Imagination lacks these senses of pastness or presence, as we argue, otherwise, it could be mistaken for perception or memory. The distinction between imagining something currently occurring or having occurred might be distinguished by, say, doxastic features; beliefs about what the imagined scenario would be like or would have been like. We discuss why doxastic features are not plausible for the key distinction between memory, imagination and perception in section 8. However, first, we will formulate our account of the relevant feelings.

In order to argue that the senses of presence and pastness are important features of our mental life, we will discuss each in turn. We turn to an account of presentness first, which is, perhaps, more widely accepted than the feeling of pastness. The key features of presentness will help explain some of the similar features of pastness.

4 Feeling of presence

Perception is often said to be accompanied by a 'feeling of presence', that objects and events are experienced as occurring *here and now* (Dokic & Martin, 2017; Matthen, 2005; Windt, 2018). As Dokic & Martin (2017) point out, it's been noted at least since Husserl that perceptual experience strikes us, introspectively, as if we are experiencing the present environment around us. We argue that this sense, and the sense of pastness, are not in fact too mysterious to be useful (Byrne, 2010; Debus, 2016): they are helpful for distinguishing mental states from the first-person perspective.

Let's say you are walking through the forest, perceiving the trees surrounding you. This feeling has several dissociable components. First, you feel immersed, that you are *in* a forest rather than looking *at* it (Revonsuo, 1995; Windt, 2010) as you would if you were looking at a picture of a forest or imagining being in a forest. Second, objects feel ergonomically significant: You can reach out and grab a tree branch and feel the need to duck out of its way as you pass. Third, there is the feeling of objectivity or reality, that perceived objects, trees, rocks and so forth, unlike, say, phosphenes, are mind-independent (Siegel, 2006). Fourth, perceptual experience of objects strikes us as 'accessible': our own body movements as we walk around a tree can bring new, previously unseen, parts into view (Noë, 2004).

While everyday perceptions often involve all four components of the feeling of presence, unsuccessful perceptual experiences or hallucinations may lack some of them while maintaining others. We might assume that dreams, immersive hallucinations,

or sensations brought about by artificial sensory stimulation would involve the full feeling of presence, but this is not always the case. A dreamed forest may seem underrepresented, vague and unstable. Memory-based hallucinations induced by direct temporal-lobe stimulation during clinical seizure interventions seem to lack important components. Penfield and Perot (1963) report that patients who had audiovisual hallucinations during surgery never lost track of the actual operating room, nor mistook their hallucinations for real perception or felt an urge to interact with them, suggesting a lack of ergonomic significance. The common description of these hallucinations as "dream-like" suggests they lacked the felt sense of objectivity. Penfield's patients often reported auditory hallucinations that sounded as if they were heard through a telephone or radio, suggesting inaccessibility.

Still, these temporal-lobe hallucinations seem to at times involve the feeling of immersion. One of Penfield's patients reported that "I see the people in this world and in that world too at the same time" (Penfield & Perot, 1963, p. 679), suggesting that they felt immersed in both their genuine perceptual and hallucinatory experiences. Revonsuo (1995), Windt (2010) and Metzinger (2009) have argued that dreams also involve the feeling of immersion, although it's plausible that many dreams lack this and other components of presence (Barkasi, 2020a; 2021; Rosen, 2013; 2018b). Dreams that occur in non-rapid eye movement sleep (NREM) are likely to be more imagination-like than hallucination-like (Rosen, 2018a; 2019) with rapid eye movement sleep (REM) dreams usually described as more immersive and multisensory (Schredl, 2018). However, there is disagreement about whether any dreams should be described as perceptual (Ichikawa, 2008; 2016; Ichikawa & Sosa, 2009) or if so, whether they are convincing, real world-like hallucinations (Noë, 2007). Typical imagination, closing your eyes and visualizing a red apple, lacks *all* of these components (Dokic & Martin, 2017; Matthen, 2005). It is plausible that many drug-induced, Lilliputian, and visual-release hallucinations also lack them, given that they are often described as seeing a strange object floating in the visual field, but not seen as out in the world (see the descriptions in Ffytche, 2013). If waking hallucinations and dreaming were a form of imagination (e.g., Allen, 2015; Ichikawa, 2008; 2016; Ichikawa & Sosa, 2009; Nanay, 2016a), we would expect a strong overlap with typical imagination, lacking a sense of presence.

Perception may not involve all aspects of the feeling of presence, even in successful, veridical cases. For example, mountains seen in the far distance are not experienced as ergonomically significant or accessible via small bodily movements. One could argue that the experience *as a whole* is still immersive since the mountains are only a far-away part of the visual scene that you are immersed in, but elements of the visual scene can certainly feel more or less present. Some types of virtual reality (VR) may be good examples of perceptual experiences lacking the feeling of immersion and reality. Generating these feelings is a major aim of VR (Grassini & Laumann, 2020; Sanchez-Vives & Slater, 2005), but bad setups fail in this goal. Thus, causally deviant situations

in which the normal perceptual flow of information is disrupted can break the feelings of immersion and reality in an otherwise successful or genuine perceptual experience.

Experiences of real sensory stimuli can therefore lack the feeling of presence, while aspects of the feeling of presence can be involved in imagination. So, the feeling of presence isn't fundamental to perceptual experience. It is more plausible to say that the feeling of presence is what makes perception feel like perception *rather than* what in fact makes an experience perceptual, and, further, causes us to mistake other mental states for perception. A perceptual experience that somehow loses its sense of presence remains perceptual but may register, from the first-person perspective, as imagination.

The sense of pastness, like the sense of presence, is not a part of the content of memory but rather a mode under which this content is experienced. In contrast, there are a separate set of cognitive features that distinguish a sense of pastness from a sense of presence as we discuss in the following section.

5 Feeling of pastness

Understanding the elements of the sense of presence from the previous section will help to understand the sense of pastness. Tulving's (1983) talk of "autonoetic consciousness", the view that there is a "special kind of consciousness that allows us to be aware of subjective time in which events happened" (Tulving, 2002, p. 2) evokes a similar idea to the feeling of pastness. Some theorists deny that the sense of pastness is a phenomenal feature of memory (Byrne, 2010; Debus, 2016), although we take a different view on this; sense of pastness is what makes a mental state feel like memory. We have two goals here, firstly to argue that this feeling is what makes it so easy for us, from a first-person perspective, to class a mental event as a memory. This contrasts with views that deny the relevance of a feeling of pastness all together (e.g., Byrne, 2010, Debus, 2016) and those that consider feeling of pastness as a defining feature of memory, say, under a non-factive view of memory (Fernández, 2019). This is because we want to allow that individuals can mistake other experiences for memory, which, for us, is a more plausible explanation of how mental states overlap and interrelate. A misplaced feeling of pastness is, in our view what explains this mistaken identity. The feeling of pastness works as a useful heuristic, although it is not always accurate. This also explains the common occurrence of knowing a mental event is not a memory but feeling that it is. Realising that an event did not occur does not dispel the feeling of memory precisely because such beliefs do not dispel the feeling of pastness. Our second goal is to evaluate possible cognitive features that underly the sense of pastness. This is discussed in detail in the following sections.

As the sense of presence, the sense of pastness, when considered as a mode of presentation, is not a mysterious feature. When remembering walking through the forest, the scene has a sense that it *was* immersive. It feels like if you *had* moved

in a certain direction, the backs of objects would have been accessed. The objects *were* ergonomically significant but no longer are. Might a memory instead involve a current sense of ergonomic significance? When remembering turning a light on and thinking about turning it off again, the light remains there to be manipulated, and perhaps *feels so*.[7] We think that there is a sense in which ergonomic significance is maintained but altered. Now the switch feels present but, say, in another room, not in front of you as represented in memory. The light switch feels *reachable* only by walking back to the other room, not reachable in your *peripersonal space*. If it was represented as reachable, the experience might be misinterpreted as perception, a hallucination. There might be some overlap if you switched on the light then closed your eyes and remembered the light switch. The switch does feel present because you could reach out and touch it, but the memory of it has a sense of pastness. There are some complexities, but these senses aren't truly mysterious. Another important issue is that these senses do not necessarily accurately determine the mental state, they can lead to miscategorising.

We can mistake memory for imagination when it lacks a sense of pastness, or, perhaps less commonly, mistake memory for perception (Barkasi, 2020b) or imagination for perception. For example, imagining a grating at a specific orientation makes subjects more likely to report detecting that grating (Dijkstra, Mazor, Kok & Fleming, 2021). This, in our view, is explained by the image gaining a sense of presence due to relevant cognitive features going awry. What makes imagination feel different from perception and memory is that it lacks a sense of presence or pastness but since there are overlapping cognitive attributes, they can be confused. In our view, a memory that loses its feeling of pastness remains a memory but is experienced as imagination whereas if a sense of presence is gained, it would feel like perception but not be ontologically classed as such. Further, the phenomenal features of any particular memory, perception or imagination may differ depending on the individual and circumstance. It is likely that some or all of these features lie on a spectrum so that, like vividness, past ergonomic significance can be more or less intense, one might have a stronger or weaker sense of *having been* immersed, and so on. These mental features may not 'carve nature at its joints', yet the clear sense of pastness and presence or absence thereof may often make it very easy for an individual to feel that "this experience is a memory".

If sense of pastness is what makes a mental state feel as it does but does not define memory, this is consistent with empirical findings that suggest that presentness and pastness cross-cut the lines between perception, memory, and imagination. Nanay (2016b) denies that the feeling of presence distinguishes perception and imagination since certain imaginative experiences can involve the

7 Thanks to a reviewer for this example.

feeling of presence. Similarly, Debus argues that "one might plausibly suggest that there are at least some cases of R-memory[8] which are not accompanied by relevant feelings [of pastness], and one might well come to hold that subjects do not usually experience any relevant 'feelings of pastness' when they R-remember" (Debus, 2016, p 138). We agree that the feelings of presence and pastness can come apart from perception and memory. But from this, we should neither infer that there are no feelings of pastness or presence, nor that these feelings fail to serve as markers for the mental state types.

The feeling of pastness is not what makes an experience a memory but only what makes it feel as such. An experience of imagination may still involve some, but not all or at sufficient intensity, components of the feeling of presence or pastness, but by passing a threshold can be mistaken for another mental state. Any state may be falsely classed as a different type. These feelings, however, are generally useful heuristics that lead to easy categorisation but can be cognitively superseded, e.g., by evidence that their 'memory' is false.

In contrast, it might be argued that imagination that gains a sense of presence should then be *classed* as hallucinatory perception, or that experiences lacking the feeling of pastness are no longer memories. We find this implausible, as it requires radically redescribing or re-taxonomizing all the cases discussed above. We think a broader criterion of mental state types which considers phenomenology, neurobiology, functional role, and causal-contextual-etiological factors should be adopted. How these come together is an important issue for further research. If an experience is produced from a memory trace with causal origins in a past event but lacks a sense of pastness, we would still call this a memory.

Our view is compatible with contemporary constructivist and anti-causal views of memory (De Brigard, 2014; Michaelian, 2011; 2016; Robins, 2019; Sant'Anna & Michaelian, 2019; Sutton, 1998). It's not etiology alone which defines memory, but some mix of etiology, neurobiology, functional role, and phenomenology. We assume that even constructivists will agree that there's more to what makes a state a memory than just its phenomenology. We do, however, want to allow for a classification of 'false memories' that are *not* memories but, instead, are other types of cognition mistaken for memory. This contrasts with Fernández's (2019) non-factive approach, according to which false memory is a type of memory because the term 'false memory' does not seem to be "a deviant use of the term "memory." Which it should, if "memory" was factive" (Fernández, 2019, p. 3). Under a non-factive view, memory ontology *could* be determined by phenomenology; mental states that feel like memories, *are*. The sense of pastness could be the defining feature. We, however, think it is more

8 'R-memory' is Debus' term for 'recollective memory', or a memory with an experiential component, as contrasted with mere propositional recall.

plausible that false memories can be miscategorised imaginations, as we discuss further in the following.[9]

Perhaps here there is only disagreement in approach, as Craver's (2020) suggests. The empirical approach takes memory to be fallible while the epistemic approach takes memory to be a way of accurately representing the past and gaining knowledge about it. If, however, we can be wrong about introspection, even under an empirical approach, it is still possible to be wrong about memory under a memory-as-phenomenology view. We might, in a difficult case, introspect and make a wrong assessment about the phenomenology of the mental state, assessing that 'this feels like it happened in the past' when it does not. If phenomenology picks out the type of mental state but we can be wrong about phenomenology, we can be wrong about the mental state type.

We find it more plausible to deny that false memory is a type of memory. The sense of pastness generally does a good job at helping us to be in touch with the past; picking out mental events that involve mental time travel (Barkasi & Rosen, 2020). We can, however, mistake imagination for memory when the sense of pastness is associated with the wrong type of mental event. On the other end of the spectrum, however, we might even be wrong about a feeling of pastness, a mistake made through faulty introspection, leading us to be wrong about something even feeling like a memory.

One issue is that perception, memory, and imagination overlap and intermingle in a way that conflicts with distinct phenomenology. In Levy's (2012) interpretation of Sartre, memory "supplies materials" to imagination and "imagination shapes our memories" (p. 156), which is plausible given that imagining a face is informed by our memory of what that face looks like and that memory is always, to a certain extent, reconstructed using imagination (Sutton, 1998). While plausible in terms of the intertwining of cognitive features, Levy (2012) goes a step further to argue that "imagination and memory cannot be separate from each other" (p. 156). We think that, although imagination and memory can be mistaken for each other, there are clear phenomenal features that make them usually easily distinguishable from a first-person perspective yet which cannot be used to categorize them ontologically.

Now that we have set out sense of presence and pastness as modes of experiencing mental content, we argue in more detail why several of the cognitive features discussed by other theorists should be seen as part of a cluster of indicators that comprise these senses. These lead to an experience having a mode of presentness, pastness or lacking either feature.

9 False memories are presumably cases of imagination confused for memory. If hallucination is a form of imagination (e.g., Allen, 2015; Nanay, 2016a), then it's a case of imagination confused for perception. For example, failure of self-monitoring can lead to mistaking internal monologue for voices in schizophrenia (Bob & Mashour, 2011). The famous Perky experiment involved perception being confused for imagination (Perky, 1910).

6 Causal factors of pastness and presence

Previously we responded to those who argue that pastness and presence are too mysterious to be useful (Byrne, 2010; Debus, 2016) by analysing these concepts. Now we discuss what causal factors might lead to these senses.

6.1 Basic phenomenal and cognitive features

We think that several more basic phenomenal and cognitive features contribute to the sense of pastness. For example, a feeling of familiarity (Dokic, 2014; Russell, 1921) may be part of the experience. 'Mental strength', a much-contested aspect of experience, may also contribute while not being the key feature that distinguishes mental states. To explain, a mental state might have a stronger sense of pastness, thus feel more like a memory, if it is more vivid than the average imagination and less than the average perception. We may associate recalled events with being less vivid due to the passage of time as objects that are spatially further away are also less vivid.[10] Should older memories, therefore, have less of a sense of pastness? There may not be symmetry between presence and pastness in this regard, as it seems that although objects that are spatially further away feel less present, objects temporally further may not feel 'less past' but just 'further past'. However, it is likely that often, older memories do become ambiguous and lose vividness; it then becomes harder to discern whether a memory from long ago is a memory or simply imagined. Further, a background web of beliefs may contribute to the feelings of presence and pastness. We discuss mental strength in more detail in section 6.2 and beliefs in 6.3.

A good analogy for this 'multiple indicators' model is how a cluster of 'clues' contribute to a sense that a perceived sound emanated from a particular direction. These include time lag, distinct volume and quality of sound between ears as well as cues from other senses such as vision (Mather, 2016). From a first-person perspective, we cannot specify *why* a sound seems to emanate from a direction —some features are not consciously detectable, such as the imperceptible difference in volume between ears, and others go unnoticed. Yet together, these features bring about the phenomenal feel of the sound coming from *over there.* Similarly, we might not be able to consciously distinguish between the vividness of memory and imagination, but they may contribute to the sense that an experience comes from the past from below the level of awareness.

10 Memories may also have a sense of *having been* more or less vivid. If remembering a hazy or unvivid perception, that original experience will likely carry forward to the experience in the sense that the memory is of a perception that was hazy. An interesting attribute here is that in memory, detail could be added via imaginative filling in, making the memory clearer than the perception, but we discuss this issue in the following section.

Experience results from noisy and ambiguous input (Pizlo, 2001). Perception, memory, and imagination fill in for each other and intermingle (Pelaprat & Cole, 2011) such that our general experience relies on each capacity functioning well (Mitterer, Horschig, Müsseler, & Majid, 2009). This can cause errors, such as occurs with hypervigilance; misinterpreting neutral, ambiguous stimulus as being threatening due to memory or preconceptions (Kimble, Boxwala, Bean, Maletsky, Halper, Spollen & Fleming, 2014).

If filled-in detail and perceptual detail are indistinguishable, perhaps this simply is what perception *is*—combined sensory feedback and top-down modulation intermingling with gap-filling that draws on memory and imagination (Albright, 2012; Penfield & Perot, 1963). If experience is just intermingling of sources and cognitive features, then the *ontological* boundary between memory, perception and imagination becomes less clear. But this ontological messiness is consistent with overall distinguishable feelings of presence and pastness. These feelings often seem to supervene on diverse mixtures of neurobiological machinery, cognitive and phenomenal features. Despite the cognitive intermingling, there does seem to be a clear sense of presence assigned to certain mental states and pastness to others. It is plausible that this is an outcome of the weighing up of these features, many of which work as cues that are below the level of conscious awareness.

We conclude that the feelings of pastness and presence are phenomenal markers of, respectively, memory and perception, while imagination lacks these features. This is consistent both with the fact that some tokens of memory and perception, typed by a more holistic criterion including etiology, neurobiology, and functional role, lack these features. It's also consistent with the intermingling of perception, memory, and imagination state types. In the following, we focus more specifically on the relevance of two different potential cognitive contributors, mental strength and beliefs.

6.2 The contribution of mental strength

Historically, vividness, clarity, detail, intensity, strikingness and other features described under the umbrella of 'mental strength' by Morales (2018) have been taken as markers of mental state type. Hume famously proposed a difference in the degree of "vivacity". While memory "retains a considerable degree of its first vivacity, and is somewhat intermediate betwixt an impression and an idea", imagination "entirely loses that vivacity, and is a perfect idea". Perception is more vivid than imagination and memory, although he acknowledged that this didn't hold true for each occurrence of a mental state (Hume, 1739, II:5).

These features are generally rejected by modern researchers as *fundamental* distinctions (Debus, 2016; Teroni, 2017), while others reject their coherence entirely (Kind, 2017). Perceptual experiences of properties can be quite "dim", while memory

Estud.filos n.º 64. Julio-diciembre de 2021 | pp. 95-122 | Universidad de Antioquia | ISSN 0121-3628 | ISSN-e 2256-358X
https://doi.org/10.17533/udea.ef.n64a05

and imagination experiences can be hyper "vivid" (Perky, 1910; Thomas, 2014). We deny this wholesale rejection, however. Mental strength likely relates to the feelings of pastness or presence. While some perceptions can be dull and some imaginations vivid, generally imagination is less vivid than perception. The presence of an object allows visual and other sensory exploration and details are made available to attention. In contrast, imagination is more likely to be under-represented, that is, an imagined scene may lack detail or objects. The mental effort required to vividly represent, say, imagining walking down the street with the level of detail and complex interaction of multiple senses that occurs in perception, requires significant cognitive resources. Since the experience is generated by the mind, whereas perception involves taking in sense data from the surrounding environment, it is difficult, if not impossible, to imagine a scene with as much detail as a perceived scene. Memory may be more vivid on average than imagination since representations are to an extent retrieved from memory traces rather than generated. Just noticeable difference, a major foundation of cognitive science of perception (Mather, 2016), shows that we can distinguish between different subtle features of weight, illumination, saturation and so forth. We can also judge if something appears more or less blurry, saturated and detailed. Judgments about features of perceived objects tend to be more reliable than introspective judgments. There certainly seems to be *something* to talk of mental strength. Mental strength may, *in part*, furnish what makes mental states, as previously discussed, so easily distinguishable from the first-person perspective in most cases.[11] This is supported by the fact that mental strength can make real objects feel more or less present.

A strong image can be more intense than a relatively weak perception. Vision in low light, mist, in the distance, for someone with poor eyesight or any of the many circumstances where vision is impaired are examples. A perceived object might be indistinguishable from an image in extreme circumstances, although we might still be able to distinguish perception from imagining or remembering despite not knowing what it is we are looking at. Relevant cognitive features likely contribute to a threshold of sense of presence where one will confidently state that an experience is perceptual. Less presence leads to less confidence. Someone who enters a room without their glasses on might find that the blurry objects feel *less present* than when they later don their glasses. A blurry colour patch can be indistinguishable from an after-image. One could argue that, in contrast, when a person takes off their glasses and their vision becomes blurry, objects to them *don't* lose their sense of presence, they retain the sense that they are there but just look blurry.

11 Interestingly, a virtual reality environment of textureless line drawings can elicit the same physiological responses as one with more detailed, realistic renderings (Sanchez-Vives & Slater, 2005). This shows that some mental strength markers, like detail, don't correlate well with the feeling of presence (which itself seems to be part of how we normally distinguish perception from memory and imagination).

This could be a case of memory or imagination making up for the lack of detail, allowing for sense of presence to remain stable. When observing the face of a loved one very briefly, details such as the small mole on their cheek may be filled in as we fill in the colour in our peripheries. Remembering the detail of a well-known object might assist in maintaining its sense of presence. Blurry objects may also have less of a sense of availability and accessibility since it is unclear how the object can be interacted with, but changing one's perspective may disambiguate the object, increasing accessibility and ergonomic significance. Similarly, when one is trying to remember what happened at lunch yesterday, imagination may help fill in the blanks while perception, let's say, being in the same room that one was in during that lunch, may fill in some of the details that weren't originally remembered. It is likely that particular aspects accounting for the experience are often unknown by the individual undergoing the experience.

What is required to pass a 'presence' or 'pastness' threshold likely differs between individuals. Individuals with poor eyesight may adapt to rely less on mental strength, depending more heavily on other features to attain a sense of presence. Further, someone who closes their eyes might feel that an unseen object is still present. It can be argued that presence is related to mind independence, however, if one has their eyes closed and is told there is an object in front of them, this may not have the same sense of presence even if the belief is formed that there is indeed an object there.

So, it is likely that belief in a mind-independent object can add to a sense of presence but is not sufficient. If it is possible for a realistic hallucination to involve a sense of presence, as may be so for lucid dreams, where the dreamer realises they are dreaming (LaBerge, 1981), then belief of mind-independence is not necessary either. Mental strength is likely a part of a cluster of causal features that make an experience feel the way it does and thus should not be overlooked.

A final feature we analyse as part of the indicators that lead to experiences of pastness and presence is belief states. In the following, we argue against a doxastic view of the distinction between imagination, perception and memory, but note that beliefs play an important role in our experience.

6.3 The relevance of belief to phenomenology

An alternative view to ours that comes from James (1892) and other contemporary theorists (e.g., Debus, 2016), is that memory is distinguished from imagination via biographical knowledge, a broader set of beliefs rather than phenomenology. Your current experience might match your beliefs about an event from the past, and not your belief that, say, you're now sitting at home. On that basis, you infer that the experience is a memory. In contrast to doxastic views of experience, in our view, the sense that something is a memory does not depend on beliefs about the actual presence of the experienced scene, but beliefs may be relevant to the sense of pastness. Just as I

continue to see an illusion despite knowing that it is an illusion, a hallucination could have a sense of presence despite the viewer knowing that it is unreal.

Belief is likely relevant to the experience of memory and may modulate phenomenology. While holding a specific belief does not usually alter phenomenology, the right *network* of tacit beliefs might contribute towards probability weighting that induces the feeling of pastness described above. Higher-order processes modulate and alter lower-level ones. For example, probability weighting can affect whether a concave mask is seen as convex (Corlett, Taylor, Wang, Fletcher & Krystal, 2010). While one's current belief that the mask is concave does not cause it to appear concave, a tacit web of beliefs that faces are convex may contribute to the illusion. Probabilities relating to the context of an image can also affect the perception of its colour, as occurs with 'the dress' illusion, which some see as blue and black and others as white and gold (Handel, 2019) or with sound, as with the McGurk effect (McGurk & MacDonald, 1976), where seeing a mouth move a certain way alters how an ambiguous word sounds. This does not mean, however, that the content is not itself phenomenal. Belief or probability weighting may intensify the experience by heightening the related phenomenal attributes such as current or past embeddedness, accessibility and mental strength. "Presentness" and "pastness" describe an experiential mode rather than doxastic formation although they may be modulated by one's web of beliefs or probability weightings. For example, the top-down modulation that leads to 'the dress' being either black and blue or white and gold occurs without explicit awareness of a belief about background luminosity. Individuals are surprised to find that others see the dress differently and the explanation about interpreted context is not obvious. Beliefs and phenomenology about our experience of an object being *present* or *in the past* seem hard to disentangle. While beliefs can influence phenomenology, it is plausible that the feeling of presentness or pastness can lead to the formation of belief, say, about the veracity of the experience and when it occurred.

Importantly, beliefs and feeling here are dissociable. We can phenomenally feel as if what we're experiencing is present or past without believing it is, and vice versa. For example, while lucid dreaming, realising that one is dreaming doesn't necessarily make the phenomenology less realistic (Metzinger, 2003; Revonsuo, 1995). In fact, some describe lucid dreams as being more vivid and realistic than non-lucid dreams (LaBerge, 1985; 2000), although this may be due to other cognitive attributes such as increased attention and memory (Filevich, Dresler, Brick & Kühn, 2015; Voss, Schermelleh-Engel, Windt, Frenzel & Hobson, 2013). That is not to say that lucidity cannot or never dispels the sense of presence, just that there isn't a necessary or tight connection between the two. This view leaves open the disjunctive interpretation that hallucinations, although convincing, are only perceptual from the first-person perspective but are not in fact perception. This would be analogous to considering false memories as non-memories.

Similarly, a VR experience can and often does successfully induce a feeling of presence despite the subject knowing that it is merely virtual. Just as you continue to see illusions, such as the Müller-Lyer, despite knowing that it is an illusion, it is possible for a hallucination to have a sense of presence despite the viewer knowing that it is unreal. How people interpret the background affects the perception of the colours of the stripes of 'the dress' illusion in a top-down fashion, but the process goes beneath conscious awareness just as with sensing where a sound came from. Perhaps belief at some tacit level or instead, a predictive weighting as described by predictive processing, affects perception (Weise & Metzinger, 2017). We argue, however, that the experience of pastness is phenomenal and we categorize based on phenomenology rather than belief. Feelings of presence or pastness, however, may *relate* to beliefs about the actual presence or pastness of the experienced scene. While presence and pastness are genuine phenomenological features, beliefs and phenomenology are deeply related.

Debus (2016) mentions the fickleness of feelings and how a feeling of pastness should not be sufficient for an individual to form a belief that their memory is accurate. This does not strike us as a decisive objection. Reflections on accuracy may be a process that occurs *after* the initial experience of the mental event; the experiencer feels that their mental state is either a memory or perception and they may then go on to reflect about whether their feeling is accurate. We think the question of what makes an experience feel like memory is different from the question of how we assess the accuracy of a memory.

Although the doxastic distinction between memory, imagination and perception allows for there to be false memories and to mistake one type of experience for another, it is more plausible that the phenomenal senses of presence and pastness rather than doxastic features are what make the experience of perception and memory what they are. One argument for this is that a mental state can feel like memory without the individual believing that it is. For example, one assesses that a mental state that feels like a memory cannot possibly have happened, based on external evidence. The belief doesn't change the feeling. Secondly, mental states are often categorized more quickly than it would take to assess a belief about the state, for example, when you duck from an incoming projectile, the sense of presence may proceed any explicit belief formation. We may accept a memory as such based on phenomenology without rational assessment, or form a belief about a memory based on the feeling of pastness alone.

The doxastic view seems to provide a simple explanation for why false memories can be relatively easily brought about in experiments (e.g., Loftus & Pickrell, 1995; Wade, Garry, Read & Lindsay, 2002). If there is no particular memory-phenomenology to distinguish the states, all that would be required is to believe one's image was memory for it to be classed as a memory. However, this is not a reason to reject the importance of the sense of pastness in our mental lives. Firstly, a sense of presence may develop over time in the experiments mentioned above. Secondly, we also have beliefs about memories being more or less accurate of the original event that contrast with how the

mental events *feel*. In normal circumstances, at first pass, we don't assess or judge an experience as falling into one category or another; we experience it as such. This accounts for the ease and confidence with which we initially distinguish between states, irrespective of accuracy. Sense of presence and pastness are their own phenomenal features despite having a complex relationship with belief. Belief is relevant to these processes, as described. But it is primarily a sense of pastness that makes us ascribe an experience as memory rather than what defines memory, allowing for mistaken identity.

Conclusion

The feeling of pastness is a good contender for what makes a mental state *feel* like memory and part of what gives us confidence in memory. A strong sense of pastness is likely what makes it easy, in most circumstances, to quickly judge "I remember" as distinct from "I imagine" and "I perceive" without reflection. At the same time, sense of pastness can be inaccurate, and we can be wrong about mental states that strongly feel like memories.

We argue that the feeling of pastness is a truly phenomenal aspect of the human experience and that this feeling is strongly related to a complex interaction between cognitive components including a sense of space and time. We agree with theorists who deny that the sense of pastness and presence define and distinguish imagination, memory and perception. However, these senses are plausible contenders for what makes a particular experience feel the way it does. Specifically, the *feeling of pastness* consists in a felt relation between our current structured specious present and an experienced scene, of which we don't seem to be a part, that lies in relation to our current specious present. We argued that the feeling of pastness is influenced by both phenomenal features such as 'mental strength' and feelings of *having been* immersed and objects *having had* ergonomic significance, and metacognitive doxastic states such as beliefs about a mental state's fit with the biographical narrative. Feelings of pastness and presence are fallible heuristic markers by which we identify experiences as perceptions, memories, or imaginings. Despite not solving the ontological issue of mental states, these are important features of cognition that allow us to pre-reflectively experience and first-personally classify these mental states the way we do.

References

Albright, T. D. (2012). On the perception of probable things: neural substrates of associative memory, imagery, and perception. *Neuron, 74* (2), 227–245. https://doi.org/10.1016/j.neuron.2012.04.001

Allen, K. (2015). Hallucination and imagination. *Australasian Journal of Philosophy, 93*(2), 287–302. https://doi.org/10.1080/00048402.2014.984312

Anstis, S. (2010). Visual filling-in. *Current Biology*, *20*(16), R664-R666. https://doi.org/10.1016/j.cub.2010.06.029

Arcangeli, M. (2020). The two faces of mental imagery. *Philosophy and Phenomenological Research, 101*(2), 304-322. https://doi.org/10.1111/phpr.12589

Arntz, A., de Groot, C. & Kindt, M. (2005). Emotional memory is perceptual. *Journal of Behavior Therapy and Experimental Psychiatry, 36*(1), 19–34. https://doi.org/10.1016/j.jbtep.2004.11.003

Augustine. (1998). *The city of god against the pagans*. Cambridge University Press. https://doi.org/10.1017/CBO9780511802300

Barkasi, M. (2020a). Does what we dream feel present? Two varieties of presence and implications for measuring presence in VR. *Synthese*, 1-27 [Preprint]. https://doi.org/10.1007/s11229-020-02898-4

Barkasi, M. (2020b). Some hallucinations are experiences of the past. *Pacific Philosophical Quarterly, 101*(3), 454-488. https://doi.org/10.1111/papq.12320

Barkasi, M. (2021). What should the sensorimotor enactivist say about dreams? *Philosophical Explorations*, *24*(2), 243-26. https://doi.org/10.1080/13869795.2021.1908575

Barkasi, M. & Rosen, M. G. (2020). Is mental time travel *real* time travel? *Philosophy and the Mind Sciences*, *1*(1), 1-27. https://doi.org/10.33735/phimisci.2020.1.28

Bitbol, M. & Petitmengin, C. (2013). A defense of introspection from within. *Constructivist Foundations, 8*(3), 269–279.

Bitbol, M. & Petitmengin, C. (2016). On the possibility and reality of introspection. *Mind and Matter, 14*(1), 51-75.

Bitbol, M. & Petitmengin, C. (2017). Neurophenomenology and the microphenomenological interview. In S. Schneider & M. Velmans (Eds.), *The blackwell companion to consciousness,* 2 edition (pp. 726-739). Wiley & Sons. https://doi.org/10.1002/9781119132363.ch51

Bob, P. & Mashour, G. A. (2011). Schizophrenia, dissociation, and consciousness. *Consciousness and Cognition, 20*(4), 1042-1049. https://doi.org/10.1016/j.concog.2011.04.013

Bone, M. B., Ahmad, F. & Buchsbaum, B. R. (2020). Feature-specific neural reactivation during episodic memory. *Nature Communications, 11*(1945), 1-13. https://doi.org/10.1038/s41467-020-15763-2

Butz, M. V. (2017). Which structures are out there: learning predictive compositional concepts based on social sensorimotor explorations. In *PPP-Philosophy and Predictive Processing* (pp. 1-16). MIND Group.

Byrne, A. (2007). Possibility and imagination. *Philosophical Perspectives, 21*(1), 125-144. https://doi.org/10.1111/j.1520-8583.2007.00123.x

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

Corlett, P., Taylor, J. R., Wang, X.-J., Fletcher, P. C. & Krystal, J. H. (2010). Toward a neurobiology of delusions. *Progress in Neurobiology, 92*(3), 345-369. https://doi.org/10.1016/j.pneurobio.2010.06.007

Craver, C. F. (2020). Remembering: epistemic and empirical. *Review of Philosophy and Psychology, 11*(2), 261-181. https://doi.org/10.1007/s13164-020-00469-7

De Brigard, F. (2014). Is memory for remembering? Recollection as a form of episodic hypothetical thinking. *Synthese 191*, 155-185. https://doi.org/10.1007/s11229-013-0247-7

Debus, D. (2016). Imagination and memory. In *Routledge Handbook of the Philosophy of Imagination* (pp. 135–148). Routledge.

Descartes, R. (1998). *Discourse on method and meditations on first philosophy* (D. A. Cress, Trans.). Hackett Publishing Company.

Dijkstra, N., Mazor, M., Kok, P. & Fleming, S. (2021). Mistaking imagination for reality: congruent mental imagery leads to more liberal perceptual detection. *Cognition, 212*, 104719. https://doi.org/10.1016/j.cognition.2021.104719

Dokic, J. (2014). Feeling the past: a two-tiered account of episodic memory. *Review of Philosophy and Psychology, 5*, 413-426. https://doi.org/10.1007/s13164-014-0183-6

Dokic, J. & Martin, J.-R. (2017). Felt reality and the opacity of perception. *Topoi, 36*(2), 299-309. https://doi.org/10.1007/s11245-015-9327-2

Dretske, F. (1994). Introspection. *Proceedings of the Aristotelian Society, 94*, 263-278. https://doi.org/10.1093/aristotelian/94.1.263

Elliott, M. L., Knodt, A. R., Ireland, D., Morris, M. L., Poulton, R., Ramrakha, S. & Hariri, A. (2020). What is the test-retest reliability of common task-fMRI measures? New empirical evidence and a meta-analysis. *bioRxiv* [preprint] https://doi.org/10.1101/681700

Fernández, J. (2019). *Memory: a self-referential account*. Oxford University Press. https://doi.org/10.1093/oso/9780190073008.001.0001

Fernández, J. (2020). Self-referential memory and mental time travel. *Review of Philosophy and Psychology, 11*, 283–300. https://doi.org/10.1007/s13164-019-00453-w

Ffytche, D. H. (2013). The hallucinating brain: neurobiological insights into the nature of hallucinations. In F. Macpherson & D. Platchias (Eds.), *Hallucination: Philosophy and Psychology* (pp. 45–64). The MIT Press. https://doi.org/10.7551/mitpress/9780262019200.003.0003

Filevich, E., Dresler, M., Brick, T. R. & Kühn, S. (2015). Metacognitive mechanisms underlying lucid dreaming. *The Journal of Neuroscience, 35*(3), 1082-1088. https://doi.org/10.1523/JNEUROSCI.3342-14.2015

Grassini, S. & Laumann, K. (2020). Questionnaire measures and physiological correlates of presence: A systematic review. *Frontiers in Psychology, 11*, 1-21. https://doi.org/10.3389/fpsyg.2020.00349

Handel, S. (2019). *Perceptual organization: an integrated multisensory approach.* Springer. https://doi.org/10.1007/978-3-319-96337-2

Horikawa, T. & Kamitani, Y. (2017a). Generic decoding of seen and imagined objects using hierarchical visual features. *Nature Communications, 8*(15037), 1-15. https://doi.org/10.1038/ncomms15037

Horikawa, T. & Kamitani, Y. (2017b). Hierarchical neural representation of dreamed objects revealed by brain decoding with deep neural network features. *Frontiers in Computational Neuroscience, 11*(4), 1-11. https://doi.org/10.3389/fncom.2017.00004

Horikawa, T., Tamaki, M., Miyawaki, Y. & Kamitani, Y. (2013). Neural decoding of visual imagery during sleep. *Science, 340*, 639–642. https://doi.org/10.1126/science.1234330

Hume, D. (1739/2000). *A treatise of human nature*. Clarendon Press. https://doi.org/10.1093/oseo/instance.00046221

Husserl, E. (1975). *Experience and judgment*. Northwestern University Press.

Husserl, E. (2006). *Phantasy, image consciousness, and memory (1898-1925)* (Vol. 11). Springer Science & Business Media.

Ichikawa, J. (2008). Scepticism and the imagination model of dreaming. *The Philosophical Quarterly, 58*(232), 519–527. https://doi.org/10.1111/j.1467-9213.2007.546.x

Ichikawa, J. (2016). Imagination, dreaming, and hallucination. In *The Routledge Handbook of the Philosophy of Imagination* (pp. 149-162). Routledge.

Ichikawa, J. & Sosa, E. (2009). Dreaming, philosophical perspectives. In *The Oxford Companion to Consciousness*. Oxford University Press.

James, W. (1892/1962). *Psychology: briefer course*. Collier Books. https://doi.org/10.1037/11630-000

Jansen, J. A. (2010). Phenomenology, imagination and interdisciplinary research. In D. Schmicking & S. Gallagher (Eds.), *Handbook of Phenomenology and Cognitive Science* (pp. 141-158). Springer. https://doi.org/10.1007/978-90-481-2646-0_8

Kimble, M., Boxwala, M., Bean, W., Maletsky, K., Halper, J., Spollen, K. & Fleming, K. (2014). The impact of hypervigilance: evidence for a forward feedback loop. *Journal of anxiety disorders, 28*(2), 241-245. https://doi.org/10.1016/j.janxdis.2013.12.006

Kind, A. (2017). Imaginative vividness. *Journal of the American Philosophical Association, 3*(1), 32-50. https://doi.org/10.1017/apa.2017.10

LaBerge, S. (1981). Lucid dreaming: directing the action as it happens. *Psychology Today, 15*(1), 48-57.

LaBerge, S. (1985). *Lucid dreaming*. J. P. Tarcher.

LaBerge, S. (2000). Lucid dreaming: evidence and methodology. *Behavioral and Brain Sciences, 23*(6), 962-964. https://doi.org/10.1017/S0140525X00574020

LePort, A. K. R., Stark, S. M., McGaugh, J. L. & Stark, C. E. L. (2017). A cognitive assessment of highly superior autobiographical memory. *Memory, (Hove, English)*, *25*(2), 276-288. https://doi.org/10.1080/09658211.2016.1160126

Levy, L. (2012). Rethinking the Relationship between Memory and Imagination in Sartre's The Imaginary. *Journal of the British Society for Phenomenology, 43*(2), 143-160. https://doi.org/10.1080/00071773.2012.11006764

Loftus, E. F. & Pickrell, J. E. (1995). The formation of false memories. *Psychiatric annals, 25*(12), 720-725. https://doi.org/10.3928/0048-5713-19951201-07

Mahr, J. B. & Csibra, G. (2018). Why do we remember? The communicative function of episodic memory. *Behavioral and Brain Sciences*, *41*, e1. https://doi.org/10.1017/S0140525X17000012

Mather, G. (2016). *Foundations of sensation and perception* (3 ed.). Psychology Press. https://doi.org/10.4324/9781315672236

Matthen, M. (2005). *Seeing, doing, and knowing: a philosophical theory of sense perception*. Oxford University Press. https://doi.org/10.1093/0199268509.001.0001

Matthen, M. (2010). Two visual systems and the feeling of presence. In N. Gangopadhyay, M. Madary & F. Spicer (Eds.), *Perception, action, and consciousness: sensorimotor dynamics and two visual systems* (pp. 107–124). Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199551118.003.0007

McGurk, H. & MacDonald, J. (1976). Hearing lips and seeing voices. *Nature, 264*(5588), 746-748. https://doi.org/10.1038/264746a0

Metzinger, T. (2003). Phenomenal transparency and cognitive self-reference. *Phenomenology and the Cognitive Sciences, 2*(4), 353-393. https://doi.org/10.1023/B:PHEN.0000007366.42918.eb

Metzinger, T. (2009). *The ego tunnel: the science of the mind and the myth of the self*. Basic Books.

Michaelian, K. (2011). Generative memory. *Philosophical Psychology, 24*(3), 323-342. https://doi.org/10.1080/09515089.2011.559623

Michaelian, K. (2016). Confabulating, misremembering, relearning: the simulation theory of memory and unsuccessful remembering. *Frontiers in Psychology 25*(1857), 1-13. https://doi.org/10.3389/fpsyg.2016.01857

Mitterer, H., Horschig, J. M., Müsseler, J. & Majid, A. (2009). The influence of memory on perception: it's not what things look like, it's what you call them. *Journal of Experimental Psychology: Learning, Memory, and Cognition, 35*(6), 1557. https://doi.org/10.1037/a0017019

Mizuguchi, N., Nakata, H., Uchida, Y. & Kanosue, K. (2012). Motor imagery and sport performance. *The Journal of Physical Fitness and Sports Medicine, 1*(1), 103-111. https://doi.org/10.7600/jpfsm.1.103

Morales, J. (2018). *The strength of the mind: essays on consciousness and introspection* (Ph. D. thesis). Columbia University.

Nanay, B. (2016a). Hallucination as mental imagery. *Journal of Consciousness Studies 23*(7-8), 65-81.

Nanay, B. (2016b). Imagination and perception. In *The Routledge handbook of the philosophy of imagination* (pp. 124–134). Routledge.

Noë, A. (2004). *Action in perception*. The MIT Press.

Noë, A. (2007). Magic realism and the limits of intelligibility: what makes us conscious. *Philosophical Perspectives, 21*, 457-474. https://doi.org/10.1111/j.1520-8583.2007.00132.x

Overgaard, M. & Mogensen, J. (2017). An integrative view on consciousness and introspection. *Review of Philosophy and Psychology, 8*, 129-141. https://doi.org/10.1007/s13164-016-0303-6

Palombo, D. J., Sheldon, S. & Levine, B. (2018). Individual differences in autobiographical memory. *Trends in Cognitive Sciences, 22*(7), 583-597. https://doi.org/10.1016/j.tics.2018.04.007

Patihis, L., Frenda, S. J., LePort, A. K. R., Petersen, N., Nichols, R. M., Stark, C. E. L., McGaugh, J. L. & Loftus, E. F. (2013). False memories in highly superior autobiographical memory individuals. *Proceedings of the National Academy of Sciences, 110*(52), 20947-20952. https://doi.org/10.1073/pnas.1314373110

Pelaprat, E. & Cole, M. (2011). "Minding the gap": imagination, creativity and human cognition. *Integrative Psychological and Behavioral Science, 45*(4), 397-418. https://doi.org/10.1007/s12124-011-9176-5

Penfield, W. & Perot, P. (1963). The brain's record of auditory and visual experience. *Brain 86*(4), 595-696. https://doi.org/10.1093/brain/86.4.595

Perky, M. C. W. (1910). An experimental study of imagination. *The American Journal of Psychology, 21*, 422-452. https://doi.org/10.2307/1413350

Perrin, D., Michaelian, K. & Sant'Anna, A. (2020). The phenomenology of remembering is an epistemic feeling. *Frontiers in Psychology, 11*(1531), 1-14. https://doi.org/10.3389/fpsyg.2020.01531

Pizlo, Z. (2001). Perception viewed as an inverse problem. *Vision research, 41*(24), 3145-3161. https://doi.org/10.1016/S0042-6989(01)00173-0

Redshaw, J. (2014). Does metarepresentation make human mental time travel unique? *WIREs Cognitive Science, 5*(5), 519-531. https://doi.org/10.1002/wcs.1308

Revonsuo, A. (1995). Consciousness, dreams and virtual reality. *Philosophical Psychology, 8*(1), 35-58. https://doi.org/10.1080/09515089508573144

Robins, S. K. (2019). Confabulation and constructive memory. *Synthese, 196*, 2135-2151. https://doi.org/10.1007/s11229-017-1315-1

Rosen, M. G. (2013). What I make up when I wake up: anti-experience views and narrative fabrication of dreams. *Frontiers in Psychology*, 4. https://doi.org/10.3389/fpsyg.2013.00514

Rosen, M. G. (2018a). How bizarre? A pluralist approach to dream content. *Consciousness and Cognition, 62*, 148-162. https://doi.org/10.1016/j.concog.2018.03.009

Rosen, M. G. (2018b). Your dream-body: all an illusion? commentary on Windt's account of the dream-body. *Dreaming. Journal of Consciousness Studies, 25*(5-6), 44-62.

Rosen, M. G. (2019). Dreaming of a stable world: vision and action in sleep. *Synthese*, 1–36. https://doi.org/10.1007/s11229-019-02149-1

Russell, B. (1921). *The analysis of mind*. George Allen and Unwin.

Sanchez-Vives, M. V. & Slater, M. (2005). From presence to consciousness through virtual reality. *Nature Reviews Neuroscience, 6*, 332-339. https://doi.org/10.1038/nrn1651

Sant'Anna, A. & Michaelian, K. (2019). Thinking about events: a pragmatist account of the objects of episodic hypothetical thought. *Review of Philosophy and Psychology, 10*, 187-217. https://doi.org/10.1007/s13164-018-0391-6

Schacter, D. L. & Addis, D. R. (2007). The cognitive neuroscience of constructive memory: remembering the past and imagining the future. *Philosophical Transactions of the Royal Society B: Biological Sciences, 362*(1481), 773-786. https://doi.org/10.1098/rstb.2007.2087

Schredl, M. (2018). *Researching dreams: the fundamentals*. Palgrave Macmillan. https://doi.org/10.1007/978-3-319-95453-0

Schwitzgebel, E. (2008). The unreliability of naïve introspection. *Philosophical Review, 117*, 245-273. https://doi.org/10.1215/00318108-2007-037

Siegel, S. (2006). Subject and object in the contents of visual experience. *Philosophical Review, 115*(3), 355-88. https://doi.org/10.1215/00318108-2006-003

Sutton, J. (1998). *Philosophy and memory traces: Descartes to connectionism*. Cambridge University Press.

Sutton, J. (2003). Constructive memory and distributed cognition: towards an interdisciplinary framework. In B. Kokinov & W. Hirst (Eds.), *Constructive Memory* (pp. 290-303). New Bulgarian University.

Teroni, F. (2017). The phenomenology of memory. In *The Oxford handbook of philosophy of memory* (pp. 21–33). Oxford University Press. https://doi.org/10.4324/9781315687315-3

Thomas, N. J. (2014). The multidimensional spectrum of imagination: images, dreams, hallucinations, and active, imaginative perception. *Humanities, 3*(2), 132-184. https://doi.org/10.3390/h3020132

Tulving, E. (1983). *Elements of episodic memory*. Oxford University Press.

Tulving, E. (1985). Memory and consciousness. *Canadian Psychology/Psychologie Canadienne, 26*(1), 1–12. https://doi.org/10.1037/h0080017

Tulving, E. (2002). Episodic memory: from mind to brain. *Annual Review of Psychology, 53*, 1-25. https://doi.org/10.1146/annurev.psych.53.100901.135114

Voss, U., Schermelleh-Engel, K. Windt, J., Frenzel, C. & Hobson, A. (2013). Measuring consciousness in dreams: the lucidity and consciousness in dreams scale. *Consciousness and Cognition, 22*(1), 8-21. https://doi.org/10.1016/j.concog.2012.11.001

Wade, K. A., Garry, M., Read, J. D. & Lindsay, D. S. (2002). A picture is worth a thousand lies: using false photographs to create false childhood memories. *Psychonomic Bulletin & Review, 9*(3), 597-603. https://doi.org/10.3758/BF03196318

Whiteley, C. M. K. (2020). Aphantasia, imagination and dreaming. *Philosophical Studies*, *178*, 2111–2132. https://doi.org/10.1007/s11098-020-01526-8

Wiese, W. & Metzinger, T. (2017). Vanilla PP for philosophers: a primer on predictive processing. In T. Metzinger & W. Wiese (Eds.), *Philosophy and Predictive Processing* (pp. 1-18). MIND Group. https://doi.org/10.7551/mitpress/9780262036993.003.0008

Windt, J. M. (2010). The immersive spatiotemporal hallucination model of dreaming. *Phenomenology and the Cognitive Sciences, 9*, 295-316. https://doi.org/10.1007/s11097-010-9163-1

Windt, J. M. (2018). Predictive brains, dreaming selves, sleeping bodies: how the analysis of dream movement can inform a theory of self- and world-simulation in dreams. *Synthese, 195*, 2577-2625. https://doi.org/10.1007/s11229-017-1525-6