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Abstract

Mahr & Csibra (M&C) propose that episodic memory evolved to support epistemic authority in social communication. We argue for a more parsimonious interpretation whereby episodic memory subserves a broader preparatory function for both social and non-social behavior. We conclude by highlighting that functional accounts of episodic memory may need to consider the complex interrelations between self and subjective time.

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Beyond Communication: Episodic Memory is Key to the Self in Time

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Abstract

Mahr and Csibra (2017) propose that episodic memory evolved to support epistemic authority in social communication. We argue for a more parsimonious interpretation whereby episodic memory subserves a broader preparatory function for both social and non-social behavior. We conclude by highlighting that functional accounts of episodic memory may need to consider the complex interrelations between self and subjective time.

Since the publication of Tulving's (1983) treatise on episodic memory, psychologists and cognitive neuroscientists have amassed an impressive amount of data elucidating the cognitive and neural mechanisms that give rise to and support first-person accounts of the experienced past (for reviews, see Dickerson & Eichenbaum, 2010; Szpunar & McDermott, 2008; Tulving, 2002a). Nonetheless, relatively little is known about *why* healthy human adults possess this capacity. Mahr and Csibra (2017) propose that the defining component of episodic memory—the capacity to mentally re-experience the self in subjective time or auto-noetic consciousness—may have evolved to support the negotiation of epistemic authority in social communication. According to this account, episodic memory enables people to ascribe confidence in their reporting of the personal past when interacting with others.

Although episodic memory undoubtedly serves to fine-tune the nature and quality of human interactions, we suggest that social communication represents but one instance wherein this capacity bestows an advantage for its owner. The crux of our argument is that many non-social circumstances also require an accurate and confident recounting of specific past experiences as a means for supporting adaptive behavior. As one example, consider the behavior of an individual who decides to walk home along the longer of two paths on the basis of a recent negative experience along the shorter path. In this case, the debate (deciding between the longer, safer route versus the more convenient, but riskier route) takes place within the individual's mind, and mentally re-experiencing a pertinent past episode may help justify the most appropriate course of action. Because it is difficult to ascertain the circumstances of our evolutionary history under which recollections first

emerged to guide behavior, a comprehensive functional account of episodic memory should be able to explain why salient past experiences tend to guide behavior in both social and non-social domains. In formulating his theory of episodic memory, Tulving (1985) seemingly envisioned such an account, stating that “the adaptive value of episodic memory and auto-noetic consciousness lies in the heightened subjective certainty with which organisms endowed with such memory and consciousness believe, and are willing to act upon, information retrieved from memory”... “lead[ing] to more decisive action in the present and more effective planning for the future” (pp. 9-10).

Beyond providing a sense of added certainty in guiding behavior, episodic memory may also play a pivotal role in conceptualizing the self’s existence across time. Current events often cue spontaneous retrieval of past events, and these recursive reminders (Hintzman, 2004) help bridge the recollected past with the anticipated future. Profoundly amnesic patients with episodic memory deficits that preclude recollection of much or all of the personal past and simulation of the personal future provide a window into the nature of this relation. Indeed, a striking deficit for patients with a dysfunctional episodic memory is that they are often “lost in time.” For example, about 40 years after a medial-temporal lobe resection to alleviate chronic seizures, patient H.M. mistakenly believed that he had memory problems for only about one year (Corkin, 2013). Similarly, following a motorcycle accident that resulted in diffuse brain damage, patient K.C. was unable to answer the simple question of “how old are you?”, even though he knew the date of his birth, because he did not know the current year in which he lived (Rosenbaum et al., 2005).

Of course, the aforementioned observations of amnesic patients are selective and are not intended to imply that amnesic patients lack a self-concept or the ability to think about time. Indeed, semantic knowledge may be sufficient to support cognitions about the self (Klein & Gangi, 2010). Moreover, Mahr and Csibra highlight that K.C. showed delayed discounting (Kwan et al., 2012), suggesting that episodic memory is not necessary for some future-oriented aspects of cognition. Although people may be able to imagine the future in a manner that does not involve episodic memory (Szpunar, Spreng & Schacter, 2014), this should not eliminate the possibility that episodic memory is necessary for future thinking that requires extending the self in time. We believe that two pieces of evidence support our argument. First, given that nonhuman animals such as pigeons and rats can discount future outcomes (Vandervelt, Oliveira, & Green, 2016), it is unlikely that episodic memory is necessary for judgments of intertemporal choice. Second, whereas healthy human adults use event simulations to curb their tendency to discount future outcomes (Benoit, Gilbert, & Burgess, 2011; Peters & Büchel, 2010), amnesic patients do not (Palombo, Keane, & Verfaellie, 2015). For instance, even though Kwan et al. (2015) found that some amnesic patients could use personally relevant future scenarios to support far-sighted decisions, their amnesic patients experienced great difficulty generating relevant future scenarios and were aided by either personal calendars or relatives. Hence, in the absence of external support, an impaired episodic memory system is associated with an impoverished perspective of the self across time.

Finally, whereas we and the authors of the target article have focused primarily on the adaptive value of the auto-noetic component of episodic memory, i.e., mentally re-experiencing the self in subjective time, Tulving (2002b) further mused about the capacity to be aware of the subjective time in which the self exists. The distinction is subtle but may be important for understanding the evolution of episodic memory and of the human race as a whole. In theorizing about its functions, Tulving noted that the awareness of subjective time is integral to the ability for humans to establish a continued culture by which the world is altered to suit their needs, rather than adapting to the world. If humans did not possess the capacity to project their minds into the future, they would have no reason to alter their behavior, based on relevant past experiences or otherwise, to suit the future that is yet to exist (Tulving & Szpunar, 2011; see also Klein, 2013).

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