

## General

# You Might Not Remember Reading This

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My friend possesses an uncanny ability to recollect detailed descriptions of topics and concepts in medical journals that span decades. Within minutes, if prompted, he will send a copy or digital link to the original article, regardless of how obscure the subject or how humble the journal. As a seasoned cardiac electrophysiologist, he has personally witnessed – and at times taken part in – the evolution of a new field of medicine, accumulating a large body of information. Indeed, time has inevitably tilted his wisdom towards a more “crystallized” rather than “fluid” form, following the natural progression of an academic career. The breadth of his scientific reservoir is only surpassed by an ability to access not just fundamental and esoteric concepts, but also descriptive information such as the title, authors, journal, and approximate year of publication. I asked my friend how he accomplishes this feat, assuming he maintains a large queryable digital library with the ability to access it quickly. Rather, he said, he summons it in conjunction with other aspects of his initial experience, including when and where he read the article, whom he was with, his level of training at the time, and so on. His mind is littered with memories of holding the original journal volume or a physical printed copy, occasionally with a mentor’s name hastily stamped on the top of the first page, implying an academic consignment of sorts. His memory, and subsequent retrieval, were not based solely on the article’s content, but rather represented a composite experiential memory, inextricably linked with his surroundings at the time.

The relationship between memories and sensorial factors was first described by Marcel Proust, who coined the term “involuntary memories”,<sup>1</sup> containing the “essence of the past”. Contextual information such as physical location, surroundings, and mental and physical state encode memories, partially governed by these retrieval cues, as described in the “encoding specificity principle”.<sup>2</sup> Medical training represents a particularly impressionable period in a young doctor’s life, in which educational enlightenment combined with the weight of burgeoning responsibility and autonomy rule the day, and first principles and basic concepts are acquired in earnest. One might recall first hearing of a particular concept on rounds with a considerate proctor, or while examining a patient when a diagnosis was in question, or perhaps recollect the pizza they were enjoying during an especially enlightening noon conference. Similarly, information gleaned from journals might link to the color or symbology of the cover art, the feel or smell of a fresh jour-

nal’s 60-pound gloss text, the font chosen by the publisher, or how the pages were previously dog-eared, highlighted, or stained by a previous learner. When physical journals were the norm, even the hunt for the article could be memorable, whether found in a fresh issue in your mailbox, looking through old dusty composite volumes in the hospital library, or clumsily navigating the inter-institutional loan process. For my friend, who trained abroad, acquiring meaningful articles was no easy task, not to mention an expensive one. Thus, it was only pursued if the curiosity was genuine. Once, he spent weeks visiting medical libraries in his hometown, searching for obscure articles on the pharmacology of renin secretion, to complete the monography required to become a Pharmacology instructor. The multi-sensorial experience started with the search and ended with the physical copy in one’s hand.

The computer age has ushered in new ways of acquiring and reading articles, with a rapid shift to online content, spawning an explosion in the number of medical journals.<sup>3</sup> Leveraging digital platforms, works are disseminated in various mediums including polished PDFs, with some maintaining a print copy for reasons of tradition and perhaps fear of irritating devoted customers. Reading articles on computers, tablets, smartphones, or other digital screens can be a hollow experience filled with clicks and hums and the inevitable digital eyestrain from the emitted blue light. This experience also challenges linkage to other sensorial factors, seemingly melding into one another, and pilfering some experiential romanticism. Further diminishing this experience is the release of early versions of manuscripts not yet copy-edited or embedded into the journal’s proprietary template, and preliminary versions not yet peer-reviewed and only found on preprint servers. Of course, this type of early access is demanded by the voracious consumers of these scientific data which seem to hurdle through our 24-hour news cycles. The trade-offs of this somewhat sterile and incomplete experience include immediate availability and ease of access, satisfying the demands of current generations that expect their data at the click of a button.

The occasionally onerous quest for a copy of an article in a library has been replaced with a mobile digital search, at most requiring the skirting of a paywall. Gone are the days of sliding papers under a door with a handwritten note; they have been replaced by emails with hyperlinks or attachments which may permanently reside in an inbox. The scattered or towering piles of journals on one’s desk

have been exchanged for an apparently endless row of open browser tabs destined to remain that way until read or, more often, until an inevitable forced reboot intervenes. The amount of data we are exposed to, as well as how it is being delivered, has likely prevented its coalescence with long-lasting sensory memories and its subjective vividness to be sparked later. Today, one might be more likely to recall where they were when someone first commented on a paper on social media or after reading a sensationalized headline in a daily periodical. Despite this sensorial loss, a digital world requires a digital solution. Global ease of access to articles and sharing of information, including with those who previously had no or limited access, is crucial to the scientific process at large. Just don't be surprised if you struggle to remember the content of a relevant article (or when and where you read it), including this one.

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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