

Psychological Research on Memory, Meet the Real World

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Without memory, our past would be lost (Burnham, 1889). Our ability to make informed, conscious decisions in the present depends on the existence of memories, both consciously and unconsciously obtained. From the earliest days of experimental psychology, researchers have attempted to understand the “laws” of memory, in part to improve learning processes and later remembering of old material (Ebbinghaus, 1885/1964). However, education was not the only discipline in which early psychologists saw potential applied benefits from memory research. Advertisers (Burt & Dobell, 1925), mental ability examiners (Wells, 1917), and legal system experts (Hutchins & Slesinger, 1927–1928), among many groups, used psychological research on memory to improve the effectiveness and accuracy of their disciplines.

This topical issue of the *Zeitschrift für Psychologie* provides the reader with a general sense of the current state of the field of applied memory research. Mirroring the early days of experimental psychology, I sampled a wide variety of subject areas, both within and outside mainstream psychology. The end result covers learning and memory within the field of educational psychology (Küpper-Tetzel, 2014; Talarico, 2014), error sources in forensic psychology (Strange, Dysart, & Loftus, 2014), language impairment within clinical psychology (Marton & Eichorn, 2014), and interactions between social and technical systems within industrial-organizational psychology (Grundgeiger, Sanderson, & Dismukes, 2014). Branching away from mainstream psychology, topics in architectural and industrial design (van den Hoven & Eggen, 2014) are covered.

Küpper-Tetzel (2014) focuses on the spacing effect, one of the earliest discovered and most thoroughly studied memory enhancement techniques in cognitive psychology. She argues that strong, educationally relevant theories of the spacing effect do not yet exist. Instead of focusing purely on laboratory situations, she suggests that theories should be developed that can account for variability that is likely to be encountered in actual classrooms. Only when strong theories that are relevant to the classroom exist will widespread systematic adoption of the spacing effect by

teachers take place, in part because teachers desire to implement theory-backed learning strategies.

Strange et al. (2014) examine the effect of alibi errors on prosecution, in the field of forensic psychology. They show that people’s memory for their location at a given point in time can be inaccurate and vary from day to day. This inconsistency contrasts with lay beliefs about consistency of memory, as well as beliefs by those trained in law enforcement. For example, beliefs in a near-perfect memory system make it easier for prosecutors to mislead juries to assume that a defendant is lying, when in fact the defendant’s memory is merely imperfect.

Marton and Eichorn (2014) look at the relationship between working memory and long-term memory in a clinical population, children with specific language impairments, compared to two control groups. They demonstrate the need for clinicians to have a robust understanding of how memory works in order to effectively treat these clients. By targeting the most specific source of memory failure, better treatment outcomes will occur.

Human factors research focuses on developing effective interactions between humans and social and technical systems. Grundgeiger et al. (2014) review a subset of the literature on human factors associated with prospective memory, in domains such as health care and aviation, where risks from memory errors are high. They argue that improved theoretical and empirical understanding of prospective memory processes can result in improvements in the design of sociotechnical systems, thereby mitigating potential risks, and present the concept of *distributed prospective memory*, incorporating environment–individual interaction when future tasks need to be remembered.

van den Hoven and Eggen (2014) highlight a nonpsychological application of theoretical psychological research on memory cues – the use of design, such as layout of space, to enhance retrieval probability. Their paper is a reminder to psychologists to make research available in an accessible manner to nonpsychologists, some of whom share the goal of improving memory accuracy. Without a strong theoretical background, it would be far less likely

that individuals in the field of design could effectively implement features that enhance real-world memory improvements.

Talarico (2014) questions the assumptions held by some individuals that participant sampling issues pose a serious problem for generalizability of memory research in educational psychology. She provides several examples of research questions that are in fact well suited to sampling a young adult undergraduate population.

My hope is that these papers will spur researchers to develop and foster atypical cross-discipline collaborations between theoretical experimental psychologists and applied researchers in other fields, both within and outside academia. Consideration of applied issues has spurred theoretical advancement within my own field of spacing effect research (e.g., Cepeda, Vul, Rohrer, Wixted, & Pashler, 2008), which in turn has improved potential educational outcomes in secondary school classrooms (Carpenter, Pashler, & Cepeda, 2009). Likewise, these sorts of back-and-forth benefits can be clearly seen in several of the papers in this topical issue. My belief is that similar synergistic effects will occur in a diverse range of fields involving applied memory research.

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