

Special Issue

The Electrophysiology of Memory: Section II **Clinical Studies**

Exploring Human Memory Processes With Event-Related Potentials

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Welcome to the second in our two-part special issue on the electrophysiology of memory. In the first installment, we included papers reviewing recent findings from studies addressing basic questions about human memory processes. In this issue, we will consider electrophysiological studies of memory processes in special populations.

As Gabriel García Márquez stated in his epigraph to *Living to Tell the Tale*, "life is not what one lived, but what one remembers (...)". Indeed, memory functions are critical for almost every facet of daily life. Unfortunately memories are fragile, and memory functioning is highly susceptible to deterioration through disease or injury. Such memory deficits can have tragic effects on one's quality of life. Fortunately, results from event-related potential (ERP) studies have revealed significant insights into the nature of memory disorders. ERPs can help to identify time-critical neuronal processes and to relate them to specific cognitive processes. Likewise, ERPs can help delineate functional deficits induced by diffuse or localized brain lesions. Because ERP recordings are normally non-invasive and comparatively inexpensive, they may eventually well become part of clinical routine investigations. For these reasons, ERPs are an ideal method for investigating the neural basis of memory and its disorders.

Here, we will present a series of review papers showing that ERP studies have revealed significant insights into the nature of memory disorders. For example, even normal aging is associated with substantial changes in memory functions. Friedman et al. show how ERP studies can help

to understand age-related memory decline. Of course, Alzheimer's disease is a significant cause of pathological memory disorders among the elderly. In their contribution, Taylor & Olichney ask whether ERP studies can contribute to early detection and diagnosis of Alzheimer's disease. Most clinical assessments of memory focus on verbal memory functioning. However, Vannucci reviews studies into the nature of visual memory deficits, focusing on patients with temporal lobe epilepsy. In addition to neurological disorders, it is clear that psychiatric conditions can also have debilitating effects on memory. Pogarell et al. consider the potential of ERP studies for practical psychiatry and suggest that ERPs may prove valuable to monitor and possibly predict the patient's response to psychopharmacological treatment.

We hope that this two-part Special Issue of *Clinical EEG and Neuroscience* will inspire readers to learn more about ERP research on memory, and we thank all of the contributing authors for sharing their knowledge with us. Likewise, we thank the editors of this journal for giving us the opportunity to share our enthusiasm for this field of basic and clinical research with you.

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