An Introduction to the Event-Related Potential Technique (Cognitive Neuroscience)

By Steven J. Luck

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The event-related potential (ERP) technique in cognitive neuroscience allows scientists to observe human brain activity that reflects specific cognitive processes. In *An Introduction to the Event-Related Potential Technique*, Steve Luck offers the first comprehensive guide to the practicalities of conducting ERP experiments in cognitive neuroscience and related fields, including affective neuroscience and experimental psychopathology. The book can serve as a guide for the classroom or the laboratory and as a reference for researchers who do not conduct ERP studies themselves but need to understand and evaluate ERP experiments in the literature. It summarizes the accumulated body of ERP theory and practice, providing detailed, practical advice about how to design, conduct, and interpret ERP experiments, and presents the theoretical background needed to understand why an experiment is carried out in a particular way. Luck focuses on the most fundamental techniques, describing them as they are used in many of the world's leading ERP laboratories. These techniques reflect a long history of electrophysiological recordings and provide an excellent foundation for more advanced approaches.

The book also provides advice on the key topic of how to design ERP experiments so that they will be useful in answering questions of broad scientific interest. This reflects the increasing proportion of ERP research that focuses on these broader questions rather than the "ERPology" of early studies, which concentrated primarily on ERP components and methods. Topics covered include the neural origins of ERPs, signal averaging, artifact rejection and correction, filtering, measurement and analysis, localization, and the practicalities of setting up the lab.

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Editorial Review

Review

Steve Luck has written an authoritative and highly readable treatise that will enlighten researchers of event-related brain potentials at all levels of expertise. As befits an introduction, the basic principles and practical information for beginners are covered in depth, yet the book also includes penetrating discussions of experimental design and interpretation that will engage the most experienced investigator. The eight chapters are spiced with personal anecdotes recounting hard-earned lessons from the laboratory and laced with illustrative examples of how and how not to conduct ERP experiments. Luck writes with a sparkling style that is as engrossing as it is informative. I read the book from cover to cover.

(Steven A. Hillyard, Department of Neurosciences, University of California, San Diego)

About the Author
Steven J. Luck is Professor of Psychology and Director of the Center for Mind and Brain at the University of California, Davis. A leading authority on ERP research, he leads ERP Boot Camps that provide ERP training to researchers from around the world.

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