
BOOK REVIEWS

Taxi Rides and Cognitive Neuroscience

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A Student's Guide to Cognitive Neuroscience (2nd Edition). Jamie Ward (Ed.). 2010. New York: Psychology Press, 453 pp., \$110 (HB); \$59.95 (PB).

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The term “cognitive neuroscience” was coined by Michael Gazzaniga and George Miller “in the back seat of a New York City taxi” in the late 1970s (Gazzaniga, Ivry, & Mangun, 2002, p. 1). Since that time, there has been an explosion of papers that fall under the umbrella of cognitive neuroscience, yet not until Psychology Press's publication of *A Student's Guide to Cognitive Neuroscience* by Jamie Ward in 2006 was there a text that served as an introduction to cognitive neuroscience. There exist other cognitive neuroscience texts (e.g., *The Cognitive Neurosciences IV*, Michael Gazzaniga; *Principles of Cognitive Neuroscience* by Dale Purves et al., and *Cognitive Neuroscience: The Biology of the Mind*, 3rd Edition, by Michael Gazzaniga, Richard Ivry, and George Mangun), although they largely assume a foundation in the neurosciences and cognitive psychology, thus leaving *A Student's Guide to Cognitive Neuroscience* as the only beginner's text about cognitive neuroscience.

The author, Jamie Ward, Ph.D., is a Reader (Associate Professor) at the University of Sussex, a well-established cognitive neuroscience researcher, and also author of the book *The Frog Who Croaked Blue: Synesthesia and the Mixing of the Senses*. This second edition of *A Student's Guide to Cognitive Neuroscience* contains several improvements from the first edition such as color illustration and research updates. It also includes new chapters on audition and development allowing for more in-depth discussion of these topics. Excellent on-line resources are now available too, including PowerPoint slides, suggested course structure, quizzes, a glossary of terms, and links to many of the research papers cited in the text.

General Overview: *A Student's Guide to Cognitive Neuroscience* provides a wonderful guided tour of most major content areas of cognitive neuroscience in the span of 16 chapters. The book begins by providing a historical and philosophical context to cognitive neuroscience. Some of the discussion, such as “Does cognitive psychology need the brain?” and “Does neuroscience need cognitive psychol-

ogy?”, represents perhaps surplus text that is overly simplified and redundant, but nonetheless the introductory chapter effectively establishes a broader context for cognitive neuroscience. The second chapter moves on to providing a rudimentary understanding of the brain with a description of the structure and function of a neuron and a gross description of the organization of the brain. The book then begins to really fire on all cylinders providing excellent chapters on cognitive neuroscience methodology. The author's extensive expertise in this area is evident as he provides a basic understanding of the methods, how the methods are effectively applied to the study of neural and cognitive processes, and common pitfalls in the application of the methods. The text then proceeds through core areas of brain-behavior relationships with chapters devoted to vision, visuospatial abilities, psychomotor abilities, audition, learning and memory, language, numeracy, executive functions and finishes with chapters on emotions, social behavior, and development.

As a textbook for undergraduate and graduate students: The publisher pitches this book as a core text for a cognitive neuroscience course as well as an accompanying text for other courses related to cognitive neuroscience (e.g., cognition, cognitive neuropsychology, or brain and behavior). As this is an introductory book, the most appropriate didactic range is that of more advanced undergraduate courses or entry level graduate courses in the neurosciences or psychology. Use of specific modules may lend itself best at the graduate or even postdoctoral fellow level didactics by incorporating chapter(s) as a launching point for a specialized topical area. A lot of territory is covered in this text, and it is written in a highly accessible and engaging style. This helps ensure your student's comprehension and piqued interest in course topics. For the lecturer, course preparation is made considerably easier with the extensive on-line resources.

As a reference guide for neuropsychologists: This text can serve as a primer or refresher for topical areas of interest

providing excellent broad-based overviews. One major strength is the review of cognitive neuroscience methodologies, providing an opportunity for those less familiar with neuroimaging techniques such as fMRI, MEG, ERP, PET, VBM, and DTI to gain a basic understanding of how the data are collected as well as being provided respective strengths and weaknesses *via* the author's consistently honest and penetrating appraisal of the methods. For instance, one does not need be in possession of an advanced degree in physics to come away from the section on functional MRI with a general understanding of how this method works in addition to its respective advantages and weaknesses as compared to other methodologies. These highly accessible chapters on methodology can provide important tools for neuropsychologists who have limited exposure to cognitive neuroscience methods to critically consume the cognitive neuroscience literature.

One area of particular explosive growth is clinical cognitive neuroscience. Unfortunately, only limited attention is provided to the important contributions of cognitive neuroscience to our understanding of clinical populations (e.g., dementia, schizophrenia) as well as clinically applied cognitive neuroscience (e.g., preoperative mapping of eloquent tissue for purposes of neurosurgical planning).

Perhaps the most prominent strength of *A Student's Guide to Cognitive Neuroscience* is that of the frequent application of cognitive neuroscience findings and principles to everyday contexts. This generates a quasi-laboratory experience for the reader that very much enriches the understanding of

concepts described. For instance, cognitive neuroscience is given opportunity to revisit the original taxi ride to explore the topic of spatial memory. The author describes how aspiring London taxi drivers must pass an exam called "the knowledge" in which they are given two locations within the city and must generate a reasonable route (without maps, smart phone, or the like). The author describes how an increasing right hippocampal volume corresponds to the time spent on the job driving a taxi, effectively revealing an important aspect of neural processing of spatial memory in a real world context. The clarity and highly appealing style in which this text is written will no doubt translate to more students entering the field of cognitive neuroscience. This text also provides a nice reference guide for those in associated fields that are interested in a highly accessible and relevant primer for cognitive neuroscience topics of interest.

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Improving the Function of Neuropsychology

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Neuropsychology of Everyday Functioning. Thomas D. Marcotte and Igor Grant (Eds.). 2010. New York: The Guilford Press, 477 pp., \$65.00 (HB).

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Cognitive deficits of all levels and varieties, and from most any etiology, are commonly associated with difficulties in everyday activities. These difficulties pose serious consequences for patients, caregivers, and the public. For example, among individuals with dementia, everyday functional difficulties have been linked to patient quality of life, frustration, depression (Adam, van der Linden, Jullerat, & Salmon, 2000; Espiritu, Rashid, Mast, Fitzgerald, Steinberg, & Lichtenberg, 2001; Hargrave, Reed, & Mungus, 2000), and institutionalization (Smith, Kokmen, & O'Brien, 2000), as well as caregiver burden (DeBettignies, Mahurin, & Pirozzolo, 1990) and costs of care (Albert et al., 1999; Wolinsky, Callahan, Fitzgerald, & Johnson, 1993). Not surprisingly, neuropsychologists often are asked to address specific questions regarding their patients' ability to function independently in

their home, manage their finances, drive, work, and other activities of daily living (Rabin, Barr, & Burton, 2005). However, most neuropsychologists evaluate everyday functioning only briefly through a portion of their clinical interview or by using brief self/caregiver-report measures. In contrast to impairments in episodic memory and executive functioning, everyday functional difficulties are characterized in only very gross terms (e.g., no, mild, moderate, or severe overall impairment).

Because everyday functioning is not the primary focus of clinical neuropsychological evaluations or of most neuropsychology-related research, functional difficulties remain poorly understood, the ecological validity of traditional neuropsychological tests remains untested, and many neuropsychological recommendations lack empirical support. Even