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BOOK REVIEWS

Fatigue in Neurological, Psychiatric, and Medical Conditions

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Fatigue as a Window to the Brain, John DeLuca (Ed.). 2005. Cambridge, MA: The MIT Press, 336 pp., $55.00 (HB).

Reviewed by Sara J. Swanson, Ph.D., ABPP-CN, Associate Professor of Neurology, *Medical College of Wisconsin, Milwaukee, Wisconsin*.

Fatigue is ubiquitous and falls within the purview of several specialties, including neurology, psychiatry, neuropsychology, endocrinology, rheumatology, and immunology. As Simon Wessely points out in the Foreword of *Fatigue as a Window to the Brain*, fatigue has been virtually overlooked as an area of scientific study, because it is difficult to measure and, as a symptom, rarely aids in differential diagnosis. John DeLuca's edited book is part of the *Issues in Clinical and Cognitive Neuropsychology* series edited by Jordan Grafman. This is an ambitious book that examines the multidimensional and multifactorial nature of the neurobiology of central fatigue. This book advances the reader's understanding of the neural mechanisms of fatigue through review and integration of empirical data on fatigue and its cognitive correlates in neurological, medical, and psychiatric disorders.

Section I includes three chapters and lays the foundation for the remainder of the book through a discussion of the nature of fatigue, its assessment, and the relationship between fatigue and cognition. Chapter 1 addresses the nature, history, and epidemiology of fatigue from neurasthenia through Epstein-Barr virus to chronic fatigue syndrome, and persuasively indicates the need for a biopsychosocial approach. Chapter 2 sheds light on the historically murky topic of the assessment of fatigue by dividing it into (1) a subjective physical or mental experience or (2) a measurable performance decrement. Subjective fatigue is measured with self-report questionnaires that can be limited by response or recall bias as well as mood issues, whereas physical or cognitive performance decrement can be measured objectively by examining error rates and declines on cognitive or physical performance such as reduced muscle strength after physical exertion or sleep deprivation. This chapter provides a comprehensive review of fatigue scales that is useful for clinicians and researchers. Chapter 3 provides an excellent review of empirical studies of experimentally induced cognitive fatigue after prolonged time on task, sustained mental effort, and mental and physical exertion. This enlightening discussion of empirical research gives the reader perspective on the scientific study of fatigue, the cognitive domains it affects, and possible brain mechanisms.

Section II includes chapters on fatigue in various neurological conditions, including multiple sclerosis, stroke, traumatic brain injury, and other conditions (dementia, post-Lyme encephalopathy, and Parkinson's disease). This presentation of research is particularly cogent with discussion of central mechanisms, cytokines, hypothalamic-pituitary-adrenal axis and endocrine mechanisms, and the role of the reticular activating and striatocortical systems in fatigue after brain injury. Several chapters include sections in which results of functional neuroimaging studies are reviewed to provide insight into the neural correlates of fatigue in specific disease states. Functional magnetic resonance imaging (fMRI) studies of pathologic populations such as individuals with chronic fatigue syndrome or traumatic brain injury often show increased and more dispersed cerebral activation relative to healthy controls, suggesting that recruitment of additional brain regions may be needed to perform the studied task. However, the opposite pattern is seen in comparisons between healthy individuals and patients with multiple sclerosis: hypometabolism and reduced functional activation in frontal cortex and basal ganglia on fMRI were observed in multiple sclerosis patients during a simple motor task The existence of these inconsistencies highlights the conclusion that we are in the infancy of our use of neuroimaging methods to study of fatigue.

Section III addresses fatigue in various psychiatric conditions. It begins with an interesting chapter on the history of the diagnosis of fatigue in psychiatry along with a discussion of its psychiatric treatment. Chapters follow on

fatigue in specific psychiatric disorders including chronic fatigue syndrome (which the authors acknowledge may be considered either a psychiatric or a neurological condition), depression, and somatization. These chapters nicely discuss the interplay between psychological and physiological factors that may contribute to fatigue.

Section IV is composed of chapters on fatigue associated with general medical conditions, including human immunodeficiency virus, cardiovascular disease, systemic lupus erythematosus, and breast cancer. The cancer chapter includes comparisons of fatigue associated with radiotherapy, chemotherapy, and autologous bone marrow transplantation, as well as considering the puzzling finding that chronic fatigue continues long after systemic therapy has been completed. This section also includes well-written chapters on the relationship between sleep and psychoneuroimmunology with an illuminating discussion of how the brain and immune system interact through proinflammatory cytokines. Although a single chapter, Section V is particularly useful clinically in that it discusses the treatment of fatigue through cognitive behavioral therapy, graded exercise, and pharmacotherapy.

The book culminates with a summary chapter in Section VI in which fatigue is separated into primary mechanisms (biological/neural) and secondary mechanisms (general), including deconditioning, depression, stress, medication, and sleep habits. This distinction is complex and appears somewhat artificial at times, however, as secondary mechanisms such as depression or stress may lead to mechanisms considered primary such as physiologic changes in neurotransmitters or hypothalamic-pituitary-adrenal axis abnormalities.

Fatigue as a Window to the Brain is unique in that fatigue is examined not only in various conditions but also from the vantage points of different disciplines with different methods of study. At first blush, fatigue as a general concept seems a challenging area for scientific inquiry because of its complexity and multifactorial nature. However, through its incisive definitions, presentation of empirical methods of study, and integration of available knowledge across disciplines, this book advances the scientific study of fatigue and provides compelling evidence that brain mechanisms underlie many of its aspects. Moreover, despite the findings presented that subjective fatigue associated with chronic physical illnesses does not correlate highly with disease severity, physical performance, or performance on neuropsychological tests, the book succeeds in using fatigue to elucidate how the brain functions.

Thoughtful People Thinking About People Thinking About Thinking People

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Social Neuroscience: People Thinking About Thinking People. John T. Cacioppo, Penny S. Visser, and Cynthia L. Pickett (Eds.). 2006. Cambridge, MA: The MIT Press, 328 pp., $45.00 (HB)

Reviewed by Deborah Fein, Ph.D., ABPP-CN, *Board of Trustees Distinguished Professor, Department of Psychology, University of Connecticut, Storrs, CT.*

Perhaps not since the flowering of clinical neuropsychology thirty years ago have we seen this sense of exhilaration about the emergence of a new field through the integration of existing disciplines. Clearly, these authors and thinkers feel the same excitement that could be felt when new collaborations were being forged among neurologists, psychiatrists, psychologists, and communication specialists in earlier decades. For the emerging field of social neuroscience, the parent fields include social psychology (see, for example, chapters on Race and Emotion, The Social Neuroscience of Stereotyping and Prejudice, Social and Physical Pain, and Animal Models of Human Attitudes), clinical neuropsychology (Neurological Substrates of Emotional and Social Intelligence: Evidence from Patients with Focal Brain Lesions), social cognition (Neural Substrates of Self Awareness, and three chapters bearing directly on Theory of Mind) and, of course, cognitive and basic neuroscience. Each chapter includes theoretical perspectives from multiple fields and reviews studies that use diverse techniques (including functional imaging, ERP, behavioral scales, lesion studies, developmental studies, and animal studies), although the book is very heavy on functional imaging data. As the editors acknowledge, animal and patient data are not represented in a thorough way.

This volume is one in a social neuroscience series edited by John Cacioppo and Gary Berntson that includes *Foundations in Social Neuroscience* and *Essays in Social Neuroscience*. In fact, it is one of a larger group of recent volumes on social neuroscience published in the last 10 years, but mostly in the last 5 years. All contain fascinating, cutting edge information, including attempts to define this new field, and this volume is no exception. As described by the editors, the volume focuses on the neurobiological underpinnings of social information processing. However, the title is a bit misleading, because it suggests a volume devoted to the neuroscience of theory of mind. In fact, theory of mind is covered in several fascinating chapters but other topics range widely, from theoretical treatises on the interpreta-

tion of functional imaging studies to several chapters on the neurobiology of prejudice. As discussed in Banaji's eloquent Foreword, and the editors' equally eloquent Preface, social neuroscience can refer to a huge range of behaviors and neural processes. Indeed, given how very social humans are, it could in theory refer to the study of what we do during most of our waking hours, because even ostensibly nonsocial activities may rest on ultimately social motivations.

Selecting specific chapter topics must have been difficult. The papers come out of a conference and the resulting volume has the usual drawbacks of such an arrangement: it is neither an organized overview of a field nor an in-depth treatment of a particular topic from multiple perspectives but a set of theoretically disparate chapters by stellar authors writing about what they know best. The book's strength is therefore not in its organization or exhaustive coverage of a new field (hardly possible any longer) or even exhaustive coverage of a particular area within this new field. Compare, for example, with *The Neuroscience of Social Interaction: Decoding, Imitating, and Influencing the Actions of Others* edited by Frith and Wolpert, which has more detailed discussions of specific topics, including multi-chapter sections on biological motion, imitation, and "mentalizing," and *Perspectives on Imitation: From Neuroscience to Social Science* edited by Hurley and Chater, a fascinating two-volume work on imitation with even more detail on a particular subject. This book's strength lies in the quality of the separate chapters, each of which is truly outstanding. The chapters vary a bit in their readability (some are quite dense and could not be recommended for beginning graduate students, whereas many are very clearly written and easy to read), but they do not vary in the quality and recency of the literature reviewed; the theoretical depth of thinking; or the excitement, common to all, of pursuing work in a new and integrative field.

One theme touched on in almost all of the chapters is the extent to which neural processes underlying social information processing have evolved specifically for this purpose as opposed to being adapted from (or for) more general information processing mechanisms, a set of arguments that will be familiar to many from the language literature. The issue of specificity of social neural mechanisms is addressed in most chapters, and is central to several of them, with interestingly diverse conclusions being drawn. It is addressed directly in Adolphs's chapter, What is Special about Social Cognition?, and in Berntson's chapter, Reasoning about Brains, which also goes a bit afield in a fascinating discussion of how to make valid brain localization inferences and principles governing multi-level research, (e.g., genetic to cellular to anatomical to systems neuroscience and behavior).

A subtext of the book is theory behind functional imaging studies. Nusbaum and Small's chapter, Investigating Cortical Mechanisms of Language Processing in Social Context, (in addition to their more content-related discussion of why imaging studies of language should include more naturalistic processes and social contexts) has a thought-provoking critique of the subtractive and componential logic of typical fMRI studies. They emphasize the interdigitated nature of many cortical systems, also discussed at length at Berntson's introductory chapter. Raichle's concluding chapter, Social Neuroscience: A Perspective, focuses heavily on the development of neuroimaging and its likely future.

It is difficult to identify outstanding chapters in this uniformly excellent set of contributions. Mitchell et al. have a very readable chapter on theory of mind, impression formation, and neural systems that guide social behavior and self-awareness. They also directly attack the book's central question of whether social cognition relies on a discrete set of brain regions that are distinct from other mental processes. I particularly enjoyed Stone's discussion on the evolution of social cognition, especially theory of mind, in which she discusses underlying and precursor processes (in other mammals and in children) to adult human theory of mind capabilities and Saxe's nicely complementary analysis of what each activating brain region might contribute specifically to theory of mind processes. A set of chapters on how neuroscience and comparative studies (e.g. social learning in animals) is informing our understanding of prejudice, impression formation, perceptual distortion of members of out-groups, and related phenomena is also fascinating and quite sobering. Clinicians may be particularly interested in a chapter by Ochsner on affective evaluation and the amygdala, and how cognitive influences, such as attention or reappraisal, change subjective experience as well as the neural activation underpinning subjectively experienced affect. Although the implications of this work for cognitive therapy are not discussed, the work is clearly directly applicable to clinical interventions.

I will resist the temptation to mention all of the remaining chapters. There was not a single one that was not informative in its literature review and sophisticated and elegant in its theoretical interpretation. The fact that very different, even opposing, points of view are taken makes it even more fun to read. This will be great reading for anyone interested in a sampling of current thinking by leaders in social neuroscience.

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A Contemporary Approach to Geriatric Neuropsychology

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Geriatric Neuropsychology: Assessment and Intervention. Deborah K. Attix and Kathleen Welsh-Bohmer (Eds.). 2006. New York: The Guilford Press, 467 pp., $65.00 HB.

Reviewed by William B. Barr, Ph.D., ABPP-CN, *NYU Comprehensive Epilepsy Center, New York University School of Medicine, New York, NY.*

Most neuropsychologists specializing in assessment and treatment of adults will receive a fair share of referrals for assessment of memory and cognitive functions in older patients. The past 15 to 20 years have been marked by an impressive increase in the amount known about the neurobiological basis of aging and dementia. Keeping up with this field has been like monitoring a "moving target," as a result of increasing refinements in diagnostic categories, technological developments in neuroimaging, and continuing discoveries in the fields of genetics and molecular biology. The field has needed an accessible reference that reviews all of these important areas while also providing an integration of the literature from a uniquely neuropsychological perspective. I am pleased to report that the book, *Geriatric Neuropsychology: Assessment and Intervention*, meets this important need.

The book has two parts, with Part I focusing on assessment and Part II on intervention. The editors, Deborah K. Attix and Kathleen Welsh-Bohmer, are to be commended for providing a coherent, organized structure to the book that makes it comprehensive, yet very readable. Many of the chapters, particularly in the first section, follow a predictable sequence, which will make this book valuable as a "quick and easy" reference source for both clinicians and researchers.

Chapter 1 provides a model and an organizing structure for the book's section on assessment. Chapter 2 provides a rationale and outline for the diagnosis of mild cognitive impairment (MCI), an important entity that all clinicians must now contemplate when evaluating geriatric patients. Whereas the chapter provides extensive detail on the spectrum of memory disorders in the elderly, some clinicians, particularly those working with specific neurological populations such as epilepsy or multiple sclerosis, may come away from this chapter with questions about whether the diagnosis of MCI can be applied appropriately to their patients.

The assessment section continues with an excellent Chapter 3 on neurodegenerative dementias; providing a concise update on Alzheimer's disease in addition to Frontotemporal dementia, Parkinson's disease; and Diffuse Lewy Body dementia. What is missing is a detailed discussion on the state of the art regarding the use of biological markers such as tau (*T-tau*, *P-tau*) and beta-amyloid (*Abeta-42*) in making differentiations among these various forms of dementia. The section concludes with reviews of a range of neurological, medical, and psychiatric conditions classified as slowly progressive dementias (Chapter 4) or potentially reversible cognitive syndromes (Chapter 5). Each chapter provides a clear review of the physiological basis of these conditions while also furnishing insights on their resulting neuropsychological test profiles.

The first section continues with a series of chapters focusing on specific issues relevant to neuropsychological assessment as performed in the geriatric population. Chapter 6 addresses the use of norms, and outlines many of the challenges encountered when developing and using performance-based norms on an aging population. There is also information on how to assess change in scores on tests administered longitudinally, which is one of the major applications for neuropsychological testing in this age group. Chapter 7 introduces us to methods for conducting a functional assessment, accompanied by information on how to assess medical decision-making and financial capacities. Chapter 8 emphasizes the impact that cultural issues play in assessment of elderly patients, including the confounding role that literacy and socioeconomic factors play in assessment of patients from various ethnic minority groups. The section's concluding Chapter 9 on feedback provides a number of important points that will be helpful to those conducting assessments on patients at any point along the age spectrum.

Chapter 10, introducing Part II, is likely to change the minds of those who hold the outdated view that psychological based interventions are useless in patients with neurodegenerative disorders. It gives the impression that all is not hopeless for these patients and that a great deal can be accomplished with appropriately targeted therapies. The quality of the chapters is more variable in Part II. For example, authors of one of the chapters provide new data and presuppose the reader's familiarity with their particular approach to treatment, whereas a chapter on language intervention reviews interesting work on the treatment of primary progressive aphasia, without providing details on what might be done for the semantic impairments commonly seen in more prevalent forms of dementia.

Another intervention chapter provides a convincing introduction to the method of spaced retrieval (Chapter 12), with

results that will certainly capture the attention of those neuropsychologists who focus their practice on assessment rather than intervention. Chapter 13 on multitechnique program approaches provides an informative review of how much therapeutic work has actually been done on the geriatric population, which is more than many might think. Chapter 15 includes a discussion on the use of external aids for compensating for memory deficits, which many might recognize as useful from a common-sense standpoint without actually knowing how to implement their use. The chapter gives a reasoned and detailed approach to using these devices with elderly, memory-disordered patients.

The final section includes chapters on a number of specific psychotherapeutic approaches. Chapter 16 contains not only a nice review of the behavioral treatment literature but also a discussion of many of the concrete details critical to developing a successful behavioral intervention program. Much of the information from this chapter will be useful for clinicians for inclusion in the recommendation section of their neuropsychological test reports. Chapter 17 provides valuable tabular listings of behavioral treatments for specific behavioral conditions and related discussion on these topics. Many will be interested to read Chapter 18 on group psychotherapy that offers specific recommendations for how one can successfully provide treatment to geriatric patients using this modality. Chapter 19 on pharmacological approaches, which will be anticipated by many readers, is well worth the wait until the book's end. The chapter provides a comprehensive review of drug treatment strategies for treating memory disorders including details regarding the pharmacological properties of various agents. Reviewing this information from the neuropsychologist's standpoint makes this a unique contribution to the often dense pharmacological content contained in many other texts.

Those who decide to obtain this book will be very happy with their purchase. The book is comprehensive and well organized, which makes it an ideal selection as a resource to place on one's bookshelf. It is up-to-date and differs from similar books by providing a uniquely neuropsychological point-of-view about neurodegenerative disorders and related syndromes rather than simply rehashing methods for conducting a differential diagnosis. The book's viewpoint is helpful for the situation commonly encountered in most current clinical settings, when a multidisciplinary team makes the diagnosis and the neuropsychologist is asked to provide a functional assessment of the patient as well as an appropriate intervention. The sections on intervention are provided in a particularly useful and digestible format. The outline and theoretical rationale for neuropsychological intervention in geriatric patients is presented in an accessible manner, more useful than what is typically found in most sources on cognitive rehabilitation, including those books addressing traumatic brain injury intervention strategies. Whether a veteran or a recent entrant into the field, neuropsychologists from all backgrounds and specialties will benefit from this book's well-presented introduction to contemporary practice in geriatric neuropsychology.

Disorders of Epileptic Origin From A Developmental Perspective

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Cognitive and Behavioral Disorders of Epileptic Origin in Children. Thierry Deonna and Eliane Roulet-Perez. (Eds.). 2005. MacKeith Press, distributed by Cambridge University Press, 256 pp., £50.00; $90.00 HB.

Reviewed by Michael Westerveld, Ph.D., ABPP-CN, *Associate Professor, Neurosurgery, Yale University School of Medicine, New Haven, CT*.

Understanding the effects of epilepsy, a neurological disorder frequently beginning in childhood, is particularly important because it may disrupt the development of foundations for later cognitive and psychological functions. Despite the prevalence of seizure disorders and the importance of the developmental period in which seizures frequently begin, surprisingly little information about the effects of seizures with respect to cognitive and behavioral functioning is available. Moreover, understanding of the complex interactions between the pathological processes (bioelectric disturbance, neuropathology) and developmental, environmental, and psychological variables that contribute to the overall clinical picture is limited. In *Cognitive and Behavioral Disorders of Epileptic Origin in Children*, Thierry Deonna and Eliane Roulet-Perez take a unique approach to beginning to untangle these variables, drawing on their extensive clinical experience to present a series of cases that illustrate how seizures influence development.

In the foreword, Jean Aicardi reminds us that prior to the introduction of the scientific method, which relies on large samples of patients amenable to statistical analysis, careful observation of single cases and "anecdotal" evidence was the primary method of inquiry for understanding disease and discovering treatment effects. Despite the limitations inherent in case series, meticulous observations framed in the context of contemporary knowledge can still provide valuable insights into the effects of disease on the individual in multiple domains. The availability of advanced tech-

nology for studying structural and functional anomalies enhances the power of the case study as a means for understanding disease.

The authors begin with the premise that epilepsy's effect has on development is multidetermined, and that the seizures are important factors. The emphasis throughout the book is on this factor—that is, the seizure as a recurring bioelectric event is important not only in the transient behavioral disruption observed during a seizure but also because it produces changes in structure and function that contribute to ongoing problems later in development. While acknowledging the importance of other factors, they make the important point that not all of the behavioral and cognitive disturbances are caused by a static underlying neuropathological condition. Successful seizure treatment may, in some cases, be accompanied by amelioration of the accompanying cognitive problems.

The authors lay the foundation for the rest of the book in Chapters 1 and 2, tracing the development of their approach in historical context of emergent thinking about seizures in children. Subsequent chapters are organized around a central theme, with case studies from practice used to illustrate the authors' theses. In Chapter 3, the authors provide a brief review of how seizures alter the neurological landscape of the child at various stages of development. They explain that seizures tend to spread *via* established networks and, just as normal stimulation reinforces synaptic connections necessary for development of cognitive functions, abnormal stimulation can alter these same networks. In chapter 4, they begin to isolate the effects of the ictal discharge on cognitive development and function, arguing that epileptic discharges can have effects that are distinct from the effects of the underlying cause of seizures (e.g., mass lesion, MTS) or side effects of treatment with antiepileptic medications before moving on to discuss these effects in Chapter 5. Chapter 6 is a brief review of cognitive and behavioral disturbances in various epilepsy syndromes, again framing the value of the individual longitudinal case study to identify the direct effects of epileptic discharges on behavior.

The next three chapters provide brief reviews of neurocognitive function from three different approaches. In Chapter 7, a functional domain-by-domain approach to neuropsychological deficits begins with a cursory review of attention and memory in epilepsy. This is followed by a discussion of language and reading disturbance, with case presentations to illustrate the association of reading disorders and correlation of reading errors with active epileptic discharges. In Chapter 8, the approach shifts from functional domains to the spectrum of cognitive dysfunction in selected epileptic syndromes, with the most detailed discussion focusing on the benign partial epilepsies that, it turns out, may not be so benign when careful analysis of cognitive function is undertaken. In Chapter 9, brief discussion of specific underlying pathologies (developmental and acquired lesions) is punctuated by two illustrative cases.

In Chapter 10, the authors miss an opportunity to extensively discuss issues of plasticity in development following surgery, a topic that is ideally suited for the methods and direction that the rest of the text takes. A cursory overview of surgery is followed by a discussion of language development following dominant hemispherectomy. However, less extensive and less radical surgery is becoming increasingly seen as a viable option for children with focal epilepsies, and study of individual outcomes and more elaborate discussion of the controversial issue of early surgery would have been a valuable addition.

Chapters 11 and 12 take on the difficult topic of more severe cognitive (e.g., mental retardation) and developmental disorders (autistic spectrum disorders) and their possible association with epilepsy, noting that often the association is not causal but that the contribution of epileptiform activity needs further exploration.

The detailed testing and observations of individual cases depend on a structured approach to child assessment. In Chapter 13, the authors present an overview of their approach to child assessment, including a brief discussion of important issues such as test-retest effects, timing of assessments in relation to active seizures, and taking into account side effects of medication treatment. Whereas far from comprehensive, this chapter can be a helpful guide to the nonneuropsychologist regarding the structure and content of neuropsychological examination of the child with epilepsy. The next two chapters provide a similar overview of medications in epilepsy, and emotional/psychological aspects of epilepsy for the child.

The final chapter addresses a topic rarely discussed and in need of more attention—what happens to the children with epilepsy when they become adults? The authors present an optimistic picture, but clearly it is important that more work be done in this area. It is this that I think is the most important point of the book: that understanding the long-term outcome in all cases (chronic, developmental, treated, untreated) is needed to better understand the developmental consequences of epilepsy, and detailed follow-up can provide an important window for viewing the mechanisms of development and plasticity in the more general sense.

Throughout the book, the authors remind us that many children with epilepsy function normally with no disturbances in cognition or behavior. There is a great deal of diversity in the functions of children, even within "homogenous" diagnostic groups (e.g., Temporal Lobe Epilepsy). It is this diversity that makes application of group findings to the individual difficult, proving the value inherent in careful analysis of individual cases. Although their treatment of some topics is cursory, it does not seem that their intent was to provide a comprehensive overview. Instead, they briefly introduce problems and analyze individual cases to illustrate their points. By providing a different view on the fluctuating nature of seizure disorders and how factors such as the diversity of underlying pathology interact with the individual characteristics to produce the overall clinical picture, the authors have produced a work that can be a useful addition to a more comprehensive library for clinicians who work with children that have seizure disorders.

RECENT AND RELEVANT

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Beyond Nature-Nurture: Essays in Honor of Elizabeth Bates. Michael Tomasello and Dan Isaac Slobin (Eds.). 2005. Mahwah, NJ: Lawrence Erlbaum Associates, 339 pp., $69.95 (HB).

This highly personal and worthwhile collection of chapters by a distinguished international faculty of colleagues and collaborators forms a fine tribute to Elizabeth Ann Bates, developmental psychologist, psycholinguist, and cognitive scientist, whose writings and teaching have influenced many who study language in children or adults. After the editors' finely worded Introduction that summarizes the essence of Dr. Bates' interests and explorations, and her Emergentist theory, a few pages of *Elizabeth Bates's Aphorisms for the Study of Language, Cognition, Development, Biology, and Evolution*, and the *Vita of Elizabeth Bates*, chapters are contributed for Part I. *Gestures and Word Learning*, Part II. *The Competition Model and Connectionism*, Part III. *Grammar*, Part IV. *Biology and Language*, and Part V. *Language Processing*.

Perspectives on Imitation: From Neuroscience to Social Science. Volume 1. *Mechanisms of Imitation and Imitation in Animals. Susan Hurley and Nick Chater (Eds.). 2005*. Cambridge, MA: The MIT Press, 437 pp., $35.00 (PB).

Perspectives on Imitation: From Neuroscience to Social Science. Volume 1I. *Imitation, Human Development, and Culture. Susan Hurley and Nick Chater (Eds.). 2005*. Cambridge, MA: The MIT Press, 547 pp., $40.00 (PB).

The first paragraph of the Introduction to both Volumes 1 and 2 includes the statement that ". . . imitation is a rare ability that is fundamentally linked to characteristically human forms of intelligence, in particular to language, culture, and the ability to understand other minds." These two volumes include fascinating chapters by researchers from diverse fields of study on current thinking about the relevance and essential nature of imitation as a fundamental trait. Volume I, Part I, focuses on mechanisms of imitation, including discussion of the mirror neuron system, the neural underpinnings of imitation, and its relations with language and empathy, identity, neurophysiological aspects gleaned from neuroimaging experiments, application of ideomotor theory, along with discussions of meme theory and a shared circuits hypothesis for a functional architecture for control, imitation, and simulation. In Part II, imitation in animals is the focus, with comparisons to humans. Volume II, Part I, addresses imitation and human development, including theory of mind. It includes a chapter supportive of the Piagetian theory and timetable, and discussions on human social learning, selective tool use by children, imitation as entrainment, among other stimulating perspectives. Part II, provides discussions on imitation related to social and cultural roles and functions, deceptive mimicry, effects of media violence, moral development, mimesis, and rationality.

Clinical Neuropsychology: A Pocket Handbook for Assessment. Peter Snyder, Paul D. Nussbaum, Diana L. Robins (Eds.). 2006. Washington, DC: American Psychological Association, 769 pp., $49.95 (PB).

This updated small paperback revises the well-received 1998 edition. There are new emphases, such as on neuroimaging, neurochemical bases for various disorders, and pharmacologic treatment approaches. New chapters include *Neuroimaging and Clinical Neuropsychological Practice*, *Schizophrenia*, *Neuropsychology of Adult Neuro-Oncology, Late-Life Depression*, and *Adult Attention-Deficit/Hyperactivity Disorder*. The 1998 edition's Part II, Pediatric Neuropsychology, and Part III, Geriatric Psychology, are now merged as *Part II. Neuropsychology and the Human Life Span*. Previous chapters on estimating premorbid intelligence, learning disorders, and HIV infection are omitted.

The A-Z of Neurological Practice: A Guide to Clinical Neurology. By Roger A. Barker, Neil Scolding, Dominic Rowe, and Andrew J. Larner. 2005. Cambridge, UK: Cambridge University Press, 936 pp., $75.00 (PB).

The authors qualify up-front their inclusions from abducens nerve palsy to zygomycosis in a handy reference book aimed at neurologists-in-training and allied professionals. The general template for neurological conditions includes clinical features, investigational techniques, differential diagnosis, pathogenesis, treatment, selected references, and a minimal number of useful cross-references within the text.