active contributor to the field. The important principles of neural plasticity as they relate to behavioural recovery put forward in this monograph provide a rational basis for neurorehabilitation and hopefully will further stimulate readers to turn their scientific and clinical attention to this next great frontier.

Sandra E. Black,
Toronto, Ontario

CLINICIAN'S GUIDE TO NEUROPSYCHOLOGICAL ASSESSMENT. 1994. Edited by Rodney D. Vanderploeg. Published by Lawrence Erlbaum Associates Inc., Publishers. 307 pages. $C36.00

This book is a practical guide to the assessment and interpretation of neuropsychologial testing procedures as widely applied in neurological disorders. Although intended primarily for students and practitioners of clinical neuropsychology, it is of interest also to neurologists who wish to better understand and utilize neuropsychological testing. Given the complexity of human behaviour and the tendency of many neurological disorders to take a toll on human cognition, neuropsychological evaluation should be considered part of the neurological investigative armamentarium, not different than an EEG or MRI. In certain disorders, it is the most sensitive tool for detection and sometimes differentiation of neurological disease. The need to understand the information provided by such assessment, including its limitations, should be different than the need to understand the interpretation of an angiogram or a CT scan. This book provides important insights into neuropsychological assessment techniques, interpretation and application of results, with chapters authored by clinical neuropsychologists engaged in clinical practice as well as teaching and research.

Chapter 1 provides an overview of the interview procedure and administration of neuropsychological tests emphasizing the importance of determining the primary referral question, which neurologists should try to formulate as clearly as possible since this may influence the choice of tests and interpretation. An important part of the neuropsychological assessment is the clinical interview which is structured and more comprehensive than usually is possible in a typical neurological consultation. Behavioural observations during the interview and testing can provide important information, with respect to executive functions, mood state and motivation. The main advantage of neuropsychological assessment over mental status assessment is the standardized administration of quantitive tests over a broad range of cognitive functions. This chapter discusses techniques to maximize patient performance including the order of tests, pacing, use of breaks, single verses multiple testing sessions, etc. Procedures to minimize scoring and clerical errors, to look for mismatches and to ensure accuracy in recording of results are also discussed. In Chapter 2 there is a valuable review of methods used to estimate promorbid level of functioning, which clearly affects interpretation, including historical data, socio-economic status, reading tests and demographic variables. Chapter 3 presents principles of interpretation as a multistage process which integrates data from the history, interview, behavioural observations and test scores. The influence of subject-specific variables, state factors, psychological and personality factors and effects from the interaction of different cognitive functions, including diffuse versus specific deficits, low order and high order deficits, primary and secondary effects are all discussed in a coherent, informative fashion. Indicators that an astute neuropsychologist can use to assess symptom exaggeration or feigned deficits are also briefly described, for example, inconsistencies or poor-than-chance-performance.

Different applications of neuropsychological evaluations, in particular their use in diagnosis, in rehabilitation and in the forensic context are discussed in chapter 4. A series of useful tables describing potential pit-falls in these applications and how to overcome them is provided, as are techniques for providing feedback to both patients and clinicians.

Chapter 5 considers the special application of neuropsychological assessment to children. Three key variables affect the outcome of brain lesions in children, including type of lesion, location and age at the time of damage. The basic domains of assessment are outlined as well as the need for normative reference. The author advocates more longitudinal studies and research into the effectiveness of cognitive remediation in children.

Psychometric issues including reliability, test theory, test referencing, test validity, modelling of data and sampling characteristics are reviewed in chapter 6. Traditional concepts of normal curve distribution often do not apply because of highly skewed distributions in patient populations. It is argued that neuropsychology should not be bound by normed reference tests as traditionally used, but should move towards modelling the tails of sample distribution through operating characteristics.

The last two chapters consider two different approaches to neuropsychological assessment. The cognitive-metric, fixed-battery approach is the more traditional and commonly used in everyday practice. The contents of two new neuropsychological batteries are compared in some detail, including issues such as conversion from raw to scaled scores and age and education correction. An important future direction in the fixed-battery approach will be the increasing application of computerized administration and of computer processing in the interpretation of such batteries. A more flexible, decision-tree-oriented approach to evaluation, usually based on a priori models of brain function, can also be used. The major examples discussed are Luria's approach, the tradition of European Cognitive Neuropsychology, which develops theoretically-motivated tasks to probe specific cognitive deficits in an individual subject, and the Boston process approach, which analyzes how the tasks are carried out as well as the total score. The fixed-battery approach arose within the psychometric tradition, whereas the flexible-battery approach uses neurological and information processing concepts. The two approaches provide alternative, but not mutually exclusive, frameworks for conceptualizing and quantifying data.

In summary, this book guides the reader through the assumptions, procedures, interpretation and different approaches to neuropsychological testing. While it is particularly directed toward neuropsychological trainees and practitioners, it will certainly help interested physicians to interact more knowledgeably with their neuropsychological colleagues. As health care service continue to get relentlessly trimmed, it is important that neuropsychological assessment continue to have a proper place in the repertoire of the neurological

investigation. Physicians must understand the tools available to supplement the basic neurological assessment, in order to select them appropriately and to evaluate properly the information they provide. In this context, this book serves a useful purpose and can be recommended to both physicians and neuropsycholgists alike.

Sandra E. Black,
Toronto, Ontario

TRAUMATIC HEAD INJURY IN CHILDREN. 1995. Edited by Sarah H. Broman, Mary Ellen Michel. Published by Oxford University Press – Canada. 299 pages. $C65.00

This book evolved from a 1993 conference on head injury in childhood at the National Institute of Neurological Disorders and Stroke in Bethesda, Maryland. The purpose is to evaluate the current state of knowledge about consequences of traumatic head injury in childhood and to identify sources of variability in outcome found in studies of both severe and mild injury". This objective is achieved in 16 chapters.

The book is organized in 4 parts. Part 1 deals with key issues, including a developmental perspective on outcome, epidemiological features of brain injury in children, and pathophysiological responses of the child's brain following trauma. Part II, "The Data", has chapters on behavioural sequelae, neurobehavioural outcome, discourse as an outcome measure, the UCLA study of mild closed head injury, mild head injury in the British Birth Cohort, attention deficits after injury, and the role of the family in recovery from brain injury. Chapters in Part III are a twenty-three year followup study, lessons for the study of pediatric head injury outcome based on recovery of function in adults, evaluating efficacy of rehabilitation after pediatric traumatic brain injury, and the prospect of pediatric clinical trials. Part IV, "Commentary" includes implications for clinical care and cognitive neuroscience, and a summary of progress in recent years.

Several chapter authors point out the problems involved in doing outcome studies after head injuries in children. Studies need to be prospective, take into account the mechanism of injury, ensure adequate numbers of children of all ages (0 to 14 or 0 to 18?), clearly define when the Glasgow Coma Score or a pediatric modification are to assessed, include information about the child's pre-morbid function, utilize standard imaging studies, and use assessment strategies that take into account the normal acquisition of skills as a child develops. The definition of mild head injury based only on the Glasgow Coma Score may need to be changed. Evidence in the literature suggests that a GCS of 13 may indicate a more severe injury than a GCS of 14 or 15. The quality of the studies included in this book is variable, the reader needs to critically evaluate the weighting given to each.

A strength of this book is pointing out new avenues to explore, such as the use of functional imaging methods, using models of intraindividual change, studying the processing of information, and looking at therapies such as hypothermia, dextromethorphan and free radical scavengers. I recommend this book to pediatric neurologists and neurosurgeons, developmental pediatricians, child and adult psychiatrists, rehabilitation specialists, as well as psychologists and neuropsychologists. Despite the flaws in the studies, it is the best summation of the "state of the art" in pediatric head injury outcome information to date.

Terry Myles,
Calgary, Alberta

THE NMDA RECEPTOR. 1994. SECOND EDITION. Edited by G.L. Collingridge and J.C. Watkins. Published by Oxford University Press. 503 pages. $C80.95

Only one type of the four types of receptors activated by glutamate is covered in this book. This may seem rather specialized, and not all clinicians will rush out and buy this volume. But then, how is a clinician supposed to understand glycine encephalopathy, without some idea of how glycine acts in the nervous system, especially on the NMDA receptor? The chapters on the role of the NMDA receptor in learning and memory, epilepsy, and other arenas in the clinical sphere will attract the academic clinician in any area of clinical neuroscience. Fundamental insights into the actions of glycine, and glutamate, in both normal and pathophysiologic situations are contained between the covers. Black holes in knowledge of excitatory amino acid action will result if the neuroscience researcher ignores this book. For example, D- and L-glutamate are an exception among enantiomeric pairs, in that they are roughly equally potent at the NMDA receptor. The relatively low toxicity of naturally occurring gluatmate or aspartate versus their N-methylated and other congeners is not explained by receptor-ligand interaction, but by lack of uptake of the artificial ligands by the axonal high affinity glutamate uptake system. The regenerative, self-sustaining, or "run-away" positive feedback depolarization of the NMDA receptor is explained at several points in the book. As a reference work for those working in any field related to EAA and NMDA receptors, this book is invaluable. Much of the history of the field of excitatory amino acids is contained within this book. I recommend it to the neuroscience researcher, as well as the clinician who wishes to have a reference work on the NMDA receptor on the bookshelf.

R. Auer,
Calgary, Alberta

PEDIATRIC CLINICAL ELECTROMYOGRAPHY. 1996. By H. Royden Jones, Jr., Charles F. Bolton and C. Michel Harper, Jr. Published by Lippincott-Raven. 487 pages. $C127.00

This is a book for electromyographers investigating pediatric neuromuscular patients. Basic knowledge is assumed and electrode and needle sites and techniques are not repeated. Added tips are given for approach to the infant and child where cooperation and short inter-electrode distances are limiting factors in procedure duration and test reliability. Tables comprising age controlled, normative data from different authors for motor and sensory responses, F waves, H reflexes, blink reflexes, phrenic