Journal of the International Neuropsychological Society (2013), **19**, 488–491.

BOOK REVIEWS

Leader of the Pack

doi:10.1017/S1355617713000337

Neuropsychological Assessment, 5th Edition, Muriel Lezak, Diane B. Howieson, Erin D. Bigler, & Daniel Tranel. 2012. New York: Oxford University Press, 1161 pp., $125.00 (HB).

Reviewed by Peter J Anderson, Ph.D., *Murdoch Childrens Research Institute, Melbourne and the University of Melbourne, Victoria, Australia.*

Neuropsychological Assessment is without doubt one of the most prominent and cited textbooks in clinical neuropsychology. The first edition was published in 1976, and over the past 35 years Muriel Lezak and colleagues have updated this remarkable textbook on four occasions. Regular revisions are a necessity to keep the text relevant and contemporary given the vast advances in measurement and knowledge over the past three decades.

Most in the field of neuropsychology will have a copy of *Neuropsychology Assessment*, with some having multiple editions. Each revision has included additional sections, updated text, and added new tests resulting in a significantly larger textbook in each case. While the structure has not changed greatly, especially for the two most recent editions, the 5th edition continues the tradition of being significantly updated and larger. However, the aim of this review is not to outline the changes between the 4th and 5th editions; instead it will provide an overview and critique of the content and features of the most recent edition of this renowned textbook.

For such a voluminous book, the text is presented in a very engaging style and from a clinical perspective. The style is also consistent throughout the 800+ pages, which is not always the case with multi-author books. It is written for clinicians, particularly trainees, however given the wealth of experience and knowledge of the authors, clinicians of all levels will benefit from reading *Neuropsychological Assessment*. Throughout the book, clinical anecdotes and examples are presented to illustrate important clinical points, as well as highlighting diagnostic features of assessment techniques. These case studies are generally well positioned and are very well integrated with the general text. The authors endorse and justify a clinical observational, hypothesis driven, and flexible test battery approach to assessment. A feature of the book is that opinions on clinical issues, assessment approaches, and different measures are based on both clinical experience and an extensive evaluation of the literature. In other words, up to date evidence is provided but in conjunction with practical and diagnostic considerations. There is some overlap and repetition between chapters. However, rather than being annoying it is a successful method for reinforcing important points. Given the breadth of this book, the organization of the sections and chapters must have posed a significant challenge. There were some chapters in which I felt important information was lacking, only to find these concepts introduced later in the book. This may present a challenge for those who are reading single chapters rather than the entire book from cover to cover.

The book is divided into two distinct sections: 1) Theory and practice of neuropsychological assessment (Chapters 1–8), and 2) A compendium of tests and assessment techniques (Chapters 9–20). Section 1 provides the foundations for neuropsychological assessment. In addition to providing a brief historical perspective to the evolution of neuropsychology, the early chapters define some of the more common terms and concepts used in the field. Basic neuroanatomy is described in Chapter 3 and provides an excellent primer for more detailed neuroanatomy texts and formal neuroanatomy courses, and a useful starting point for trainee neuropsychologists. Consistent with the rest of the book, the structure of the brain is described from a clinician's perspective, with brief descriptions of the functional consequences associated with injury to specific brain regions. While acknowledging that this is an adult neuropsychology text, a section on brain development would have made this chapter more complete. Children with brain injuries ultimately mature into adults and many of the neurological conditions diagnosed in adulthood are developmental in nature.

Chapters 4 to 6 review a huge range of issues directly related to the assessment process. For example, considerations for identifying deficits are outlined, including the challenges of assessing premorbid ability as well as the importance of determining a person's strengths. The structure and content of the neuropsychological evaluation is covered including the type of information that can be obtained during interviews and direct observation. A flexible test approach and selecting tests according to the examination goals is justified. The psychometric properties of assessment tools that clinicians

should take into account are reviewed. While acknowledging the importance of test norms for evaluating performance, an understanding of what level of performance to expect (test "wiseness") is recommended, as appropriate norms are not always available. Guidance is provided on the content and structure of feedback interviews and reports, while numerous procedural issues are covered including practice effects, the use of technicians, and testing the patient's limits. Interpreting test performance and integrating this information with direct and indirect observations is also covered in detail. Related to this, the authors outline the dangers of making interpretative and diagnostic judgments on test scores only.

The biggest chapter in the book (Chapter 7) reviews the neuropathology and clinical features of the most common adult neurological conditions. Sections are provided on, but not limited to, traumatic brain injury, stroke, epilepsy, mild cognitive impairment, dementia, multiple sclerosis, and brain tumor. The authors acknowledge that these reviews are not comprehensive, however they provide a solid basis for further reading. The next chapter focuses on clinical and socio-demographic factors that may influence behavior and test performance. It begins with a discussion on injury related factors such as diffuse versus focal injuries, lesion size and location, progressive and non-progressive injuries as well as age at onset. Numerous non-injury factors are also mentioned including sex differences, handedness, race, culture and ethnicity, primary language, premorbid mental ability, education and literacy, personality, mental health status, and malingering.

Section 2 of *Neuropsychological Assessment* is a review of common neuropsychological tests and assessment techniques used with adults. It has separate chapters on orientation and attention (Chapter 9), perception (Chapter 10), memory (Chapters 11 and 12), language (Chapter 13), construction and motor skills (Chapter 14), concept formation and reasoning (Chapter 15), and executive functions (Chapter 16). These chapters are similar in scope to the previous edition, but provide more updated literature reviews and include recently published measures. Given the huge range of measures now available, the authors do not attempt to cover all measures in these domains, but rather focus on the measures that are commonly applied in clinical and research settings, as well as including some experimental measures that have clinical utility. An appealing aspect of this section is that the authors integrate a comprehensive literature review of measures with their clinical experiences in using the tools when appropriate. This practical information is very helpful for clinicians in deciding whether or not to implement a new instrument into their assessment battery. At the commencement of each of these chapters a brief definition of each domain is provided, however a broader more in-depth description would be helpful. Clinicians need a solid conceptual understanding of these neuropsychological concepts before they can decide on an assessment battery. There will always be debate as to how to categorize neuropsychological tests as most are multi-dimensional and tap multiple cognitive skills. The authors of *Neuropsychological Assessment* acknowledge this overlap, but as a consequence the review of a specific test may not always be in the section the reader expects. Some domains are covered more extensively than others. For example, the orientation and attention chapter was quite brief, especially given that it covers processing speed and working memory.

The final four chapters review cognitive and neuropsychological batteries (Chapter 17), observational methods, rating scales and questionnaires (Chapter 18), personal adjustment and emotional functioning (Chapter 19), and malingering (Chapter 20). Domain specific batteries are reviewed as a whole, but in some cases commonly used subtests are also reviewed as a stand-alone measure. Generally, newer batteries receive less extensive reviews, which is understandable given the more limited literature, and individual subtests from these recently published batteries are rarely described in detail. The authors provide a balanced view on the pros and cons of computer testing, although these measures are described only briefly and are an area for expanding in future editions. The next 10 years is likely to see a major shift in how cognitive tests are administered with the explosion of tablets. These IT platforms, with high resolution interactive touch screens, will undoubtedly be utilized in the development of future measures, and have great potential for creating novel, as well as ecologically valid, measures.

Neuroimaging technologies have advanced greatly over the past 30 years and continue to evolve at a rapid pace. Furthermore, access to these advanced neuroimaging modalities has increased greatly, and as a consequence neuropsychologists need a good understanding of these technologies as they advance our understanding of brain-behavior relations and are very often used to diagnose brain pathology and clinical conditions. In an appendix rather than a chapter, *Neuropsychological Assessment* briefly describes neurophysiological techniques such as electroencephalography (EEG) and magnetoencephalography (MEG), structural imaging techniques such as computed tomography (CT), magnetic resonance imaging (MRI), magnetic resonance spectroscopy (MRS), and diffusion tensor imaging (DTI), and functional neuroimaging techniques such as positron emission tomography (PET), and functional MRI (fMRI). Neuroimaging is becoming such an integral part of neuropsychological work that it was surprising that this section was not a full chapter with a greater description of these technologies.

In summary, the fifth edition of *Neuropsychological Assessment* continues to be one of the leading textbooks in neuropsychology. It is an immensely useful reference for all assessment issues in adult neuropsychology, and all neuropsychology students and practitioners would benefit from having it in their collection. *Neuropsychological Assessment* is an ideal book for neuropsychological students and new graduates, and the latest revision ensures that it continues to be relevant and up-to-date.