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BOOK REVIEWS

Cultural Relativity in Neuropsychology

Cross-Cultural Neuropsychological Assessment: Theory and Practice, by Victor Nell. 1999. New York: Lawrence Erlbaum Associates. 289 pp., $39.95.

Reviewed by KJELL FLEKKØY, dr.philos., *Department of Psychology, University of Oslo and Department of Neuropsychology and Rehabilitation, Ullevål Hospital, Oslo, Norway* and FRANK LARØI, cand.psychol., *Neuropsychology Unit, Department of Psychology, University of Liège, Belgium.*

Aristotle was right: Give me a fixed point, and I will move the earth. The "earth" in this case is the urban, semiliterate, nontestwise patient, in particular from South Africa, with symptoms of mild or moderate head trauma and in need of neuropsychological assessment. The "fixed point" does not exist in the form of test given being the same as test received conceptually with valid norms to go with it. How then can we move the earth? With justice done to psychometric requirements and most importantly, to the mental abilities of the patient, we can not. The neuropsychological tests normed on Western subjects within the Western cultural sphere, has put this patient to a disadvantage.

Professor Victor Nell of the University of South Africa has set himself a tall task. Building on clinical experience and erudite learning, and writing with great elegance, he proposes what he calls a "behavioral neuropsychology." This is not yet a fixed point, rather a method and an instrument (set of tests) that in due time may lead to the construction of the fixed point we need. We eagerly join him in this quest: Whether in Oslo or New York, Johannesburg or London, neuropsychologists are called upon to assess patients from cultures very different from those on which the tests are normed.

Disfigured by Apartheid, as the author says, South Africa was a singularly heart-breaking vortex of politics and science used for a purpose. Dr. Nell shows us how psychology, and especially IQ research, actually is intermingled with the political and scientific climate of its time. This he does by presenting test-derived information from various countries, cultures, and times, and pointing to their differences.

He has done a great service by compiling culturally heterogeneous data (to which he and his group have contributed) on the WHO neuropsychological core test battery and other tests. This is the largest database of its kind in existence, and will be of great help in research and in clinical work. Especially for simple reaction time, the similarities between countries and continents is very strong; more so than argued by the author. The scope is broadened in interesting ways by the presentation of more specialized data: Luria's Uzbek study (1931) based on Vygotsky's theories, its recapture in Kwa Zulu-Natal by the South African psychologist Andrew Gilbert in 1984, and in particular, the studies based on Piaget's methods and concepts (e.g., conservation) among African and Eskimo children. These latter methods and concepts are presented in their original form, without mention of recent advancements, nor of the often encountered gap between theory and practice when utilizing Piaget's stages in clinical work.

It is evident that culture molds our thinking on a pattern of basic similarities. The author is inclined to take an environmental stance to the data he presents, and inheritance is treated in a strangely univariate manner, rather than the source of variance it actually is. Genetic influence, of course, may also be a covariate to education through selection.

"Behavioral neuropsychology" occupies the second half of the book. First, a descriptive account of the most common symptoms following mild and moderate head trauma are presented. Other brain disorder categories, such as brain tumors, stroke, or dementia are only mentioned in passing, as head trauma injuries are the most commonly encountered type of brain damage by South African neuropsychologists. Secondly, a core test battery composed mainly of WAIS–III and WMS–III tests is proposed (9 and 10 tests, respectively). Supplementary tests for children and adults with less than 12 years of education are also suggested. Based on data given earlier, measurement of simple reaction time is wisely included. A third component is gradual adaptation and learning as part of test administration, in what one could call a clinical neuropsychological adaptation of Vygotsky's zone of proximal development. The main target group is adults with less than 12 years of education.

The author acknowledges the problem inherent in factor analysis of test scores as a method for identifying central and diagnostically relevant cognitive functions. Still, he seems to treat the problem of functional content of tests more as a psychometrician than a cognitive researcher; for example, Matrix Reasoning is grouped with Block Design under "Perceptual Organization." The choice of factor-characterized tests for a battery to build on is undoubtedly wise, however. For full-scale, neuropsychological assessment, the approach suggested is sound. Whether it is applicable in regular, clinical settings for nontestwise subjects outside bigger institutions, is much more doubtful. If valid test scores can not be obtained, symptoms and behavioral observations will have to take their place, and we will have to know their meaning. The influence of culture on the manifestation of symptoms is not analyzed in any depth, and will therefore have to be an important topic for future (differential) diagnostic work within culturally defined regions. For example, certain cultures prefer to talk in terms of physical rather than mental problems and explain their problems in terms of loss of soul substance. Also, culture can influence such factors as treatment expectations, therapeutic compliance, family involvement and the interpretation of side effects. Evidently, a full-fledged behavioral neuropsychology is not yet here. Explaining symptoms, arousal—or rather hypoarousal—is made to encompass symptoms that are probably causally heterogeneous. The relation of arousal to prefrontal cortices is also given a theoretical interpretation far from one everybody would agree with.

The author argues convincingly for cultural relativism in all psychological work and in neuropsychology in particular. He also presents a well-reasoned method for gathering neuropsychological data and a theoretical foundation for it that may lead to a behavioral neuropsychology. *Cross-Cultural Neuropsychological Assessment: Theory and Practice* is a very valuable contribution to cross-cultural neuropsychology as a clinical discipline and a research area in its own right, and will very likely become a source reference in the field.

The Authoritative Forensic Neuropsychology Text

Forensic Neuropsychology: Fundamentals and Practice. J. Sweet (Ed.). 1999. Lisse, The Netherlands: Swets & Zeitlinger Publishers. 535 pp., $119.00.

Reviewed by Jim Andrikopoulos, Ph.D., *Ruan Neuropsychology Clinic, Mercy Medical Center, 1750 48th Street, Suite 2, Des Moines, Iowa 50310.*

This book represents the latest effort to summarize a field that has grown exponentially. As stated in the introduction to the book, the contentious nature of forensic neuropsychology has resulted in a range of opinion among even the most seasoned neuropsychologists. Consequently, I must be absolved for offering what may seemingly be a partisan slant in this review.

Part I, titled Fundamentals consists of three chapters that lay the groundwork of the book. Chapter 1 deals with psychometrics. This chapter serves as a reminder to clinicians who fail to use valid and reliable tests. In a forensic setting, where test selection and interpretation are likely to be challenged, this would be shortsighted. The section on extra-psychometric considerations is exemplary. Chapter 2 covers a fundamental issue in diagnostic neuropsychology—that of base rates. Knowing how often a symptom or disorder occurs within a given population increases diagnostic accuracy. Base rates for postconcussional symptoms are high since they are found in non-head-injured patients. The issue of base rates in this context is overemphasized and is important only if your goal is to document the presence or absence of a symptom without characterizing it. The author emphasizes how the issue of base rates is especially applicable to the diagnosis of malingering and judiciously cautions on the implications of an incorrect diagnosis. In chapter 3, premorbid cognitive and psychological functioning is discussed. The most useful caveat provided is that "premorbid factors . . . may affect related neurodiagnostic tests." The authors discuss the increasing use of unreliable and unvalidated neurodiagnostic tests in mild head injury, such as SPECT and quantitative EEG, stating that "abnormal" SPECT findings have been reported in virtually every psychological disorder, including somatization disorder.

"Practice Expertise," part II of the book, has five chapters. In chapter 4, Rankin and Adams discuss the forensic neuropsychological evaluation. Some may find portions of this elementary. The important emphasis is that neuropsychological evaluation, like medical tests, should be interpreted only within the context of a history and interview since the only prerequisite for test administration and scoring is literacy. My only critique of the chapter is that more time could have been spent discussing the clinical interview in a forensic setting. As pointed out in the chapter by Kay, "In the repertoire of neuropsychological procedures, none is more useful than the clinical interview" (p. 159). I would disagree with the authors on warning patients that tests of "motivation" will be given. In chapter 5, Linas Bieliauskas addresses psychological assessment. He considers

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the review of the psychiatric history most essential since "the best predictor of future behavior is past behavior" (p. 124). The caution of accepting patient self-report is emphasized, and a more objective measure such as the MMPI–2 is mandatory. Litigants have distinctly different profiles (termed "somatic malingering" by Larabee) compared to nonlitigating neurological patients. The most useful concept of this chapter, and maybe the book, is the coined term, the "bean-counting" of symptoms. This term should be part of our neuropsychological lexicon. In this circumstance, the whole clinical interview is but a laundry list of the patient's volunteered symptoms, or worse, a self-administered symptom checklist. In the case of a compensable mild head injury, the nature of the memory problem may be severe, idiosyncratic, have a delayed onset from the time of injury, be discrepant with the person's functional abilities and test scores, or may never have been reported before. I disagree with the use of the term compensation neurosis, which Bieliauskas finds dated but useful. Such a term is fraught with diagnostic uncertainty.

Aside from the chapter on mild head injury, the chapter by Kay is the most controversial. Kay presents a mild traumatic brain injury model of functional outcome that encompasses physical, cognitive, and psychological factors. Conspicuously absent is the impact of litigation. Researchers conducting large-scale studies on mild head injured litigants are unable to form nonlitigating mild head injury control groups. Additionally premorbid psychological factors are overemphasized. His plea for a "purely psychodynamic" section to the neuropsychological evaluation has a shortcoming. Before I discovered my true love, clinical neuropsychology, my first love was short-term psychodynamic psychotherapy. Consequently, I value in part his perspective. As Kay points out, however, practitioners of neuropsychology place a strong emphasis on objectivity. The introduction of unconscious or subconscious processes that cannot be subjected to objective scrutiny has limited value within a forensic context. This point was made plainly by the neurologist Henry Miller:

> Since this distinction rests in the last resort on the claimant's credibility and on the doctor's affirmation that he knows and understands accurately what is in the claimant's mind—and since the claimant is certainly not unaware that he is making a claim for financial compensation—his contention or belief that he is unaware of any connection between his claim and his behavior can hardly be accepted at its face value. (Miller & Cartllidge, 1972, p. 580)

In chapter 7, David Osmon provides an excellent review of executive functions. Although the necessity of frontal lobe testing may be axiomatic to some, in my opinion, with the "frontalization" of every conceivable psychiatric and neurological disorder, it may make sense to assume frontal lobe dysfunction and forego the testing. More time could have been spent on the forensic implications. For example, a more extensive discussion of the orbitofrontal syndrome would have been welcomed. It has become increasingly common to report this syndrome in mild head injured patients using markers such as anosmia, personality change, and "abnormal" SPECT findings.

In chapter 8, Sbordone and Guilmette examine the very important question of ecological test validity, an area where progress has lagged, and where our ability to predict everyday functioning has been modest. The authors indicate that even though it is a relatively straightforward matter to predict the behavior of someone with significant brain damage, those with borderline or even higher scores are difficult to predict. These contributors cover a difficult area well.

One must agree with Byron Rourke who in the "Afterword" of this book cites the chapter on malingering by Sweet as "the best summary of the relevant issues." The multiple strategies used in the detection of malingering and Tables 1 and 2 citing relevant studies are the highlights of the chapter. The most important point to remember is the prevalence of malingering. According to Sweet, it ranges anywhere from 7.5 to 33% of mild head injured litigants. I would consider this a sizable minority *versus* a "low incidence." As he rightly suggests, any person seeing litigating patients who has never suspected malingering would likely have a clinical bias. One may take exception with the statement that malingering is not dichotomous. He notes: "Patients may perform at the level of their ability on some measures, while malingering others" (p. 258). This is in fact the rule and not the exception. He concludes that malingered performances on some tests does not rule out other valid test performances. Once a patient malingers any portion of testing or feigns subjective symptoms (i.e., autobiographical memory loss in the context of a mild concussion), deciphering what is real can be futile.

In chapter 10, Rosenfeld and Ellwanger present the most exciting area of research in malingering. Researchers have been utilizing the P300 component of the event-related potential to study malingering. Even the most experienced clinicians are unfamiliar with this old technology applied in a new way. The future of this technology may rest on when and how it can eventually be used clinically.

Part III, entitled Relevant Populations, covers mild head injury, neurotoxic tort, and pediatric consultation in the schools. For all intents and purposes, forensic neuropsychology is the examination of the mild head injured litigant. Ruff and Richardson state that approximately 85% of patients with mild head injury recover. It is the remaining "Miserable Minority," as termed by the authors, that are the source of contention. In my own experience, it is rare to receive referrals for neuropsychological testing for patients with mild head injury and/or whiplash injury who present with multiple, chronic, and persistent postconcussive symptoms who are not involved in litigation. The strengths of this chapter are Tables 2 ("Potential Indicators of Insufficient Effort") and 4 ("Estimating Premorbid Functioning"). They discuss the American Congress of Rehabilitation Medicine Criteria of mild head injury that differ from the original, which required loss of consciousness not to exceed

20 min, a GCS of 13 to 15, and a normal brain imaging study. With this new definition, any alteration in mental state, such as feeling dazed, now qualifies as a head injury. I believe this is overly inclusive. The chapter details how to deal with various biases, especially a "test-battery specific bias," citing the Halstead-Reitan Battery as an example. They point out the battery has no proven advantage over other tests and critique the concept of an impairment index. I have likened this index to a "medical malady measure" if one were to concoct one, so the physician can grade the severity of your affliction. I would add to these critiques that the battery that has been billed as comprehensive is inordinately expansive. Second, it is unclear what some of the tests measure. Third, the fixed battery approach encourages a cookbook approach to neuropsychology that attempts to make the field superficially intelligible for those with little or no training. Fourth, intelligence, memory, and language are not covered in any meaningful way.

Despite the intent of this book to present a scientific basis for our conclusions within a forensic setting, Hartman, in the chapter on neurotoxic tort, seems to put emphasis on clinical judgment over empiricism. He criticizes the "arbitrary worship of the *p* value of .05," the "overcontrol of confounds" and "understanding the epidemiological significance of a true but 'small' effect." The best aspect of this chapter is the "chain of inference" section in which the neuropsychologist develops a chain of logical causation. His conceptualization of the forensic evaluation is the best provided in this book.

In the next chapter, Lorber and Yurk discuss pediatric issues within the context of school settings. The most valuable parts contain discussion of the relevant laws as they relate to entitlements of school-aged children. Much of this information is extremely useful to pediatric neuropsychologists. There is however no discussion of the examination of children within a litigation context.

Part IV, "The Parameters of the Forensic Arena," contains two chapters that discuss the role of the neuropsychologist in the forensic arena. In practically all forensic neuropsychology texts, including this one, these chapters are always the most enlightening. We may know about the syndrome that we give testimony about, but never know enough about the arena in which the testimony is heard. Chapter 14 by J. Sherrod Taylor, an attorney, covers the history of neuropsychological evidence in the courtroom, cites relevant cases, provides some sound advice for presenting neuropsychological evidence and how to avoid potential pitfalls. In the last chapter, Paul Lees-Haley and Larry Cohen, a Michigan attorney, discuss how to present credible testimony. The gold standard of forensic litmus tests is asking the simple question, "How do I know that?" (p. 448). One always has to ask how does one know that what they are saying is indeed true. In the section on "controversies concerning methodology," they review the standards that make for good neuropsychological assessment. Common pitfalls such as over-interpretation of the test data are discussed. One controversial topic brought up is the disclosure of test data. In Iowa, for example, it is illegal to release the test protocols (as it should be) to someone other than a psychologist. In my opinion, it should be standard practice to include a test summary in the report that includes the name of the test, the raw and standard scores, and the interpretation. Excluding this summary forces statements such as, "The patient sorted only two of three categories on the Wisconsin Card Sorting Test, missing color, failed to maintain set, had a number of errors, the majority of which were perseverative." Such narratives are found in 85% of reports and confuse 95% of readers who are not neuropsychologists. Additionally, the common practice of listing the tests administered is inconsequential to the nonneuropsychologist and without the scores, useless to the neuropsychologist.

The only shortcoming of the book is the absence of a chapter devoted to ethics. Lees-Haley and Cohen state, "We do not intend to imply anything unspoken here about the competence or morality of individual expert witnesses. Rather, it is our impression, based on experience and observation, that incompetence and lack of integrity are both sufficiently common to be substantive concern" (p. 446). Kenneth Adams, in his 1996 Division of 40 Presidential Address put it succinctly:

> There has been an increasing focus in clinical neuropsychology on finding evidence for 'subtle' brain dysfunction that *may* explain the source of patients' complaints or somehow account for their current condition in life. While the value of neuropsychological assessment has been positive in making functional problems more equal to anatomic ones in terms of concern for health care providers, we may have overextended ourselves in areas such as mild head injury, posttraumatic stress disorder, and neurotoxic exposure. In the particular culture of forensic practice, the level of contentiousness surrounding patient claims no longer reflects well on the practice of neuropsychology. (p. 348)

Dr. Sweet is one of the authors of an important paper currently in press that remedies this omission (Grote et al., in press). Neuropsychologists must read it and act on it if necessary, as unpalatable as it may be. With the increase in medico–legal referrals (third behind neurology and psychiatry), a forensic ethics crisis has arisen and is whittling away at the integrity of a field that has long fought to build a respectable identity. When one testifies in court that the patient is malingering and the other testimonial is that of the unequivocal presence of brain damage, the only substantive question to be decided by the jury is which of the first two principals of our Ethics Code has been violated—Competence or Integrity.

To eschew bias in this review, I have tried to adopt the self-evident proposition of this book—empiricism as the sole method of practicing forensic neuropsychology. As I am fond of remarking, we may not all share the same opinion, but we do share the same literature. It is this empirical element that makes this book the authoritative text in the field of forensic neuropsychology.

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Memory for Everyone

Essentials of Human Memory by Alan D. Baddeley. 1999. Hove, UK: Psychology Press. 356 pp., $29.95 (PB).

Reviewed by Jenni A. Ogden, Ph.D., *Associate-Professor of Psychology, Dept. of Psychology, University of Auckland, Private Bag 92019, Auckland, New Zealand.*

Alan Baddeley's delightful new book is another in the series "Cognitive Psychology: A Modular Course" and as such its purpose is to bring together research relevant to the topic of memory in a format that can be easily understood by undergraduate psychology students. It certainly achieves this aim, but will also be of interest to a wide range of readers, from the interested layperson to the experienced psychologist. Memory holds an important place in everyone's lives, and readers on the far side of middle-age may find this book particularly pertinent, and in most cases reassuring! Academic and professional psychologists from many different subdisciplines will find this an easy book to refer to when they want to refresh or update their memory about one or other aspect of memory. Likewise researchers and professionals from other disciplines such as neuroscience or medicine will find this book a gold-mine of information, both academic and practical.

The book is based on Baddeley's previous popular book, "Your Memory: A User's Guide," and he has managed to retain the chatty, interactive style of that book whilst increasing the academic content considerably. The result is a book that will entrap the reader into trying out the numerous memory "tests" whilst learning about memory research at the same time. The author has clearly put his vast knowledge about memory, learning, and retention to good use when constructing this book!

The book is divided into 15 chapters that cover an enormous range of topics. Each chapter concludes with a brief summary of the main points and suggestions for further reading. Following a brief introductory chapter, the traditional bread and butter of memory research is covered in chapters 2 through 6, and chapters 8 and 9. Each of these seven chapters focuses on one aspect of memory, primarily from the cognitive viewpoint, and in considerable depth. Short-term and working memory (including a clear description of Baddeley's own phonological loop model), learning, organizing and remembering, forgetting, storing knowledge, and retrieval are all covered. Each of these chapters includes a historical perspective as well as a balanced sample of past and current research. Each chapter is rich in illustrations of how different researchers went about testing their theories, and provides examples of the tests and memory stimuli for the reader to try.

Chapters 7, 10, 12, 13, and 14, venture into areas that, while not always covered in introductory memory texts, are either topical and controversial (repression, including false memories of child sexual abuse, and eyewitness testimony), or intrigue most of us at some point in our lives (memory in childhood, memory and aging, improving your memory). Clearly, Baddeley's own opinions are more likely to be influential when he is writing about the more controversial topics, but he acknowledges this freely, and makes a good attempt to provide an objective review of a sample of the literature and outlines different points of view. The chapters on memory and aging and how to improve your memory are written in an almost "therapeutic" style. By the end of these chapters, older readers may conclude that the memory problems they feared they had are entirely normal, and feel considerably more positive about the possibility of learning strategies to compensate for these normal memory decrements. These chapters will also be of use to therapists involved in the rehabilitation of memory impairments following brain damage, especially given that the research described in these chapters should assist in the understanding of why particular memory strategies work and others do not.

Chapter 11 is on amnesia and is the only chapter that explores memory impairments following brain damage in any depth, although most chapters make brief mention of examples of memory impairment following brain damage or developmental memory disorders. The book concludes with a chapter entitled, "What's Next in the Study of Memory?" in which the author discusses, in some detail, current and new directions in memory research, including computational and mathematical modeling, functional imaging, and further neuropsychological research using the performance of brain-damaged patients to gain insights into the workings of normal memory.

In conclusion, this is a book that could be used as a main text or as a supplementary text for an undergraduate cogni-

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tive psychology or neuropsychology course. It is also a book that can be read and enjoyed by anyone interested in memory, and will provide much food for thought as well as provide numerous examples and tests of memory to spice up dinner-party conversations. This is a book which may well stay on the owner's shelves when the course is finished, and not find its way into the second-hand text-book sale!

Sex and the Developing Brain

Sexual Differentiation of the Brain. Akira Matsumoto (Ed.). 1999. Boca Raton, FL: CRC Press LLC. 323 pp., $99.95.

Reviewed by Barbara R. Sherman, Ph.D, *Clinical Assistant Professor, Department of Psychiatry and Human Behavior, Brown University, Providence, Rhode Island; private practice, Neuropsychology Specialists.*

Sexual Differentiation of the Brain will appeal primarily to researchers with specific interest in neuroendocrinological contributions to the sexual dimorphism of brain structures and neuropathways, *predominantly in nonhumans*. Collectively, the 16 chapters provide comprehensive review of our current understanding of the effects of hormonal steroids and their metabolites on brain development and the manner in which this correlates with specific behavioral functions. The clinician interested in furthering an understanding of sexually differentiated cognitive functioning or behavioral patterns *in humans*, may perceive discussion in many chapters as esoteric at best, or less charitably, as irrelevant. It is assumed that the reader has a prerequisite understanding of basic genetic and hormonal influences on brain development and subsequent behavioral manifestation. Although these issues are clarified by reference or associated discussion in several chapters, an introductory overview by the editor would have been beneficial. Similarly, the editor would have facilitated the reader's effort by organizing chapters according to findings of brain sexual dimorphism in humans *versus* "primitive" species, by clarifying the relevance of examining other species and/or by focusing attention to parallels in anatomical findings or in associated behavior.

Despite these editorial limitations, several chapters are noteworthy. Chapter 2 by Ogawa and Pfaff presents the difficulty (and fallacy) of attributing causal relationships between particular genes and specific behaviors. A single gene may have different effects on behavior over the life cycle. Concomitantly, any given physiological function does not depend exclusively on one gene. Because there is redundancy among the functions of different genes, demonstration of the role of any particular gene for any specific behavior is confounded. Lessons from studies of reproductive behaviors demonstrate that *the actions of a particular gene can depend upon the gender in which the gene is expressed*. Similarly *the location and timing of gene expression can affect behavior* throughout development (e.g., hormone receptors and associated metabolism effects). Although the authors underscore a need for systematic understanding of the lawful relations between particular genes and specific behaviors, they caution against assuming simplistic or causal relationships, particularly when considering the highly interconnected neuronal circuits of the human brain.

In chapter 8 Crews and Sakata present an excellent discussion of genetic *versus* hormonal contributions to brain organization. With regard to mammals, it is fairly well established that sexual differentiation of the brain results from the interaction of hormones secreted by genetically determined differentiated gonads. Recent work is presented to suggest that some sexually differentiated traits can be determined directly by genetic factors, independent of hormonal input. As pointed out by the authors, the implications are further confounded by the fact that structural dimorphisms in the brain do not necessarily underlie behavioral dimorphisms.

It is this reviewer's opinion that chapters 14 and 15 would be most informative to the clinician interested in patterns of gender difference for specific cognitive and behavioral functions. Within the last two decades, findings have accumulated to suggest that sex steroids underlie behavioral sex differences in other species. More recently, evidence has emerged to suggest that hormones might influence sexual differentiation for specific cognitive functions in humans, as well. In chapter 14, Melissa Hines presents a succinctly informative discussion of the two major types of influences that hormones have upon the human brain and behavior. Activational influences, which generally occur in the sexually mature, are temporary and vary in response to fluctuating hormonal levels. In contrast, the organizational influences of hormones typically occur during critical periods of early (prenatal or neonatal) development yet persist across the life span, resulting in permanent effect(s) upon neurodevelopment and synaptic connectivity. Hines provides a cohesive and well organized review of the manner in which gonadal hormones influence human neurobehavioral development, focusing on aspects of behavior that reveal sex differences in three general categories: core gender identity, sexual orientation, and gender role behaviors. Given

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Hines' ability to clarify complex issues inherent to studies of endocrine influences on neurodevelopment and sexual differentiation, this chapter would have served as an excellent introduction to the rest of the book.

In chapter 15 Elizabeth Hampson furthers understanding of the organizational and activational effects of hormones by presenting findings supporting each influence upon the emergence of sexually differentiated spatial functions in humans. The male advantage for spatial functions has persisted in studies across cultures and in investigations of nonhuman species. Because sex differences in spatial function are not commonly expressed before puberty, activational influences are suggested. Activational effects of sex steroids are of particular theoretical and research interest because of their potential to regulate neural function in brain regions outside the hypothalamic–pituitary area, not considered to be steroid sensitive in adult humans. Among several studies cited, Hampson discusses her own research showing discernable changes in spatial ability across different phases of the menstrual cycle, which associate with fluctuations in concentrations of ovarian steroids. Using an identical test battery, women's spatial scores were diminished during the preovulatory estradiol peak, relative to their own achievements on the same tests during menses when estradiol is low. Findings regarding the effect of the menstrual cycle or the specific effect of estradiol on spatial functions have been replicated by other studies using different methodologies. Preliminary evidence from several sources was reviewed to suggest that spatial ability in adult males might vary according to changes in testosterone concentration.

The implication for future research in this area is fascinating. If biorhythm-based changes in hormonal levels could be predicted and quantified, would we have the potential ability to predict the time of the day or month when the "typical" healthy adult male or female would be most successful performing a specific task?

In summary, *Sexual Differentiation of the Brain* provides the researcher or academician with a comprehensive review of recent findings relating to endocrine influences underlying the sexual dimorphism of neural development and synapse formation, predominantly in species other than humans. For many clinicians, the book may be a challenging and at times, frustrating read. Structural dimorphisms in the brain do not necessarily underlie behavioral dimorphisms. Similarly, findings in animal studies of structural sex differences do not really correlate to human brains or human behavior. Chapters 14 and 15 would be most informative to the clinician interested in patterns of gender difference for specific cognitive and behavioral functions.

Evidence-Based Neuropsychology?

Neuropsychological Differential Diagnosis, by Konstantine K. Zakzanis, Larry Leach, and Edith Kaplan. 1999. Lisse, Netherlands: Swets and Zeitlinger Publishers. 265 pp., $79.00.

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

Neuropsychologists are placed in an increasing number of situations where they must provide empirical evidence of the validity of their methods. Managed care companies want to know the bottom line of whether a given assessment will have any impact on the patient's medical or psychological care. Expert witnesses are asked increasingly to provide scientific facts regarding the tests used in their assessment battery. Grant review committees inquire about the probability that a given test will yield a significant finding when used with a particular clinical population. It is argued that there is little empirical information available to aid in making these decisions. The volume *Neuropsychological Differential Diagnosis* by Zakzanis, Leach, and Kaplan takes an initial step in providing this type of information.

The stated goals of this book are to provide clinicians and researchers with an empirical method to aid in test selection. The resulting information will be most valuable in the clinician using a flexible-battery approach to neuropsychological assessment. The authors indicate bluntly that decisions to include tests in this type of battery have been based previously on "clinical lore" and "speculation." They combine a review of the neuropsychological literature with the use of meta-analysis to "quantitatively assess individual test sensitivities" and to generate "preserved and impaired ability profiles" that are designed to aid clinicians in choosing an appropriate set of tests for use in making a clinical diagnosis. The review covers a total of 11 clinical disorders including a variety of dementia syndromes, multiple sclerosis, mild traumatic brain injury, and a number of psychiatric conditions including major depression, schizophrenia, and obsessive-compulsive disorder. Effect sizes from studies using various neuropsychological tests are placed in tabular form so that the reader can view how measures compare in terms of discriminating between patient groups and controls.

This book provides an up-to-date review of the most recent literature on neuropsychological testing as conducted on a select group of clinical disorders. More general sections lack inclusion of many of the "classic" references from the pre-1980s literature. The authors' real contribu-

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tion is the resulting meta-analyses. The authors outline clearly their methods for choosing and analyzing studies. The tables provided in the book provide a wealth of information and hold a range of possibilities for use in clinical and research applications. Questions arise, however, about the authors' decision to rank-order effect sizes without conducting any formal statistical analyses. This limits the conclusions that can be drawn from this work. Claims that a given condition may be characterized by a disturbance of one function over another are made in the absence of any concrete statistical support. Also, one cannot ignore the possibility that some of the resulting effect sizes may in some cases result more from a test's sensitivity and reliability than the function it is purported to assess. The meta-analyses presented here are as vulnerable to the oft-neglected "Chapman Effect" as other clinical and research endeavors.

Clinicians adhering to the "fixed-battery" approach to neuropsychological assessment will continue to issue the same criticisms against this book as they do with other flexible-battery approaches. All of the validity data reviewed in the various chapters pertain to tests administered and analyzed individually and not under the blanket of a larger test battery. While much of the variability among patient samples can be addressed with the large N's obtained with the resulting meta-analyses, many will continue to use this variability in sample selection as a criticism. The findings are limited to the interpretation of group effect sizes. There is little information regarding predictions based on test scores obtained from a single case. There is some limited attempt to address some of the heterogeneity that is known to occur within some of the diagnostic groups. For example, the authors distinguish between "chronic-progressive" and "relapsing-remitting" forms of multiple sclerosis. However, there are no attempts to provide more detailed data for subgroups associated with any of the other conditions that are surveyed.

Some might question the choice of diagnostic conditions reviewed in this book. Coverage of many dementia syndromes will undoubtedly provide valuable information to those working with a predominately geriatric population. The authors should be commended for their inclusion of various psychiatric syndromes as information on these disorders is often lacking in other neuropsychological treatises. One wonders at the inclusion of some low-prevalence conditions at the expense of many that are observed more frequently. While it is acknowledged that a disorder such as Huntington's disease has much theoretical importance to our understanding of the dementias, this disorder has a prevalence rate of only 4 to 5 per 1,000,000 and is only seen by a handful of practicing neuropsychologists. It is difficult to estimate the prevalence of a disorder such as primary progressive aphasia. There is a noticeable lack of coverage on epilepsy in spite of its estimated 1% prevalence and the large body of neuropsychological research that has been published on this condition. One hopes that the additional lack of information on learning disabilities, attention deficit hyperactivity disorder, and systemic medical conditions such as chronic fatigue syndrome would indicate that further reviews on these disorders are forthcoming.

There is a great potential for forensic applications of this information. Those interested in this area will surely examine the chapter on mild traumatic brain injury (MTBI). What one will find in the resulting review is a rather uncritical acceptance of this diagnosis. The inclusion criteria are broad enough to include patients with no appreciable symptoms of brain injury. Glasgow Coma Scale scores ranging from 13 to 15 may certainly include individuals with no observable change in consciousness or comportment. The mean time from post-injury to assessment is 11.2 months, which is well beyond the timeline that is observed in most well-documented cases of MTBI. There is no attempt to limit the review to studies ascertaining details of their patients' injuries through review of relevant records. There is no concerted effort to use symptom validity measures for exclusion of those patients that may be malingering or exaggerating the severity of their symptoms. There is also no attempt to control for the effects that pain and mood disorder may impact on the resulting neuropsychological test scores. The authors nonetheless conclude that neuropsychological impairment is observed in MTBI patients on a variety of tasks and, most specifically, on measures of frontal lobe functions. Conclusions from this chapter will certainly fuel the continuing debate on the existence and nature of persisting neuropsychological impairment resulting from MTBI.

The title of this book implies a special focus on differential diagnosis. The information provided is rather based on studies comparing patients with controls. There is no real empirical data pertaining to differential diagnoses between one or more patient groups, which is the situation that clinicians actually find themselves faced with. The real question in using this information concerns whether a neuropsychologist may be more effective in taking a "top-down" or "bottom-up" approach to assessment. In a top-down approach, one can use information about the disorder in question, combined with acquired knowledge in functional neuroanatomy and brain–behavior relations, to develop hypotheses regarding the profile of functional strengths and weaknesses that is expected in the presence of that disorder. The bottom-up approach consists of having specific "cookbook" information on the functional profile observed in studies of each condition and determining whether that particular profile is present or absent. The contribution of this book might be to provide the "bottom-up" knowledge for those clinicians preferring to practice in that manner while also providing information that will serve as a check to those working from the opposite direction.

In summary, practitioners and researchers in the field of neuropsychology will ultimately benefit from reviewing the contents of *Neuropsychological Differential Diagnosis* and adding it to their bookshelf as a reference tool. It provides a full review of evidence supporting the use of neuropsychological testing in selected applications. One should be aware of its limitations before using it to make larger arguments

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about the efficacy of neuropsychological testing as a whole. What is lacking in this volume is a full appreciation of the multifactorial nature of neuropsychological tests. There is minimal information on many of the important qualitative features that can be used to distinguish among various factors underlying test performance. In the clinical context, it will prove most valuable as an introduction to novices entering the field. Seasoned professionals will view this book more as an interesting review of the literature that can be consulted as needed. Its ultimate impact remains to be seen. It is doubtful that clinicians using a given verbal learning test will ever switch to another test for use with a particular population solely as a result of a higher rank-ordered effect size. The authors have fallen short in providing a convincing methodology with evidence that will change the way that most neuropsychologists currently practice.

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