

BOOK REVIEWS

Languages and the Brain

The Neurolinguistics Of Bilingualism: An Introduction, Franco Fabbro. 1999. Hove, U.K.: Psychology Press, Ltd. 255 pp., \$49.95

Reviewed by LIDIA ARTIOLA I FORTUNY, Ph.D., *Independent Practice, Tucson, Arizona, USA*.

In this very unique book Franco Fabbro acquaints us with basic concepts on the cerebral organization of language and takes us into the wonderful if sometimes confusing world of the neurolinguistics of bilingualism. It is a monograph with a wealth of information gleaned chiefly from behavioral neurology and neurolinguistics.

The first 10 chapters introduce fundamental concepts of linguistics. As the author himself suggests in his Introduction, the seasoned student of language may wish to skip these chapters as they are basic. However, other readers are likely to benefit tremendously from Fabbro's eminently readable review of a large body of knowledge that constitutes necessary background to gain full appreciation of the rest of the book: speech production and perception; brain anatomy and physiology; cerebral organization of language; and disruption of language. The author offers a brief description of various aphasia assessment techniques in monolinguals and bilinguals. He reviews language organization in the brain, providing an analysis of memory and its organization, as well as its unique contribution to language acquisition.

The second part of the book tackles bilingualism itself. Chapter 11 ("What Does It Mean To Be Bilingual?") includes a brief review of the kinds of political prejudices that have historically (and generally) led to an underestimation of the number of individuals who are bilingual.

Chapters 12 through 20 address bilingual and polyglot aphasia in all its possible combinations. Fabbro presents many of the classic case studies available in the literature. A lot of the information has been handed down to us in anecdotal form. More importantly, Fabbro treats us with some of his own superbly analyzed case studies. This reviewer found these most compelling because of the richness of detail regarding the various stages of progression of deficits in one *versus* another language. Fabbro addressed first and second language recovery in aphasics, exploring all the possible factors that can affect the degree of recovery of each language in polyglot or bilingual aphasics. Each of these factors is illustrated with case studies. He looks at

the extraordinary phenomenon of paradoxical recovery of a language. In this context the description of recovery of the second language first is truly engaging.

Fabbro also discusses the contribution of the implicit and explicit memory systems to language acquisition *versus* learning and its implications for language recovery. Selective aphasia and differential aphasia in bilinguals are examined along with a hard look at all the possible explanations for these unusual occurrences. The phenomena of pathological switching and mixing and alternating antagonism are also touched upon. Neurolinguistic models and possible explanations are brought forth. Through presentation of neurolinguistic studies of subcortical aphasia Fabbro gives convincing evidence for the notion that the basal ganglia in bilinguals play a fundamental role in the organization and control of language functions. Neurolinguistic analysis of 2 cases of bilingual childhood aphasia indicate that permanent language disorders may affect one language more than the other. These chapters do a very good job of covering the most current and important aspects of the extant literature on neurolinguistics of bilingualism. They are an accurate reflection of the state of the field itself. Indeed, and in spite of the fact that the number of individuals who can be considered bilingual world-wide is extremely high, interest in studying this common phenomenon continues to be limited. One wonders if this is perhaps because the incidence of bilingualism amongst neuroscientists probably does not mirror that of the general population (Fabbro's own skills clearly notwithstanding).

Towards the end of the book, some of the chapters get somewhat exploratory as very little is known about subjects such as aphasic syndromes with altered states of consciousness, or rehabilitation of bilingual aphasics. Some other chapters, however, represent the possible foundations of what may one day explode into important fields of inquiry. Chapter 23 provides up-to-date information on electrical stimulation studies in bilinguals. Chapter 24 describes various translation phenomena in bilingual aphasia and posits a neuropsychological model for simultaneous interpreta-

tion. Chapter 25 presents attempts at elucidating the cerebral lateralization of language and describes the bilingual production model used to systematize data from various fields of bilingualism. Finally, in the last two chapters of the book the author gives us some of his thoughts on controversial subjects that are usually not the object of traditional neurolinguistic or neuropsychologic study.

Franco Fabbro's book clearly reflects his multinational experience and eminent career. The book is well written and organized, a pleasure to read. He communicates clearly state-of-the-art research and theory without losing sight of the fact that a lot of the clinical information on bilinguals derives from case studies or very small participant/patient groups. Let's face it, homogeneity is not a prototypical feature of bilingual or multilingual populations.

Here are some thoughts I have regarding this book. They are not points of theory, but practical points that could have a powerful impact on theory. They revolve around the issue of language competence. First, I believe it would have been helpful to have language competence addressed more thoroughly either in a separate chapter or in the shape of cautionary notes when relevant. Fabbro does provide a good summary of the different types of bilingualism that have been described at various times in the literature. However, degree of competence is not specifically addressed. Can we assume, in the context of this book, that even if an individual has different needs and levels of competence for his two languages, he still must be able to demonstrate a very high level of linguistic competence in both languages to be called bilingual? Can we also assume that this applies regardless of the age and method of acquisition of the languages in question? This is important in view of the numerous vignettes presented that are simply unclear as to the degree of fluency for each of the languages of the patient. I am uncertain as to whether a high degree of fluency can always be assumed. Concluding there are deficits in a language in which the patient was fluent before brain insult is different from concluding there are deficits when there is doubt as to native competence (or quasi-native competence) in the language in the first instance.

This brings me to my second point: Fabbro did not include cautionary notes vis-à-vis researcher or examiner linguistic competence. The problem does not exist, of course, if both the patient and the examiner happen to share the identical linguistic background as can be the case in many small regions of Europe (i.e., both speak Italian and Veronese), or in some other regions (i.e., both are Canadians educated in English and French). However, it can be a serious problem in other locales. Clinicians frequently do not possess adequate fluency in the language(s) known (or reportedly known) by the patient who is an immigrant from another region of the globe. How exactly are deficits assessed? Is this the opinion of the clinician himself, or is it the opinion of an aide who may share one or more languages with the patient, or a patient's relative? It is important to document these points. Assuming that patient or relative self-reports are accurate as to fluency is probably

risky. Many people are notoriously bad at assessing their own degree of fluency in a language, particularly when they know there is no one around who can vouch for the accuracy of their opinions. The clinician may conclude that language in which the patient was never fluent has been lost, or partially so, after a cerebral insult. In this vein, of course, it is important to stress the necessity for reliable historical information. The potential impact of original level of fluency errors on theories of brain organization in bilinguals is significant.

My third comment is on the issue of who is bilingual. Fabbro makes a number of extremely valid points vis-à-vis the prejudice that had traditionally existed against bilinguals, in spite of the fact that approximately 50% of the world's population is estimated to be bilingual (many believe this figure to be much higher). However, he does not note the reverse prejudice, probably of more recent emergence, brought about by other frequently politically sensitive agendas that have led to an overestimation of the number of bilinguals in certain countries (i.e., Spanish in the United States). Indeed, while many immigrants to the industrialized world may wish to retain their language of origin and pass it on to their children, the fact is that through the process of "assimilation" the use of the language of origin generally declines from generation to generation and bilingual status is usually lost (Arce, 1982; Artioli & Fortuny & Mullaney, 1997). This is important information for clinicians, especially neuropsychologists, who usually need to assess an individual's neuropsychological status rather than unwittingly assessing the relative level of fluency he possesses in each language he purports to speak (and possibly concluding there are cognitive deficits when there are none). Fabbro indicates that it is difficult to find truly monolingual university students for psycholinguistic studies in the United States (p. 105). This may well be so in universities with a significant influx of foreign students. However, in the context of second or third generation children of immigrants, it is also true that it is extremely difficult to find individuals who fit a coherent definition of "bilingual" to conduct neuropsychology of bilingualism experiments.

These points notwithstanding, this book is a crucial addition to the library of anyone who has an interest in the neuroscience of bilingualism. In fact, it would even be a valuable addition to the library of anyone who is bilingual. It provides all of the background necessary to understand the basic issues in the neurolinguistics of bilingualism.

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Medical Pediatric Psychology Has Come of Age

Pediatric Neuropsychology, Keith Owen Yeates, M. Douglas Ris, and H. Gerry Taylor (Eds.). 2000. New York: The Guilford Press. 485 pp., \$60.00.

Reviewed by DEBORAH DEWEY, PH.D., Associate Professor, Department of Pediatrics, University of Calgary, Calgary, Alberta, Canada.

In the last line of the forward to *Pediatric Neuropsychology*, Arthur Benton stated that “pediatric neuropsychology has come of age.” This volume provides ample support for this statement. It demonstrates how the field of pediatric neuropsychology has developed and matured, but it also reminds us of the many questions that remain unanswered. Its focus is on the neurobehavioral sequelae of various medical disorders such as epilepsy, meningitis, and diabetes. It does not address, however, the neurobehavioral outcomes associated with attention-deficit/hyperactivity disorder, learning disabilities and autism spectrum disorders. As indicated by Byron Rourke in his commentary (chapter 20), “these are important areas of pediatric neuropsychological research that merit attention because of their theoretical and clinical relevance” (p. 476). I agree with Dr. Rourke’s statement that they should be covered in a book that deals with pediatric neuropsychology and would also encourage the editors to include them in a second edition should it be forthcoming. Despite this shortcoming, this book is an excellent reference for both researchers and clinicians in pediatric neuropsychology. Further, because of its multidisciplinary nature it may be of interest to other professionals who work with and treat children with various medical disorders that have neurobehavioral sequelae such as pediatricians, pediatric neurologists, pediatric psychiatrists and medical geneticists.

This publication is the second volume in the Science and Practice of Neuropsychology series, intended to be of interest to scientists and practitioners in all disciplines that address brain-behavior relationships. It is a multiauthored book with 20 chapters. The first chapter by Maureen Dennis, considers four questions related to the neurobehavioral outcomes in childhood medical disorders: (1) What is a cognitive phenotype? (2) Which factors set biological risk? (3) How do development, time since onset, and reserve moderate biological risk? and (4) What is the general form of an outcome algorithm? This chapter sets the stage for the book as a whole.

Chapters 2 to 17 are devoted to the discussion of specific medical or neurological conditions. They are divided into two sections, the first of which focuses on primary disorders of the central nervous system: hydrocephalus, epilepsy, brain tumors, closed-head injury, meningitis, neurofibromatosis, metabolic and neurodegenerative disorders (i.e., childhood dementia, leukodystrophies, mucopolysaccharidoses), and exposure to environmental neurotoxicants (i.e., inorganic and organic mercury, organochlorines, inorganic lead). The

second section focuses on other medical disorders where central nervous system dysfunction may be an outcome: prematurity and low birthweight, Turner syndrome, phenylketonuria (PKU), acute lymphoblastic leukemia, sickle cell disease, diabetes, end-stage renal disease, human immunodeficiency virus (HIV).

Each of these chapters begins with information about the specific neurological or medical condition, its epidemiology, and its associated pathophysiology and neuropathology. This is followed by a description and critique of the existing literature on the neurobehavioral consequences of the specific disorder and recommendations for conceptual and methodological improvements. The final section of each chapter is devoted to a discussion of future directions for research. Of note is that most of the chapters include information on the influence of emotional and psychosocial factors on outcomes. These are important but understudied areas in pediatric neuropsychology and this volume provides information to direct future research. Overall, each of the chapters provides an excellent overview of our current knowledge regarding the medical disorder under discussion.

The fourth part of this book is devoted to the discussion of how research on the neuropsychological consequences of medical conditions can have an impact on clinical practice. The chapter by Jane Holmes Bernstein emphasizes most appropriately the importance of the concept of “development” in the practice of clinical neuropsychological assessment. She states that the concept of development is often a “missing element” in pediatric neuropsychology and that there is a need to reconceptualize the assessment process so that the nature and impact of development is taken into account. She also stresses that the concept of development cannot be disentangled from the brain, which is the substrate for behavioral function and from the context in which the behavior is observed. Chapter 19, by Ida Sue Baron, demonstrates how the results of a clinical neuropsychological assessment can be applied to the real world to guide intervention. In addition, she provides a number of case examples with practical recommendations that are applicable to the child’s home and school situation.

The fifth part of this volume is a review and commentary by Dr. Rourke. He discusses each of the chapters pertaining to a specific disorder (chapters 2–17) and provides some general comments regarding the book overall. He also provides some suggestions regarding areas where pediatric neuropsychology should focus future research efforts.

In sum, *Pediatric Neuropsychology* contains a great deal of valuable information regarding medical and neurological disorders that can influence the development of the central nervous system. The chapters are uniformly excellent and there are few pediatric neuropsychologists who would

not find this publication to be of use. I found it to be one of the most interesting and informative books in the area of *medical* pediatric neuropsychology that I have had the opportunity to read.

A Scientist Relates Art to the Way in Which the Visual Brain Functions

Inner Vision—An Exploration of Art and the Brain, Semir Zeki. 1999. New York: Oxford University Press. 224 pp., \$35.00.

Reviewed by ALICE THEILGAARD, DOCTOR OF MED. SCIENCE, *former professor of psychology, University of Copenhagen*

Semir Zeki is professor of neurobiology at the University of London, a pioneer in the study of the visual brain, and his massive, up-to-date knowledge of the complexity of the visual system is clearly evident on every page. But what is particularly impressive to the reviewer is how he combines such detailed, in-depth knowledge of neuroscience with rich insights into art. Not many have been able to cross disciplinary boundaries with such grace and to such thought-provoking effect.

The aim of the book is to reflect in an interesting and new way about the functioning of the visual brain when we look at works of art. The result is so stimulating, that the reviewer regrets that space does not permit to elaborate the fascinating and complex ideas. A short summary cannot do justice to the many experiments and examples of pathology (achromatopsia, akinetopsia, prosopagnosia, visual agnosia) reflecting the intricate and complicated working of the brain with its wide variety of integrative potentialities.

The book consists of three parts: (I) "A Function of the Brain and Art"; (II) "The Art of the Receptive Field"; and (III) "A Neurological Examination of Some Forms of Art." Each chapter is condensed, evocative, sometimes provocative, and well-endowed with illustrations of brain mapping and works of art.

When Zeki speaks of "a neurology of aesthetics," or when he writes in the epilogue "that aesthetic theories will only become intelligible and profound once based on the workings of the brain" (p. 217), it might in the reader's eyes look like a touch of reductionism. However, it is generally clear from his writings that appreciation of art cannot be reduced to a formula. His message is that different modes of painting make use of different cerebral systems and the artist, after all, "can only deal with those attributes of nature, which his brain is equipped to see" (p. 3). What art and perception have in common is that both search for constancies, and both face the problem of how to extract from the constantly changing information in the visual world only that which is

important to represent the permanent essential characteristics of the world.

The history of perception goes a long way back, but it is only about fifty years ago that the concept of perception as a reproduction of the world was replaced by the theory of perception as an active, adaptive, and selective process. This is clearly demonstrated by Zeki, who in the first part of the book underlines the multiple functionally specialized areas of the visual brain, working in concert with regard to color, form and motion, influenced by expectancy.

A chapter is reserved for a most interesting neurobiological appraisal of Vermeer and Michelangelo, and the technical virtuosity that can generate ambiguity; that is, on the same canvas to represent simultaneously not one but several equally valid truths. A chapter entitled, "The Neurology of the Platonic Ideal" might, as its subtitle, have "Compromise with Chaos." Here descriptions of different neurological syndromes are introduced as illuminations of the fact that stored information can become defective as a consequence of the disease. Magritte's paintings representing a kind of *trompe l'esprit* become experiments with the brain's stored visual memory.

The general theme that different forms of art excite different visual areas in the brain is amply illustrated in such chapter headings as, "The Fauvist Brain," "Monet's Brain," "The Neurophysiology of the MétaMalevich and the Méta-Kandisky." In kinetic art, for example, Zeki writes of Tinguely's work with movement: "Without realising it he succeeded in tailoring one aspect of his art to the physiology of the orientation selective cells in the cortex, the ones that respond best when the oriented lines are set in motion" (p. 136).

Zeki has confined himself to writing about the perceptual processes in such a way that one's curiosity is alerted to other phenomena like arousal potential, emotions, and hemispheric laterality, all important for aesthetic appreciation. This book has convincingly prepared the ground for further explorations in this fascinating field: Art and the brain. The

thoroughness in Zeki's mode of expression makes his style seem a little repetitious, but it is his merit that the repetitions most often have the paradoxical character of "non-identical" repetitions, variations of a theme, and also serving a pedagogical purpose.

Thumbs Down on These Rules of Thumb

Neuropsychological Interpretations of Objective Psychological Tests, Charles J. Golden, Patricia Espe-Pfeifer, and Jana Wachsler-Felder. 2000. New York: Kluwer Academic/Plenum Publishers. 243 pp., \$59.95.

Reviewed by KYLE BRAUER BOONE, PH.D., *Department of Psychiatry, Harbor-UCLA Medical Center, Torrance, California*

The stated goal of this interpretative text is to provide a large selection of possible score interpretations for a variety of commonly used neuropsychological tests.

The first chapter contains a concise and informative discussion of the difficulties in comparing scores across neuropsychological tests, including the interpretative errors which can occur when test normative samples differ in demographic variables and data collection time periods (i.e., recent generations tend to outperform earlier generations). The authors note the importance of age and education corrections, but point out that the methods used to develop the adjustments (e.g., arbitrary bunching techniques, regression formulas which assume linear relationships) may introduce inaccuracy. The various techniques for generating test score cut-offs (optimization, discriminant analysis, and cut-offs derived from normal distributions) are described as well as the associated limitations for test score interpretation. Pattern analysis, an alternative to the use of cut-offs in which patient scores are compared to each other and pre-morbid estimates through conversion to standardized scores, is discussed along with the interpretative problems created by skewed test score distributions.

The second chapter provides brief descriptions of the neuropsychological tests for which interpretive strategies are provided in the remainder of the text. Although this chapter makes the book more comprehensive and cohesive, it does not contain information not already found in other encyclopedia-like listings of neuropsychological tests (i.e., Lezak, 1995; Spreen & Strauss, 1998).

The final chapter, which encompasses the remainder of the book, is organized into 10 sections: general intelligence, visual-spatial tests, verbal tests, nonverbal tests, motor and sensory tests, achievement tests, executive skills, memory tests, sustained attentional tests, and test batteries. Two neuropsychological batteries and 54 tests and individual subtests are included under these categories, and for

This book is both fascinating and aesthetically pleasing. I am convinced that this very recommendable book will also inspire readers with other than scientific interests to reflect over many, very essential aspects of art and brain.

each instrument approximately 10 to 20 interpretative "suggestions" are presented in numbered format. The interpretations range from suggested score cut-offs indicative of dysfunction, patterns of performance within the test and in comparison to other tests suggestive of localized cerebral disturbance, to performances expected for various clinical diagnostic groups.

It is in this latter chapter that the book's limitations are found. The major problem is that it is never stated how the various interpretative strategies were derived. While several citations follow each set of guidelines, *none of the individual suggested interpretations are referenced*. As a result, it is unclear whether the interpretative suggestions are gleaned from empirical research or simply from the clinical experience of the authors. For those interpretations which are actually empirically based, because there are no references, there is no way to check that the conclusions were accurately reported, that the samples on which the conclusions were drawn match the patient whose scores one is attempting to interpret, how often the interpretation is inaccurate (i.e., sensitivity and specificity), the strength of the reported associations (e.g., correlation coefficients), etc.

Interpretations from "rules of thumb" gleaned solely from clinical experience are even more problematic. Neuropsychology is first and foremost a science based on empirical observations. While clinical experience has a place, its role is to provide hypotheses which are then subjected to empirical confirmation. Without scientific anchoring, clinical observations do not rise above folklore.

In point of fact, research shows that many of the interpretations contained in this book are not accurate. For example, in the discussion of the Seashore Rhythm Test (p. 129, #4), it is asserted that "the results of the SRT can be compared with the Speech-Sounds Perception Test (SSPT). If the SSPT is normal, but there is impairment on SRT, this

suggests problems in attentional and nonverbal processing associated with the right hemisphere or subcortical areas.” The authors cite no empirical support for this statement and in fact there is evidence to the contrary. For example, patients tested pre- and post-right temporal lobectomy have been found to show no decline in performance on the Seashore Rhythm Test (Boone & Rausch, 1989), suggesting that SRT performance is not sensitive to right hemisphere damage.

Similarly, it is stated that “a poor absolute score on Digits Forward (less than a sequence of 5) suggests poor attentional processes or poor memory” (p. 184, #6). In fact, digit span is not a test of memory; severely memory impaired patients have been found to show normal digit span scores (see Iverson & Franzen, 1994; Leng & Parkin, 1995, for summaries), and digit span and memory measures load on separate factors in factor analytic studies (Boone et al., 1998; Larrabee & Curtiss, 1995). The mistaken belief that Digit Span measures memory is one of the more pervasive myths in our field, and one which is unfortunately perpetuated by this book.

Regarding the Rey-Osterrieth Complex Figure, it is asserted that “losses greater than 50% (from copy to memory phases) suggest impairment in memory skills” (p. 189, #10). However, healthy, well-educated individuals of above average intelligence aged 60 to 69 average 51% retention from copy to 3-min recall, and after age 70 an average of only 44% is retained (Boone et al., 1993). Thus, use of this interpretive strategy would inaccurately classify most older individuals as memory impaired.

The authors state that the PASAT has “minimal correlation with mathematical ability and general intelligence” (p. 228, #4), leaving the reader with the impression that these variables do not need to be considered in analysis of test performance. However, recent research has in fact shown that mathematical knowledge accounts for a substantial amount of variance in PASAT scores (Sherman et al., 1997) and IQ level significantly impacts PASAT test results (Wiens et al., 1997). Clearly, math ability and intellectual level need to be factored into any conclusions regarding PASAT scores.

The claims regarding the detection of malingering peppered throughout this book are particularly worrisome. The detection of feigned cognitive symptoms requires use of measures validated on appropriate samples with clear information on false positive and false negative rates. It would be irresponsible to use techniques for which this information is not available. In the discussion of the Stroop Test (p. 175, #2), it is stated that “in cases of individuals with normal intelligence, low scores on both (color naming, word reading) may be related to malingering or lack of effort.” However, many patient groups with normal nonverbal intelligence but with deficits in mental speed and/or rapid verbal processing perform slowly on the first two sections of the Stroop, including learning disabled adults with Klinefelter syndrome (Boone et al., 2001), and patients with major depression (Boone et al., 1995) and left frontotem-

poral dementia (Boone et al., 1999). Thus, this interpretive guideline has unacceptable specificity.

Similarly, the authors assert that “performance on the copy phrase (of the Rey-Osterrieth Complex figure) below 30 after a mild head injury or in the absence of a clear neurological disorder may suggest malingering” (p. 189, #18). However, patients with late life psychosis in the absence of dementia or other neurologic condition have been found to obtain an average score of 24 on the copy trial (Miller et al., 1991).

It is also claimed that greater than 100% retention on the WMS-III can be indicative of malingering (p. 180, #10). However, the empirical literature indicates that malingerers as a group perform more poorly on delayed recall as compared to immediate recall with retention less than that observed in brain injury patients (65 vs. 82%, respectively; Van Gorp et al., 1999). Perhaps some malingerers exhibit greater than 100% retention but the vast majority do not. As a result, if a clinician attempts to use greater than 100% retention to detect malingering, few malingerers will be correctly identified.

Likewise, regarding Digit Span, it is stated that “a difference between forward and backwards that is zero or negative (Digits Backward > Digits Forward) suggests inappropriate motivation or even malingering, as Digits Backward should never be better than Digits Forward in terms of absolute number of digits learned” (p. 184, #5). While Iverson and Franzen (1994) found that college students instructed to malingering tended to exhibit a backward span greater than forward span, studies of “real world” malingerers have not corroborated this observation (Binder & Willis, 1991; Suhr et al., 1997). Analysis of digit span performance in a sample of 64 malingerers (as verified by failed performance on “malingering tests” and/or improbably low scores on select neuropsychological measures; cf. Boone et al., 1999) failed to reveal a single case in which backward span exceeded forward span (Boone, unpublished data). Thus, sensitivity for this guideline appears to approximate zero.

In conclusion, use of the strategies endorsed in this book could lead the clinician to be inaccurate regarding the extent and nature of cognitive impairments, the location of the brain dysfunction, and the presence of malingering. While some of the interpretations contained in this book may be true, the lack of referenced substantiation virtually precludes the reader from establishing the accuracy of individual guidelines. Even assuming, optimistically, that 80 to 90% of the guidelines are accurate, if 20 to 40 interpretations are employed in interpreting a specific patient's scores, then between 2 and 8 interpretations/conclusions contained in the report are likely to be wrong.

The value and viability of clinical neuropsychology as a profession hinges on its accountability, that is, that we can point to empirical research to substantiate our interpretations. The “interpretive guidelines” in this book are in fact only research hypotheses which should not be used for clinical interpretation purposes until they are empirically verified.

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OTHER BOOKS OF INTEREST

(with brief notes by the Book Review Editor)

Battro, A.M. (2001). *Half a brain is enough*. Cambridge, UK: Cambridge University Press, 134 pp., \$17.95 (HB).

This appears to be a “work in progress,” as the author plans to continue following the development of a verbally skilled boy who had a right hemispherectomy at age 2 for intractable seizures.

Cohen, G., Johnson, R.A., & Plunkett, K. (Eds.). (2000). *Exploring cognition: Damaged brains and neural networks. Readings in cognitive neuropsychology and connectionist modeling*. Hove, UK: Psychology Press. 466 pp., \$39.95 (HB).

In depth chapters—some reprinted articles—deal with many facets of visual recognition, and such specialized language topics as some vagaries of English from a neurocognitive viewpoint, and why double dissociation may not be the high road to fractionating functions.

Eysenck, M.W. & Keane, M.T. (2000). *Cognitive psychology. A student's handbook* (4th Edition). Philadelphia: Taylor & Francis. 631 pp., \$39.95 (PB), \$74.95 (HB).

Although a 4th edition, this is a current text, relating all major areas of cognition to neuropsychological function and dysfunction, written in an accessible style with a well-illustrated format.

Fraser, R.T. & Clemmons, D.C. (Eds.). (2000). *Traumatic brain injury rehabilitation. Practical, vocational, neuropsychological, and psychotherapeutic interventions*. Boca Raton, FL: CRC Press. 250 pp. \$59.95 (HB).

A vocationally oriented “how-to” book with very practical information for anyone helping brain injured patients develop their future.

Parkin, A.J. (2000). *Essential cognitive psychology*. Philadelphia: Taylor & Francis. 368 pp., \$29.95 (PB), \$59.95 (HB).

This clearly written text with its informal style and many illustrations, graphs, tables, and cartoons reviews all aspects of cognitive psychology from a research perspective that will attract and challenge newcomers to the field.

Richardson, J.T.E. (2000). *Clinical and neuropsychological aspects of closed head injury* (2nd ed.). Philadelphia: Taylor & Francis. 304 pp., \$49.95 (HB).

An updated 2nd edition reviews traumatic brain injury in seven chapters: "Definitions, Epidemiology, and Causes"; "Mechanisms of Structural Pathology"; "Retrograde and Posttraumatic Amnesia"; "Memory Disorders"; "Cognition and Language"; "Subjective Complaints and Personality Disorders"; and "Outcome, Recovery, and Rehabilitation."