Preface

The impetus for this textbook came when the author was asked to teach a graduate course in neuropsychology and was dissatisfied with the existing textbooks on the subject. It is unique as a textbook on neuropsychology as follows:

1. This textbook can be used for: (a) undergraduate students taking their first course in behavioral neuroscience with minimal background in the biological sciences; and (b) graduate students who are taking their first course in neuropsychology.
2. Chapters 1 through 12 cover material that can be used in an undergraduate course in behavioral neuroscience. These chapters focus on brain physiology, chemical signaling, psychopharmacology, neuroanatomy, neuroimaging, the neuropsychology of cognition, and common neurological conditions. The material is presented in a straightforward format suitable for undergraduate students being exposed to this information for the first time. These chapters serve as an important review when the text is being used with graduate students, for whom Chapters 13 through 18 cover clinical neuropsychological assessment in adults. The special topics covered in Chapters 19 and 20 review material pertaining to the neuropsychological assessment of children and brain injury rehabilitation that is suitable for both undergraduate (excepting the latter half of Chapter 19) and graduate instruction.
3. Within this textbook neuropsychology is narrowly defined as the use of lesion analysis in human patients to further an understanding of brain/behavior relationships. Clinical neuropsychologists provide services to patients with structural brain injury to assist with diagnosis, management, and treatment.
4. Brain/behavior relationships described are those that are supported by a preponderance of the evidence. Isolated, novel, or unclear brain/behavior relationships are not reviewed.
5. A quantitative/qualitative flexible approach to neuropsychological assessment is described with emphasis upon using individual comparison standards as estimates of preexisting neurocognitive skill levels.
6. Neuropsychological assessment of American ethnic minorities is reviewed including case studies of bilingual Hispanic Americans.
7. Mental disorder is conceived as problematic behaviors with psychosocial determinants. There is no reliance on the medical "disease" model of psychopathology that is discussed in detail in Chapter 4.

The author declares no conflict of interest in selecting material to be included. He received no funding from any source, including any pharmaceutical company, to assist in production. The responsibility for all errors of commission and omission are the authors alone. This third edition corrected several errors noted in the second edition and updated the literature by adding new material throughout.

The Author and Neuropsychology

The author is a native of Wellington, New Zealand who was first introduced to neuropsychology when he took a course from Dorothy Gronwall, Ph.D. while a student in the Master of Science program in psychology at the University of Auckland. She supervised his Master's thesis entitled *The effect of traumatic concussion on language*, whereby it was discovered that there was no such effect.

Limited opportunities for employment in his chosen field in New Zealand provided the impetus for continued study abroad. In 1979 he was accepted as a doctoral student into the neuropsychology subprogram at Queens College of the City University of New York. As part of his doctoral studies he completed a predoctoral internship under the direction of Leonard Diller, Ph.D., at the New York University Medical Center, Howard A. Rusk Institute of Rehabilitation Medicine that aroused an interest in cognitive rehabilitation that would influence early career directions. As a doctoral student he also worked under the direction of Barry Gurland, MD at the Columbia University Center for Geriatrics and Gerontology. There he served on a research project designed to determine the incidence of dementia among chronic psychiatric inpatients at Harlem Valley Psychiatric Center in Wingdale, New York. This experience exposed him to asylum medicine and sparked an interest in the diagnosis of dementia that would dominate later career clinical endeavors.

Mitchell Kietzman, Ph.D., as much a friend as a professor, supervised his doctoral dissertation on the effects of aging on early information processing in the visual system. Exposure to information processing models of cognition convinced the author to become a clinician. His first postdoctoral appointment was as a clinical neuropsychologist at the Head Injury Center at Lewis Bay in Hyannis, Massachusetts, on Cape Cod, where he was initially supervised by Edith Kaplan, Ph.D. It was she who taught him how to conduct neuropsychological assessments.

The Lewis Bay experience tempered his enthusiasm about the efficacy of rehabilitation therapies for chronic, severe, brain injury cases and he soon moved to acute rehabilitation settings, first at the Rehabilitation Hospital of the Pacific in Honolulu, Hawaii, and then at the Rehabilitation Hospital of South Texas in Corpus Christi, Texas. The latter was an 80 bed, acute, specialty rehabilitation hospital where he served for over three years as the Director of Psychology.

In 1995 the author set up in independent practice as South Texas Neuropsychology, P. C. in Corpus Christi, Texas. This provided an opportunity to pursue varied areas of practice especially the neuropsychological assessment of patients with postconcussion symptoms, dementias, learning disorders, and forensic cases, but mostly he learned about the business of clinical neuropsychology.

Concluding that he had learned enough after 20 years of clinical practice to teach others, the author changed his career trajectory to academia and joined the Department of Psychology and Anthropology at the University of Texas – Pan American as an associate professor. This university was situated in the Rio Grande Valley, an area of Texas predominantly populated (90%) by Hispanic Americans just north of the Mexican border. There he has conducted research primarily on the neuropsychological assessment of Spanish/English bilinguals, earned promotion to full professor, served as the Graduate Psychology Program Director, and as Department Chair. While serving as the Department Chair he was instrumental in creating an independent Department of Psychology. In September 2015, the university became known as The University of Texas Rio Grande Valley as part of a merger with the University of Texas at Brownsville and the department became the Department of Psychological Science.

The author has published articles in peer-reviewed scientific journals on a very broad range of neuropsychological topics including: alien hand sign; postconcussion symptoms; neuropsychological assessment of Spanish/English bilinguals; race-norming; billing fraud; non-central nervous system medical conditions that cause neurocognitive impairment; individual comparison standard estimates of preinjury intellectual skills; behavioral function of the anterior cingulate cortex; behavioral function of the insula; anosognosia; performance validity assessment in Spanish/English bilinguals; history of neuropsychology; Wernicke-Korsakoff syndrome; and physical activity and dementia delay.

The author acknowledges that there is little consensus in the field of neuropsychology on basic issues like how to conduct neuropsychological assessments or the functions of the frontal lobes. The painfully slow but steady advance of science will eventually see these issues resolved. Over his career, the author has seen several novel scientific paradigms in the brain/behavior sciences emerge rapidly, become popular, and then just as rapidly decline. Neuropsychology has been around for over 150 years. Clinical neuropsychological assessment remains the best available measure of the functional effects on patients of structural brain injury. Given the current rate of the evolution of knowledge within the brain sciences, it is estimated by the author that about half of what is written here as doctrine will be contradicted by future research. Unfortunately, it is hard to say which half.

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