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Neuropsychology, Neuropsychiatry, and Behavioral Neurology

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To those who say
“NO!”
I say
“YES!”

Preface

This book is written for the clinician, students, and practitioners of neuropsychology, neuropsychiatry, and behavioral neurology. It has been my intent throughout to present a synthesis of ideas and research findings. I have reviewed thousands of articles and research reports and have drawn extensively from diverse sources in philosophy, psychology, neurology, neurosurgery, neuropsychiatry, physiology, and neuroanatomy in order to produce this text. Of course I have also drawn from my own experience as a clinician and research scientist in preparing this work and in this regard some of my own biases and interests are represented.

I have long sought to understand the human mind and the phenomena we experience as conscious awareness. After many years of studying a variety of Western and Eastern psychologists and philosophers, including the Buddhist, Taoist, and Hindu philosophical systems, I began, while still an undergraduate student, to formulate my own theory of the mind. I felt, though, that what I had come upon were only pieces of half the puzzle. What I knew of the brain was minimal. Indeed, it came as quite a surprise when one day I came across the journal *Brain* as I was browsing through the periodicals section of the library. I was awed. An entire journal devoted to the brain was quite a revelation. Nevertheless, although intrigued by the possibilities, I resisted. What did the brain have to do with “consciousness,” emotion, or even clinical psychology? I was to find out soon thereafter, when I met and became good friends with Dr. David Duval, then a graduate student. He was both biologist and philosopher and told me about a new experimental memory and brain injury rehabilitation clinic at the Palo Alto Veterans Administration Hospital, where he had just begun to work. I was intrigued by his stories and one day accompanied him as an invited visitor. (Later I obtained a position at the clinic for a short time.) I was astounded and deeply impressed by the seemingly bizarre variety of symptoms demonstrated by many of the brain-injured vets I met that day, and I was shocked to be confronted with what appeared to be an undeniable truth: “If you damage the brain you damage consciousness.” On that day I began a quest to understand the brain and the manner in which it interacts so as to produce consciousness, awareness, personality, memory, thinking, emotion, neurosis, and psychosis.

That was almost 17 years ago. Since that time, I have been very fortunate to have had a number of opportunities to test and observe over a thousand brain-injured individuals and to conduct a variety of studies in the neurosciences. These have included animal research in neurophysiology, developmental neuroanatomy, and sensory deprivation;

human neuropsychological studies conducted on children and split-brain, brain-injured, and neurosurgical patients; and research on hormonal and early environmental influences on arousal, aggression, memory, and sex differences in cognition.

In conducting these studies my knowledge and understanding of brain psychiatry and neuropsychology have greatly expanded. Nevertheless, many of the books in the neurosciences treat psychiatry, neurology, and neuropsychology as if they were separate and mutually exclusive fields. It is my belief that these areas of study are in fact one and the same. I think it is important to realize that what appears to be a “manic” disorder may in fact be a manifestation of right frontal lobe disease, or that the patient who suddenly develops “schizophrenia” may instead have suffered a stroke involving the basal ganglia or left temporal lobe. I believe it is also important to recognize not only that diverse symptoms may be indicative of localized dysfunction but also how specific abnormalities can be secondary to disconnection syndromes, disinhibition, epileptic disturbances, and/or tumors, strokes, head injury, and diffuse physiological changes. To understand and recognize these problems it is necessary to have at least some knowledge of neuroanatomy and the manner in which various nuclei and brain regions interact. These are just some of the issues detailed in the pages that follow.

Rhawn Joseph

Santa Clara, California

Acknowledgments

This book is written for the clinician. However, it draws from a number of research and theoretical perspectives as well as my own experiences in diverse neuroscience settings, including my readings in the neurosciences, existential phenomenology, and psychoanalysis. Nietzsche, Freud, Jung, Sartre, Geschwind, Luria, and many others have greatly contributed to my thought and understanding of the brain, cognition, emotion, and conscious awareness. Drs. Oakley Ray, Peter Koestenbaum, Arlene Kasprisin, Arthur Anderson, and Roberta Gallagher have contributed significantly to my philosophical and experiential growth. Drs. Oakley Ray, Vivian Casagrande, J. Kass, and J. Siegel provided me with tremendous opportunities to undertake a broad range of neuroscience research, whereas Drs. A. Kasprisin, J. Dalton, J. Gonen, R. Delaney, R. Novelly, M. Andersen, and A. Anton provided me with opportunities to examine a wide variety of brain-injured, neurosurgical, split-brain, and psychiatric patients. Others who have contributed significantly include Drs. Edith Kaplin, S. Berenbaum, D. O'Leary, Ralph Peterson, and Joe Ryan; the Psychiatry and Neurology Departments at UHS/The Chicago Medical School and the North Chicago Veterans Administration Medical Center; the Neurology and Neurosurgery staff at West Haven Veterans Administration Medical Center and Yale University Medical School; the staff at the Veterans Administration/Yale Seizure Unit; the *Journal of Clinical Psychology* for allowing me to republish portions of my 1982 monograph and a slightly expanded version of my 1988 monograph; and Fran Bernstein and the San Jose State University Library staff.

In preparing for this book I also spent more than a few hours browsing through old editions of various periodicals. I was often fascinated by what I discovered hidden away and uncited. I once read that "the only new ideas are those which have been forgotten." I would amend that to read "many new ideas...." This is certainly apparent after reading authors such as Hughlings Jackson and many of his contemporaries, who lived and wrote during the late 1800s, as well as other researchers and scholars publishing as recently as the 1940s. Although the field of neuropsychology has grown phenomenally during the last 25 years, a good deal of the groundwork was brilliantly proposed and explored long ago. Nevertheless much remains to be explored and discovered. It is my hope that this neuro-synthesis of old and new will contribute to the making of many new discoveries. I very much appreciate the assistance and patience of my two editors Steve Melvin and Eliot Werner.

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Brain Plates

FIGURE 1. Lateral surface of the left cerebral hemisphere. From *Structure of the human brain* by S. J. DeArmond, M. M. Fusco, & M. M. Dewey, 1976. New York: Oxford University Press. Reprinted by permission.

FIGURE 2. Superior surface of the brain. From *Structure of the human brain* by S. J. DeArmond, M. M. Fusco, & M. M. Dewey, 1976. New York: Oxford University Press. Reprinted by permission.

FIGURE 3. Medial (split-brain) view of the right half of the brain. From *Structure of the human brain* by S. J. DeArmond, M. M. Fusco, & M. M. Dewey, 1976. New York: Oxford University Press. Reprinted by permission.

FIGURE 4. Inferior surface of the brain. From *Structure of the human brain* by S. J. DeArmond, M. M. Fusco, & M. M. Dewey, 1976. New York: Oxford University Press. Reprinted by permission.

FIGURE 5. The anterior aspect of the brainstem and midbrain. From *Human neuroanatomy* by R. C. Truex & M. B. Carpenter, 1969. Courtesy of The Williams & Wilkins Co., Baltimore, MD.

FIGURE 6. The posterior aspect of the brainstem with the cerebellum removed. From *Human neuroanatomy* by R. C. Truex & M. B. Carpenter, 1969. Courtesy of The Williams & Wilkins Co., Baltimore, MD.

FIGURE 7. The ventricular system of the brain. From *Correlative neuroanatomy*, 20th Ed. by J. DeGroot & J. G. Chusid, 1988. Courtesy of Appleton & Lange, E. Norwalk, CT.