

tangible, physical, and lasting effects on neurological functioning. For anyone involved in providing psychotherapy or counseling, this is a welcome theme because it implies that people can change their lives through experiencing positive relationships with others. This is a welcome change from the ubiquitous television commercials encouraging people to seek particular medications from their doctors to relieve unwanted symptoms and restore health.

The book is organized into six parts with a total of 23 chapters. In Part I, "The Emergence of Social Neuroscience," Cozolino introduces the idea of neuroplasticity, and a second theme to which he returns frequently, the role of evolution in neurological development and in the specific functions of various brain structures. These chapters present theories and models of evolution, such as that of MacLean (MacLean, 1990), and begin to illustrate the role of evolution and survival of the species in behavioral functioning and related neurological functioning. Part II is devoted to a review of neurological structures because they relate to social behavior, or the "social brain" as Cozolino terms it. One chapter traces brain development, another structures and systems, and the third addresses laterality, specifically as it relates to emotional and social functioning. Case examples in each chapter aim to illustrate the role of neurological development and the effects of relationship experiences on various neurological structures and systems.

Part III, "Bridging the Social Synapse" is devoted to parent-child attachment from a variety of perspectives. Cozolino starts this section by focusing on "experience dependent plasticity," moving on to the role of reflexes and instincts, the effects of love on human behavior and the underlying neurological functioning, memory, and ultimately to the various ways of attaching. To attachment researchers, this part proves particularly interesting. Cozolino outlines in each of the chapters in this section, neurological structures or systems, and the role they may play in human relationships, such as the dopaminergic reward system and motivation in social behavior. Part IV moves on to focus in-depth on vision and its role in social behavior, with chapters covering topics such as gaze and eye-contact, reading faces and facial expressions, moving into imitation and being able to imitate what is seen, and ending with the topic of empathy. He provides realistic arguments from neurological development for the reality of con-

cepts such as "transference," which is often set aside in the emphasis on empirically supported treatments.

In Parts V and VI, Cozolino moves even more into a clinical discussion, with Part V detailing across six chapters various forms of psychopathology and the roles of various neurological systems as described in earlier chapters. The disorders, as expected, are relationship oriented such as social phobias, borderline personality, antisocial personality disorders, and autism. Part VI discusses issues of psychotherapy more specifically, with the importance of life narratives for health and well-being, and how psychotherapy can benefit from neuroscience and the knowledge we are gaining about how the brain systems function.

Throughout this book, Cozolino strives to weave together the mutual influences of brain structure and function with the complexities and subtleties of human relationships. He uses examples from his martial arts experiences with Aikido, stories of a Buddhist master and teacher, as well as data drawn from analyses of the brains of individuals with various social problems and impairments. It makes for an interesting read even when he is not always completely convincing. The suggestion at the end of the book, to teach clients about their own brain chemistry and functioning to facilitate psychotherapy, does not appear compelling to me. He also tends to write throughout the book as if certain findings are reliable and clear, such as when he describes the styles of attachment in children and adults and the implications for behavior and brain functioning. The reliability of avoidant/dismissive and anxious/ambivalent attachment styles is equivocal, and the adjustment and adaptation of individuals with "insecure" attachment styles can quite often appear healthy, contrary to expectations (see Crittenden & Claussen, 2003). But, these difficulties notwithstanding, *The Neuroscience of Human Relationships* lights the path that neuroscientific researchers and clinicians alike should be traveling, hand-in-hand.

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A Broad-Based and In-Depth Overview of the Neuropsychiatry of Stroke

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The Clinical Neuropsychiatry of Stroke: Cognitive, Behavioral, and Emotional Disorders following Vascular Brain Injury. Second Edition, by Robert G. Robinson. 2006. Cambridge, UK: Cambridge University Press, 470 pp., \$150.00 (HB)

Reviewed by BETH S. SLOMINE, PH.D., ABPP, *Kennedy Krieger Institute and Johns Hopkins University School of Medicine, Baltimore, Maryland*

Many researchers have explored the development of emotional and psychiatric disorders following stroke. Few indi-

viduals, however, have dedicated years of clinical research to the topic or have the depth of knowledge required to

critically evaluate the existent large body of literature. In the second edition of *The Neuropsychiatry of Stroke*, Dr. Robert Robinson eloquently summarizes and reviews major findings, including his own work and that of other investigators of emotional and psychiatric functioning after stroke and other brain injuries. In the first edition of *The Clinical Neuropsychiatry of Stroke* (1998), Robinson explored factors associated with the development of neuropsychiatric disorders following stroke. In this second edition, the original text is updated with recent studies on the development of neuropsychiatric disorders, such as poststroke depression, mania, and anxiety. A cogent argument is presented for a second edition, noting that the number of publications related to poststroke depression alone between 1998 and 2004 had more than doubled compared to the prior 7-year period (1990 to 1997).

The book is divided into five sections: (I) Introduction; (II) Poststroke Depression; (III) Poststroke Mania; (IV) Poststroke Anxiety Disorders; and (V) Other Poststroke Disorders. A solid foundation of theoretical considerations is provided, the details of relevant research meticulously reviewed, research design thoughtfully discussed, and scientific evidence within a larger, theoretical context summarized and integrated. The chapters are concise and easy to read. Many illustrative graphs and tables are presented throughout the text. As a result, the reader will gain a thorough understanding of theoretical background and research findings pertaining to neuropsychiatric disorders.

In Part I, *Introduction*, Chapters 1 to 4 cover basic information about stroke and the neuropsychology of emotion. The chapters include information about the epidemiology of stroke, the historical perspective of the neuropsychiatry of stroke, brain organization and cerebral basis of emotion, and vascular anatomy and stroke classification. This overview sets the stage for the remaining chapters and provides individuals with limited background in stroke or the neuropsychology of emotion a clear and easy-to-read overview. Chapter 3, *Brain Organization and Cerebral Basis of Emotion*, is particularly well suited for use in providing students of neuropsychology with an overview of the neuropsychology of emotion.

Part II, *Poststroke Depression*, is the most comprehensive of the five sections and contains 19 chapters, each focused on a specific consideration for poststroke depression. Chapters 5 to 9 address general characteristics of depression following stroke including diagnosis, prevalence, natural course, and phenomenology. Specifically, the applicable DSM-IV diagnostic categories of depression in individuals following stroke are reviewed. An argument is made that the category "minor depression" should be used to describe the sub-syndromal form of major depression. In addition to major and minor depression, the case is made that adjustment disorder with depressed mood may sometimes be applicable to patients with poststroke depression. After describing how depression is best categorized after stroke, the prevalence of depressive disorders is examined, pooling the data of over 6000 patients. It is concluded

that depression seems to be the most common and severe emotional disorder associated with stroke. In chapter 7, *Phenomenology and Specificity of Depressive Symptoms*, specific symptoms of depression are reviewed and it is concluded that the phenomenology of major depressive disorder in patients with stroke is similar to that found in patients with mood disorders alone and that few patients are over diagnosed based on symptoms that result from physical illness.

Chapters 10 to 12 address the relationship between poststroke depression and brain injury structure, examining lesion location, cerebral dominance, structural asymmetries, and the effects of bilateral brain injury. In Chapter 10, *Relationship to Lesion Location*, clear, convincing, and extensive evidence is presented for the relationship between left anterior lesions and depression. Specifically, Robinson describes a meta-analysis that he and his colleagues conducted, which included all studies with descriptions of the association between depression severity and the distance of the anterior border of the lesion from the frontal pole in the left or right hemisphere, over the first two months after stroke. The meta-analysis revealed that the frequency of major depression following left frontal or left basal ganglia stroke is more than two times greater than depression associated with right anterior lesions or left parietal-occipital lesions. A second meta-analysis conducted by his research group found proximity to the left frontal pole correlated significantly with depression severity.

The relationships between depression and cognitive, physical, social, and language function are described in Chapters 13 to 16. Chapter 13 examines the relationship between activities of daily living (ADLs) and poststroke depression severity, noting that whereas individuals treated with antidepressants did not show significantly better ADLs than untreated patients, depressed individuals who responded to antidepressant treatment had improved ADLs compared to non-responders. Chapter 14 addresses the relationship between depression and cognition, finding depression is associated with a greater degree of cognitive impairment than can be explained by brain lesion alone and primarily follows left hemisphere stroke. Chapter 15 discusses relationships between aphasia and depression and the assessment of depression in those with significant aphasia. Chapter 16 covers the relationship of depression to social functioning, highlighting the interactive relationship between depression and social supports. The literature suggesting those with poor social support systems are more likely to become depressed is reviewed and it is noted that those who become depressed are also more likely to deteriorate in their social functioning. Chapters 17 to 20 cover the relationship between depression and mortality, suicidal ideation, premorbid risk factors, and biological markers. Premorbid risk factors for the development of poststroke depression include socioeconomic status, age, previous personal and family history of psychiatric disorder, life events, and subcortical atrophy. The emerging evidence that poststroke depression may be associated with increased mortality is reviewed. An in-

triguing study is reviewed in which active antidepressant treatment increased survival by 50%, when outcome was examined 7 to 9 years after stroke. Mechanisms of post-stroke depression, treatment, and prevention are outlined in Chapters 21 to 23, including a review of the debate over whether poststroke depression is the result of the psychological response to impairment of functioning or whether it results from the neurophysiological response to brain injury, focusing primarily on neurophysiological changes associated with stroke or brain injury to left frontal cerebral regions. Controlled trials demonstrating the effectiveness of antidepressants in the treatment of poststroke depression are described in detail.

The more limited information provided in Parts III and IV regarding poststroke mania and anxiety reflects a less extensive body of literature exploring these disorders compared to the depth of information available for a literature review on depression. Part III, *Poststroke Mania*, contains five chapters. Chapter 24 provides an overview of the prevalence and clinical symptoms associated with mania, and indicates that it occurs rarely and is more common following traumatic brain injury. Clinical and lesion correlations of poststroke mania and bipolar disorder are reviewed, including that subcortical impairment is likely associated with the development of bipolar disorder whereas cortical lesions are more common in patients developing mania alone. Chapter 27, *Mechanism of Mania following Stroke*, discusses relevant risk factors including family history of mood disorder and a right hemisphere lesion involving frontal, temporal, or subcortical structures. Chapter 28, *Treatment of Mania following Stroke*, emphasizes a need for a controlled treatment trial in this population.

Part IV, *Poststroke Anxiety Disorders*, contains five chapters. Chapter 29, *Prevalence and Specificity of Clinical Symptoms*, notes that anxiety disorders are common sequelae of stroke and that half of the patients diagnosed with poststroke anxiety also have symptoms consistent with major or minor depression. *Clinical and Lesion Correlates*, Chapter 30, are described along with the association between poststroke anxiety disorders and history of alcohol use, impairment in ADLs, and right hemisphere lesions. Chapter 31, *Longitudinal Course*, and Chapter 32, *Relationship of Anxiety to Outcome*, are brief, each describing the results of six published studies. Throughout this section there is comment on the high rate of co-occurrence between depression and anxiety and the need for further research to examine etiology and treatment of depression alone, anxiety alone, and the interrelationship of depression and anxiety poststroke.

Part V, *Other Poststroke Disorders*, includes chapters on psychosis (34) and classic neuropsychological disorders including anosognosia (35), catastrophic reaction (36), apathy (37), disturbance of prosody (38), irritability and aggression (39), and pathological laughing and crying (40). Each of these chapters includes mention of the early reports

that first described these disorders. For example, Babinski's original description of anosognosia is described, and Goldstein's original concept of the catastrophic reaction is reviewed. Unlike in previous sections, there is no attempt to comprehensively review all the literature associated with these conditions. Instead, research data are presented that highlight issues of prevalence, etiology, mechanism, and treatment.

A concluding Chapter 41 emphasizes the high prevalence of neuropsychiatric disorder after stroke and the associated comorbidity. The efficacy of antidepressants for a broad array of symptoms is also highlighted, including antidepressants to alleviate anxiety symptoms in patients with co-morbid depression and anxiety, and treatment of pathological laughing and crying. There is expressed need to design studies aimed at elucidating etiology and underlying mechanisms of these disorders "so that rational treatments may replace empirical treatments and lead to the most effective and fullest response" (p. 450).

Importantly, whereas the full title of this book is *The Clinical Neuropsychiatry of Stroke: Cognitive, Behavioral, and Emotional Disorders following Vascular Brain Injury* and the back cover states, "This fully revised new edition covers the range of neuropsychiatric syndromes associated with stroke, including cognitive, emotional, and behavioral disorders. . ." there is little detail about the specific cognitive or neuropsychological deficits associated with stroke. In fact, Robinson acknowledges this limitation in the last chapter, writing, "The only major group of mental disorders which was not discussed in detail is the cognitive disorders. Although much of our work has been devoted to examining the effect of depression, anxiety, mania, and other poststroke disorders on cognitive functioning, we have not systematically studied the neuropsychological impairments of specific lesion site or the syndrome of vascular dementia." (p. 447). Therefore, readers looking for information about neuropsychological impairments associated with stroke will not be satisfied with this text. On the other hand, it is not clear from the book's title the extent to which Robinson reviews research about neuropsychiatric disorders associated with brain injuries resulting from etiologies other than stroke, such as traumatic brain injury. Therefore, readers interested in the development of neuropsychiatric disorders after any type of brain injury will find useful information in this book. Overall, the depth and clarity of this text is useful for clinicians who evaluate and treat individuals with emotional and behavioral disorders following brain injury as well as researchers who are interested in studying neuropsychiatric disorders. Additionally, because the text begins with a basic overview of stroke and the neuropsychology of emotion, students of neuropsychology as well as seasoned professionals will find this to be a useful and informative resource.