

BOOK REVIEWS

The Neuroscience of Memory and Psychopathology From an Associationist Perspective

From Memories to Mental Illness: A Conceptual Journey, by William M. Hall. 1996.
New York: Plenum Publishing Corporation. 272 pp., \$45.00. ISBN: 0-306-45244-8.

Reviewed by JOEL E. MORGAN, Ph.D., DVA Medical Center, East Orange, NJ;
Department of Neurosciences, New Jersey Medical School, Newark, NJ.

In *From Memories to Mental Illness: A Conceptual Journey*, the author states that he has not written a scholarly treatise with roots firmly established in empirical science. Rather, he notes that his book is largely theoretical, but is *based upon* current knowledge of neuroscience. He attempts to integrate this knowledge into a cohesive theory of the neural basis of behavior.

In a sense, the general premise of the book takes off where modern theory leaves off. The prevailing hypothesis is that the brain is organized in an *associated fashion*, that “. . . associations between memories are basic to the very organization and function of the human brain. This property may underlie our ability to think, reason, and memorize. By assuming that memories are grouped in associations as determined through experience, a functional and biological basis for most mental activity can be postulated.” Thus, the author constructs a model of human behavior, namely, mental functioning, based upon the classic notions of associationist theory. As such, the present work represents not only the *Zeitgeist* of the 19th Century, but most likely represents what appears to be the current *de facto* “*Zeitgeist*” in neuropsychology and related neuroscience disciplines, as well.

Dr. Hall proposes that associationism may explain a multitude of human behaviors, including mental illness. His major theoretical position is that emotional experience plays a crucial role in memory acquisition and retrieval and that this relationship underlies much of human behavioral phenomena. He reasons that experience leads to the establishment of neural circuits *via* huge numbers of synaptic connections, an isomorphic relationship between mind and body, so to speak. For example, *thought* is viewed as the various combinations of memories created by the flow of ideas through consciousness. *Memories* are groupings of associations stored in overlapping fashion with similar struc-

tures. *Emotional* experience exists in association with memories: New stimulus information is evaluated in light of past experience; the resulting emotional interpretation is stored in association with the new entity, providing a reference point for future evaluation. Some basic emotions are “inherited” in the sense that they are passed from one memory to the next. Any given emotion may exist with numerous brain centers. This may take place *via* association with “possibly hundreds of thousands of memories by synaptic connections.”

The author speculates that memory retrieval may be a function of the prevailing mood. Thus, the dominant emotional state at any given time may selectively determine which memories may, and may not, be retrieved. This mechanism underlies state-dependent learning. It may also explain such forms of psychopathology as Multiple Personality Disorder, wherein amnesia may be present in the “host” personality for memories acquired by “other” personalities. A similar situation is noted with psychogenic amnesia, in which the author speculates that some rare combinations of emotions may remain “free of associations in adulthood.” Deeply disturbing traumatic experiences could trigger such a mood state wherein the individual is unable to retrieve past memories “that require emotional associations for localization,” thus leading to amnesia.

Dr. Hall differs with more “traditional” neuroscience theories of amnesia, such as poor storage and consolidation (Squire et al., 1989), deficits in the consciousness–awareness system (Schacter, 1990), or difficulty with the contextual basis of some memories (Mayes, 1988). Rather, his view stresses the role of emotion in memory, stating that emotion is necessary for the initial consolidation as well as the localization of memories.

Dr. Hall discusses mood disorders and other forms of major psychiatric disturbances from a similar perspective. For

instance, his theory of depression and mania is based upon the notion that emotions associated with specific memories may change in response to life circumstances and become polarized. A redistribution of emotional associations occurs and the fixed mood state characteristic of depression or mania may develop and be maintained. Dr. Hall noted that hippocampal activity seems to underlie emotional experience. If the initial emotional experience is intense, for example, the polarization process might be widespread, involving many memories. This would lead to a relatively fixed mood state (depression, mania). For the author, mood swings may

represent the simultaneous existence of opposite emotional domains.

From Memories to Mental Illness is a stimulating, interesting, and challenging work. The author has taken great pains to make his theory quite internally consistent, with logical suppositions emanating from his central thesis. If you are inclined to theoretical journeys, have a strong interest in the neural basis of behavior and psychiatric conditions, and enjoy logically presented treatises, you will find William Hall's *From Memories to Mental Illness* a pleasant and provocative journey.

Tests: One Old, One New (Mostly)

Rey Auditory and Verbal Learning Test. A Handbook, by Michael Schmidt. 1996. Los Angeles, CA: Western Psychological Services. 137 pp., \$49.50.

The Camden Memory Tests, by Elizabeth K. Warrington. 1996. Hove, U.K.: Psychology Press (Erlbaum, Taylor & Francis). *Manual*. 16 pp., \$9.95. ISBN: 0-86377-379-6. *Short Recognition Memory Test for Words*, \$30.00. ISBN: 0-86377-429-6; *Short Recognition Memory Test for Faces*, \$35.00. ISBN: 0-86377-430-X; *Paired Associate Learning Test*, \$35.00. ISBN: 0-86377-428-8; *Topographical Recognition Memory Test*, \$85.00. ISBN: 0-86377-427-X; *Pictorial Recognition Test*, \$85.00. ISBN: 0-86377-426-1.

Reviewed by M.D. LEZAK, Ph.D., *Department of Neurology (L226) Oregon Health Sciences University, Portland, OR 97201-3098.*

Two useful assessment tools should interest neuropsychologists dealing with clinical questions, whether in service or research settings. Dr. Schmidt's handbook contains an extensive compilation of *Auditory Verbal Learning Test (AVLT)* findings that together provide suitable metanorms (developed by Dr. Schmidt) stratified by age (from 13 to 76–89) and by gender. He includes complete data from the studies that contributed to the metanorms. Also included are data from several alternate forms, a number of recognition test formats, and French and German word lists with their alternate forms. Studies of clinical populations are included along with a chapter on "Statistical properties of the RAVLT" and a comprehensive list of references. Neuropsychologists using the AVLT and puzzling over which set of norms to apply will welcome this handbook as it provides answers for normative questions and reminds the user of many other questions that can be asked of the AVLT data. My only concern is the insertion of "and" between "Auditory" and "Verbal" in the manual's title. Not only does the "and" make no sense, but no more variants on the AVLT name are needed.

In developing five (almost) new learning tests, Dr. Warrington has again enhanced neuropsychology's repertoire

of standardized instruments. Fortunately for us, this set of tests enlarges the range of persons whose memory functions can be reliably assessed as none of the tests require a motor response, and the three picture tests do not require verbal responses. Norms, stratified by age, are based on two large samples of control subjects. In addition, performance patterns of several groups of brain damaged persons are included.

Tests of *Memory for Words* and *Memory for Faces* follow the format of the original long form of these tests, but each contain only 25 stimulus items, making them much easier to give. *Topographical Recognition* and *Pictorial Recognition* present attractive full-color pictures in a multiple-choice format that can be responded to by pointing to words. Only the *Paired Associate Learning Test* comes in more than one form, making it suitable for relatively frequent retesting. Unfortunately, practice effects will be an issue on retesting with the rest of this battery. It can be hoped that Dr. Warrington will develop alternate sets to further extend the usefulness of what appears to be five valuable additions to memory testing.

Exploring Traumatic Brain Injury

Recovery After Traumatic Brain Injury. Barbara P. Uzzell and Henry H. Stonnington (Eds.). 1996. Mahwah, NJ: Lawrence Erlbaum Associates. \$34.50 paper (ISBN: 0-8058-1824-3), \$69.95 cloth (ISBN: 0-8058-1823-5).

Children With Acquired Brain Injury: Educating and Supporting Families (Vol. 2 in the series, *Family, Community and Disability*). George H.S. Singer, Ann Glang, and Janet M. Williams (Eds.). 1996. Baltimore: Paul H. Brookes. \$27 paper. ISBN: 1-55766-233-9.

Reviewed by CORWIN BOAKE, Ph.D., *Department of Physical Medicine and Rehabilitation, University of Texas–Houston Medical School and The Institute for Rehabilitation and Research, Houston, TX 77030-3405.*

Both of these books deal with the care of persons who suffer traumatic brain injury (TBI). The fact that the books have almost no overlap in content, and yet will probably share some of the same readership, shows the wide range of problems that must be addressed by clinicians in brain injury rehabilitation.

Recovery After Traumatic Brain Injury is a collection of 22 papers presented at the conference of the International Association for the Study of Traumatic Brain Injury (IASTBI) held at St. Louis, Missouri during September 1994. The editors and conference organizers are a neuropsychologist (Barbara Uzzell) and a rehabilitation medicine physician (Henry Stonnington), symbolizing the alliance between these two professions in brain injury rehabilitation. The editors are to be congratulated for collecting so many of the major papers presented at the conference. Like the conference itself, the book consists mostly of updates on the work of researchers in the neuroscience, neurosurgery, neuropsychology, and rehabilitation of brain injury, with each contribution tending to focus on the authors' own research. In fact, much of that research appeared in *Brain Injury*, the IASTBI journal.

Nevertheless, several of the chapters can serve as tutorials on current research findings. Brian Kolb reviews studies on age and recovery from brain injury. Warren Lux reviews psychopharmacological interventions, bringing together much of the newer literature. Zvi Kaliski and Barbara Uzzell review mechanisms of confabulation. John Corrigan reviews both the measurement of agitation and the problem of postinjury substance abuse. Paul Wehman reviews the supported employment model of vocational rehabilitation. Joshua Dowling and Ralph Lacey review subarachnoid hemorrhage (SAH), emphasizing the role of vasospasm in causing secondary brain damage. W. Dalton Dietrich reviews the rationale for hypothermia as an acute neurotrauma intervention. Yoichi Katayama and colleagues review mechanisms of excitotoxic brain damage. In my opinion, an important omission from the book and from the IASTBI conference it was based on (as well as most similar confer-

ences) is a review of the effectiveness of brain injury rehabilitation itself, although this is partly discussed in the papers by Jennie Ponsford and Anne-Lise Christensen and colleagues. In summary, I would recommend this book to brain injury rehabilitation specialists as a source of updates on current research in brain injury and particularly neuroscience topics.

Children With Acquired Brain Injury: Educating and Supporting Families is a multiauthored book about interventions with parents of school-age pediatric brain injury patients. The editors are two special education professors (George Singer and Ann Glang) and a social worker (Janet Williams). The editors also co-authored 6 of the 13 chapters. The theme of this book, which I endorse, is to put greater emphasis on education and support for parents, as a preferred alternative to the more common approach of intervening only with the child. After all, parents usually case manage and sometimes even provide much of the rehabilitation their children receive. For that matter, the same can be said of many parents of young adult patients.

The current book builds on an earlier book, *Head Injury: A Family Matter*, co-edited by Janet Williams and Thomas Kay (Baltimore: Paul H. Brookes, 1991). The editors and most of the authors of the current book are recognized experts in pediatric brain injury rehabilitation and special education. Two of the chapters report unique contributions to this literature. Joseph Lucyshyn and colleagues from the University of Oregon describe an in-home behavioral intervention for physical aggression in a child with TBI, using the Positive Behavioral Supports model. George Singer and Laurie Powers report a clinical trial comparing two group interventions with parents of pediatric brain injury patients, a group teaching stress management and coping skills *versus* a traditional support group without skills teaching. Despite the small sample size, it was found that the skills-teaching group obtained better outcomes, particularly in parents' emotional status. In my opinion, treatment trials like this should be the number-one priority in most areas of rehabilitation research. Other chapters cover important topics in educa-

tional reintegration, such as parents meetings with school staff. The topic of parents' emotional reactions is discussed repeatedly, which may seem redundant to many rehabilitation specialists. Despite the lack of data to support many of the interventions that the authors recommend, and the fact

that some chapters focus only on the U.S.A., I recommend this book to specialists in pediatric brain injury rehabilitation and special education as a source of proposals and examples of interventions.

An International Perspective on Hyperactivity

Hyperactivity Disorders of Childhood. Seija Sandberg (Ed.). 1996. Cambridge, U.K.: Cambridge University Press. 517 pp., \$95.00. ISBN: 0-521-43250-2.

Reviewed by KEVIN R. KRULL, Ph.D., *Department of Psychology, University of Houston, Houston, TX 77204.*

With *Hyperactivity Disorders of Childhood*, Seija Sandberg makes a timely and valuable contribution to an ever expanding area of child psychopathology. Attention deficit hyperactivity disorder (ADHD) has gone through numerous diagnostic revisions over the last several decades. Focus has shifted from primary attention deficits, to primary hyperactivity, to attention deficits and hyperactivity-impulsivity. These revisions, with their changes in major focus of pathology, have contributed to the already confusing literature, making longitudinal studies and comparison of studies across time difficult. With this book, Dr. Sandberg has shed additional light on the vast heterogeneity of ADHD. However, this book also adds to the heterogeneity confusion by including a focus on conduct disorder.

An apparent distinction between the diagnosis of attention deficit hyperactivity disorder in the United States, presumably through the use of the criteria in the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition (DSM-IV), and the diagnosis of a *hyperkinetic disorder* in the rest of the world, presumably through the use of the criteria in the International Classification of Diseases-Tenth Edition (ICD-10), is the focus on subtyping *versus* pervasiveness. The criteria from DSM-IV allow for distinction between primary problems with attention, primary problems with hyperactivity-impulsivity, and combined problems. The criteria from the ICD-10 require demonstrable problems with attention and activity at home, at school, and directly observed by the clinician. This subtle difference in criteria has apparently resulted in differences in characteristics of children diagnosed in the United States and those diagnosed in other countries. Whereas, the primary comorbidity in ADHD children in the United States is reportedly with learning disabilities and/or oppositional behavior, the required pervasiveness of the behavior according to the ICD-10 apparently results in a more extensive comorbidity with conduct disorder in other countries. With the inter-

national makeup of authors in this book, a focus on externalized behavior is apparent. Without acknowledgment of this difference in criteria, comparison of studies conducted in the United States and those from other countries can be confusing.

This book presents exceptional reviews and cross-cultural comparisons of clinical and experimental studies of hyperactivity, presented primarily from biopsychosocial and information processing perspectives. Review of genetic studies, brain imaging studies, cognitive studies, and family demographic studies are presented in detail throughout the book. However, relatively little discussion is focused on the primary attention deficits seen in a subgroup of these children, and the rather large overlap this subgroup has with learning disabilities. In fact, it is not until near the end of the book when learning disabilities are even discussed at length. Additionally, there exists almost an absence of acknowledgment of the bidirectional influences of biopsychosocial factors. For example, social and familial influences are discussed in light of the effect of parental pathology (e.g., depression or alcoholism) on the expression of the hyperactivity disorder. Little attention is paid to the stress associated with raising a hyperactive child, and the behaviors or reactions that this stress may bring about.

Overall, this book presents an interesting perspective on a broad and often confusing literature. Given the difference in diagnostic criteria and cultural influences, emphasis is placed primarily on the external problems associated with this disorder. As such, this book makes a much needed contribution to the field of child psychopathology. It will be a valuable addition to the libraries of those who work with children experiencing behavioral disorders. Given its relatively smaller emphasis on cognitive components of hyperactivity disorders (i.e., attention and learning), it makes somewhat less of a contribution to child neuropsychology.

OTHER BOOKS OF INTEREST

Ohye, C., Kimura, M., & McKenzie, J.S. (1996). *The basal ganglia V. Advances in behavioral biology*. New York: Plenum. 519 pp., \$139.50.

Solms, M. (1997). *The neuropsychology of dreams*. Mahwah, NJ: Lawrence Erlbaum Associates. 292 pp., \$59.95.
