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Book reviews

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Neuroscience for the Mental Health Clinician. By S. R. Pliszka. (Pp. 280; $35.00.) Guilford Press: New York. 2002.

As suggested by its title, *Neuroscience for the Mental Health Clinician*, by Steven R. Pliszka, is an important introductory resource for mental health clinicians who are interested in understanding how neurobiological advances can lead to new treatment and social policies for those who suffer from mental illness. However, the book's comprehensive coverage of neuroanatomy makes it an excellent resource for anyone who wants to understand how the brain can affect behaviour. Although many of the issues covered are complex, the book is written at a very basic, introductory level, which makes it an ideal text for graduate, medical and advanced undergraduate students, as well as for those professionals in other disciplines (e.g. developmental psychologists and social workers). Although some exposure to college-level biology would be helpful, and knowledge of the DSM-IV classification of mental disorders is assumed, no prior knowledge of neuroscience is required, making it a useful tool for the novice neuroscientist.

The book is divided into two primary parts, 'Basic principles of neuroscience' and 'Neuroscience of mental disorders'. The first part begins with a chapter on clinical neuroanatomy, in which the author carefully leads the reader through understanding the structure of the brain and how its different components are interrelated. This chapter contains many simple figures, and the reader is encouraged to take a pen and paper and draw the brain as he or she reads along. This is a useful and important exercise, as the brain is a very complex organ and its organization is difficult to fully comprehend on first reading. Although many of the terms will be familiar to those with a basic understanding of anatomy (e.g. the cerebellum and hippocampus), other structures (e.g. the central sulcus and the superior colliculi) may be quite unfamiliar to those without a medical background. The author also details what the function of each structure is. A colour plate in the centre of the book offers an additional, three-dimensional look at the anatomy of the brain.

Two other chapters in this section cover the neuron, which is the brain's 'microprocessor' and the many different neurotransmitter systems. Each chapter is well-organized, with detailed subject headings and many figures. The subject matter is necessarily complex, but the author makes a commendable effort to try to explain these complicated biological processes in simple language. The final three chapters in this section explain how the brain affects: (1) motor behaviours; (2) memory and emotion; and (3) language, attention and executive functioning. Relevant research is reviewed, ranging from case studies of brain injury to more recent studies using positron emission topography (PET) and magnetic resonance imaging (MRI) techniques that aid the reader in understanding how our knowledge about how the brain affects behaviour has evolved. Two colour plates showing results from PET studies also help the reader to visualize brain activity during specific cognitive tasks.

The second part of the book, 'Neuroscience of mental disorders', may be considered by many to be the more 'fun' part of the volume. It is here that the author provides a thoughtful and comprehensive review of the relevant research for many common psychiatric disorders. There are five primary chapters, covering: (1) attention-deficit/hyperactivity disorder (ADHD); (2) aggression, antisocial behaviour and substance abuse; (3) mood and anxiety disorders; (4) schizophrenia and pervasive developmental disorders; and (5) cognitive disorders. Not surprisingly, the primary focus of each of these chapters is on ways in which neurobiological factors are associated with mental health disorders. However, the author does pay attention

to environmental factors as well. In particular, evidence for biology × environment interactions is reviewed, as well as the more novel concept that the environment itself, especially early environmental experience, can affect brain functioning. The research reviewed in these five chapters covers a wide array of potential neurobiological factors, including serotonin and dopamine transporter systems, hormonal response, overall brain activity and the autonomic nervous system (ANS). The author is an expert in studying ADHD, and this shows. Each of the chapters is accompanied by simple line drawings and figures, which enhance what the author is stating in the text. Although references are not always cited in the text, there is a detailed reference section at the end of each chapter that points the reader to the specific research reviewed.

A short introductory chapter at the beginning of this second section also gives an overview of DSM-IV diagnoses and a brief introduction to principles of human genetics. Thus, relevant research from twin studies and molecular genetic studies is briefly reviewed in the five main chapters covering the psychiatric illnesses. The author makes the important point that all of these diseases are likely to be polygenetic; in other words, many genes may influence the development of a particular disorder. Relatedly, as is made clear through both the text and the accompanying figures, there is a vast array of complex neurobiological systems implicated in the development of mental illness, and the idea of a single solution such as a 'wonderdrug' or the identification of a specific gene that eliminates a specific mental illness altogether is untenable.

As implied by its title, this book is geared towards the practicing mental health clinician. The primary diseases covered are all psychiatric illnesses, and there are references to common pharmaceutical treatments, such as Ritalin, lithium and Prozac, scattered through the volume. Because these references occur in the context of discussions of specific neurobiological systems, they offer a more detailed account of why some of these medicines are effective in treating mental illness. To state that the book is only applicable to mental health clinicians, however, would be unfounded. The detailed description of brain structure and function supplied in the first half of the book makes it of interest to the beginning neuroscientist, or anyone who is interested in how the brain affects behaviour. The detailed review of research on how neurobiological systems are implicated in the development of mental illness, coupled with the review of genetic research, also makes the book an important reference for psychiatric geneticists. Finally, the final chapter should be required reading for anyone who is concerned with how genetic research in mental disorders will affect social and political policy. In this epilogue, the author confronts head-on sensitive topics such as eugenics, ethnic differences, and the concept of 'free will'. The author's conclusion is that future research on how genetics and biology influence mental illness will enhance, rather than suppress, psychosocial interventions. The author focuses not on how information from genetic and biological studies might prevent mental illness (e.g. through genetic engineering), a position he finds unlikely given the complexity of the many genetic and environmental factors that can affect behaviour, but rather on how information gained from these studies can help treat individuals with mental disorders.

In sum, this book is an excellent introductory guide to neuroscience and its relationship to mental illness. The author has done a commendable job in trying to describe, in simple language, how the brain influences behaviour and what impact that has on our understanding of the aetiology of mental illness. The wording is not over-simplistic, however; detailed descriptions of each topic are provided, and certain sections are so dense that they will undoubtably require more than one reading. The fact that the author makes references to prior and future chapters within the volume makes it easier to understand the links between the two primary sections. A detailed index at the end of the book also helps in locating specific topics. However, given the necessary complexity of the information provided, coupled with the many biological terms introduced, it is a shame that a glossary containing 1–2 sentence definitions of many of the central terms was not included. The many figures and tables provided in the chapters are also not always immediately interpretable, and it is somewhat frustrating to have to search through the text for an explanation

of the figures. Finally, there is the occasional typographical error can cause some confusion in the reader. Nonetheless, these errors are rare, and do not detract from the overall utility of this volume.

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Psychiatric Genetics: Methods and Reviews. Edited by M. Leboyer and F. B. Frank. (Pp. 268; $89.50.) Humana Press: Totowa, NJ. 2003.

Psychiatric Genetics and Genomics. Edited by P. McGuffin, M. J. Owen and I. I. Gottesman. (Pp. 472; £65.00.) Oxford University Press: Oxford. 2002.

In comparison to single gene Mendelian disorders, finding genes for common diseases has proven to be difficult and sobering. Partly this is inherent to the complex nature of the genetic contribution to common diseases. That is, it is likely that multiple genes with small effects are involved, that there are multiple mutations within the same gene, and that genes interact with other genes or environmental factors. Methodological factors such as the modest power of linkage studies to detect small effects and the high costs of large-scale genotyping are also responsible for the modest success. As if the challenge is not large enough, finding genes for psychiatric conditions is plagued by additional difficulties. This includes problems in defining and measuring the phenotypes and a limited knowledge of the biological mechanisms by which clinical disorders arise from genetic vulnerability. In addition, tools that may be available to other disciplines seem of less value to psychiatric genetics. The reliance of psychiatric diagnosis on unobserved cognitive and emotional symptoms makes it difficult to develop good animal models. Furthermore, many of the relevant processes take place in the brain, restricting the use of techniques that require tissue such as measuring gene expression with microarray chips. However, the moderate success and many difficulties facing psychiatric genetics have by no means led to fatalistic attitude. On the contrary, new information, tools and ideas to tackle all these problems become available at an enormous pace.

Within this larger context, two books about psychiatric genetics were recently published. Although there are apparent resemblances, such as chapters on analytical methods, the books have a very different flavour. *Psychiatric Genetics and Genomics* is the more in-depth reference book. The first section of the book introduces the reader to molecular biology and the techniques of molecular genetics. The book then moves on to consider the genetics of normal development, including cognition and personality, followed by chapters reviewing the genetics of abnormal behaviour. The final section considers applications and implications of psychiatric genetics such as counselling, closing with a look to the future. The book is extensive in a variety of dimensions. First, the literature that is reviewed includes linkage and association studies, animal studies, and the considerable 'history' of the field in twin and family studies. Secondly, the book covers all the main phenotypes in psychiatric genetics. Thirdly, with chapters on pharmacogenetics, genetic counseling and ethical considerations the scope of the book is broad. The chapters are well written. Although the first three introductory chapters help to refresh the reader's knowledge of molecular biology and basic techniques, they are inevitably compact. A certain basic knowledge is therefore required to fully appreciate the book. Rather than being a textbook, *Psychiatric Genetics and Genomics* appears to be a good introduction and reference book for professionals interested in psychiatric genetics such as psychiatrists, clinical psychologists and neuroscientists.

Psychiatric Genetics: Methods and Reviews aims more directly at the psychiatric genetic research community, highlighting methodological issues and proposing solutions to commonly occurring problems. The first part of the book is strong. It addresses practical issues such as the selection of genetic markers, provides a review of diagnostic interviews to assist in selecting the right one for genetic studies, and gives suggestions how to ascertain patients. The book tends to avoid too much detail and compensates for this by providing numerous and up-to-date references to the relevant literature. The second part of the book focuses on the use of

endophenotypes as a solution to the phenotype definition problem in psychiatric genetics. Endophenotypes are phenotypes that mediate the effect of the gene on the clinical phenotype. Examples range from neurotransmitters and neural activity in the brain to personality traits. Because they are closer to the gene in the causal chain and multiple endophenotypes are involved in a clinical condition, endophenotypes are assumed to be genetically influenced to a larger extent where a more limited number of genes affect the endophenotype in a more simple and basic way. Five chapters give nice examples of the endophenotype approach, where there is tendency to focus on schizophrenia. Although the preface of the book clearly recognizes that the gene-hunt battle will be long and difficult, some discussion of the limitations of endophenotype approach would have been appropriate to put this topic in a somewhat broader perspective and avoid an unrealistic amount of optimism. Thus, it would have been interesting to learn more about the extent to which crucial assumptions of the endophenotypes such as high heritability and reduced complexity are expected to hold, and how to make the step from endophenotypes to the clinical syndromes that are the outcomes of primary interest. Furthermore, practical issues like the costs and feasibility of reliable measurement of endophenotypes in large samples remain somewhat unclear. A possible place for such overarching considerations could have been the final chapter. However, instead of revisiting and reviewing the endophenotype approach that is an important component of the book, this chapter focuses on broader topics such as treatment, prevention and ethical issues.

In sum, both books are timely accounts of the current state of psychiatric genetics. Rather than covering the same material, the books complement each other. *Psychiatric Genetics and Genomics* is the book you want to have on your bookshelf to look up material and obtain a complete and balanced picture of the field. *Psychiatric Genetics: Methods and Reviews* is less comprehensive but great for getting new ideas as well as suggestions for how to deal with practical research questions.

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Handbook of Affective Sciences. Edited by R. J. Davidson, K. R. Scherer and H. H. Goldsmith. (Pp. 1119; £130.) Oxford University Press: Oxford. 2003.

Emotion has always been a frightening topic for neuroscientists. Instead, it has been thought better to study cognitive processes in a vacuum away from this ill-defined and difficult to control, confounding variable. However, in recent years, it has been increasingly clear that this strict separation between cognition and emotion is untenable and investigations of affective processes have rapidly increased. The *Handbook of Affective Sciences* represents a timely and thorough attempt to bring together the very latest results and views by some of the key investigators in an array of allied fields including neurobiological, developmental, cognitive and social approaches to emotion. The vast collection of different approaches and methodologies applied to the study of emotion in the *Handbook of Affective Sciences* helps place the different facets of research in its broader context.

The handbook is divided into six parts, each containing three to six chapters by experts in the field and with key issues and topics introduced and integrated by each part editor. The first part is on the neuroscience of emotion and explores the circuitry outlined through animal investigations, which is now beginning to be characterized in human studies using techniques such as functional magnetic resonance imaging (fMRI) and positron emission tomography (PET). For example, Chapter 4 (by LaBar and LeDoux) provides a review of the neural pathways and cellular processes involved in conditioned fear in animals, before moving on to consider this same circuitry in humans. Convergent findings from these different approaches highlight an important role for the amygdala in learning associations between neutral stimuli and noxious events, while evidence across different species implicate the ventral prefrontal cortex in tasks that require reversing or extinguishing this relationship. While human research on this topic is at a relatively early stage, detailed animal research has allowed a greater understanding

of the neuronal and cellular processes that may underlie this form of learning. Taken together with the other chapters, this section gives a comprehensive overview of the anatomy, functions and interactions of the different components of neural circuitry involved in emotion, including the amygdala, anterior cingulate, orbitofrontal cortex and hippocampus.

A theme throughout the handbook is the application of research on the neurobiology of emotion and social behaviour, to the processes that underlie disorders of emotion such as depression, anxiety and psychopathy. For example, Elliott and Dolan (Chapter 7) review the role of the medial prefrontal cortex in depression, using functional neuroimaging methods. This chapter considers results from different imaging approaches, such as investigations of resting state, cognitive task activation and treatment response in depressed patients, which highlight the involvement of areas within the medial prefontal cortex. The direction of this abnormality (hypo or hyperactivation) and the functional relationship to the symptomatology of depression requires further investigation. Garlow and Nemeroff review the neurochemistry of depression in Chapter 54, concentrating on the involvement of monoamines and neuropeptides, such as corticotropin-releasing factor, in depression and its treatment. At a cognitive level of analysis, Mineka *et al*. (Chapter 52) explore how information-processing biases in memory, attention and interpretation may differentially characterize depressive relative to anxiety disorders. The compilation of these different perspectives into one volume should help lead the way to greater integration between these approaches, though, at present there is a paucity of data relating these neuroanatomical, neurochemical and cognitive accounts into a more cohesive theory.

Overall, the real strength of this book is the comprehensive coverage of a wide range of different approaches to the study of emotion. It is an up to date manual that every researcher interested in emotion should display proudly, albeit on a shelf sufficient to take its 3 kg weight.

CATHERINE HARMER

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A Guide to Treatments That Work, *2nd edn*. Edited by P. E. Nathan and J. M. Gorman. (Pp. 681; $85.00.) Oxford University Press: New York. 2002.

This is one of the best, most comprehensive discussions of psychiatric disorders and treatments that I have ever encountered. Edited by psychology professor Peter Nathan and psychiatry professor Jack Gorman, this 681 page volume is simply wonderful.

The editing is so well done, that the volume communicates cohesion even though over 60 internationally renowned authors have contributed. For almost all diagnoses, separate chapters describe the psychopharmacological treatments that work while the companion chapter by different authors provide evidenced based documentation of the effective psychosocial treatments for the same condition. The authors clearly present the data that supports the superiority of one therapy over others.

A system of classifying various types of research is presented in the first few pages and all authors use this classification in describing the research that supports treatment for each condition. Type I studies are prospective, randomized trials with random assignment, defined inclusion and exclusion criteria, blinded assessments, adequate sample sizes, and the best diagnostic methods and adequate statistical power. Type II studies are clinical trials with interventions but lacking some of the rigor of the Type I research. Type III investigations are the open trial studies, Type IVs are meta-analytical works, and Type Vs are reviews lacking secondary data analysis. Finally, Type VI studies include essays and case studies.

The book begins with a 10 page table that summarizes 'Treatments that Work' for each diagnosis. Extensive bibliography and many highly useful summary tables facilitates the use of this book as a quick reference and as a marvelous in depth review.

It gets even better, in that not only are the major Axis I disorders explored but there are many important topics often overlooked elsewhere. Some of these areas include separate chapters on the psychopharmacology and psychotherapy of personality disorders,

a chapter on sleep disorders, an outstanding discussion of pharmacotherapy for PTSD, a chapter on the management of somatoform and factitious disorders, and a review of treatments for dissociative disorders. One of the most interesting and elusive areas reviewed was a great evaluation of paraphilias.

You can effectively use this book as a reference to deal with a specific difficult patient, as an overview to learn about a diagnosis and its management, and as a great resource for writing a lecture. This book is for the clinician, the academic, the student and for those of us who are all of these. My only criticism is a wish that the publishers would have chosen a slightly larger type for those with older eyes.

I end these comments with the first words of the preface: 'In the absence of science, opinion prevails'.

JOEL SILVERMAN

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Pediatric Psychopharmacology: Principles and Practice. Edited by A. Martin, L. Scahill, D. S. Charney and F. James. (Pp. 791; £99.50.) Oxford University Press: Oxford. 2002.

This is a handbook dedicated to the life of Donald Cohen one of the modern giants of child and adolescent psychiatry, who died at the early age of 61 following a battle against cancer.

The title belies the comprehensive nature of the text and in many ways it is a text book of child and adolescent psychiatry. Priority is given to the role of therapeutics with an emphasis on the role of pharmacological agents in the overall management of the mentally ill and behaviourally disturbed child and adolescent. There are four sections with multiple authors covering the biological bases of paediatric psychopharmacology, somatic interventions, assessment and treatment, epidemiological research and methodological considerations focusing in the main on clinical trials. There are 56 brief chapters in all providing a very comprehensive coverage of the nature, characteristics and use of pharmacological agents and retaining a measured approach to putting this within a framework of treating the whole child.

Section one gives a nice introduction to brain development and pharmacokinetics for clinicians looking to update their knowledge. This is followed by a neurobiological section describing current state of science of the neural basis of clinical syndromes. This leads us into sections on types of psychotropic agents, their mode of action and their application to clinical disorders. This includes phenotypes where classification is problematic, such as agitation and aggression. There is a section on complementary and alternative medicines that is novel and timely. The authorship is entirely North American.

Overall, the book is for specialist clinicians with a practice and interest in clinical paediatric psychopharmacology. These would include child and adolescent psychiatrists, paediatricians and some neurologists.

Clinical child psychologists and nurses would find it a useful library book as would established specialists and trainers in child neuropsychiatry.

IAN GOODYER