

Neuroimaging in Developmental Clinical Neuroscience, edited by Judith M. Rumsey and Monique Ernst. Cambridge, United Kingdom, Cambridge University Press, 2009, 472 pp, \$199.99.

On the back cover, the publisher asserts that this “comprehensive volume is an essential resource for neurologists, neuropsychologists, psychiatrists, pediatricians and radiologists.” This is indeed a tall order but one that is strikingly well-achieved in this book. Unlike many thematically organized textbooks of this sort, the editors dedicate a significant amount of space to chapters that describe commonly used neuroimaging techniques, in addition to applications of these methods to a range of questions relating to normal development and psychopathology. While this format is helpful for the neuroimaging-naïve reader, as an adult neuroimager, I found myself drawn to the technical chapters as well. Contributing to the accessibility of this volume, there are many figures in each chapter, all well-reproduced in color, an element that can be essential for conveying information from neuroimaging studies.

The present volume is a significant update on an earlier volume by the same editors (*Functional Neuroimaging in Child Psychiatry*, Cambridge University Press, 2000). Several interesting points arise in the comparison of the 2009 and 2000 editions. First, the breadth of topics around which sufficient numbers of neuroimaging studies have been conducted has increased dramatically, as has the depth of coverage within each topic. Areas such as normal brain development, affective disorders, attention deficit/hyperactivity disorder, and autism spectrum disorders, to name just a few, have seen an explosion of interest and investigation over the past decade. In fact, a quick PubMed search for any relevant term reveals at minimum a 3- to 4-fold increase in yearly citations since 2000, and that pace is only accelerating. This is due to many factors, including greater recognition of psychiatric disorders in pediatric populations, greater awareness of the importance of studying prodromal or risk periods for disorders typically in the domain of the adult neuroimaging literature (e.g., schizophrenia), a proliferation of access to noninvasive imaging methods (e.g., functional and structural magnetic resonance imaging instead of positron emission tomography), and, overall, a greater interest in the interplay between normal and abnormal development. As one illustration of how rapidly pediatric neuroimaging has progressed, the 2000 edition had six chapters in the Future Directions section, while the present one contains only one such chapter. Though this is not to be

taken as an indication that the field has sufficiently matured and that few open questions remain—quite the contrary, many more new and important questions are being opened up. Rather, this is an indication that future directions can now be incorporated into a substantive discussion of progress made and, therefore, is a natural extension of a well-grounded literature base.

Another interesting facet of this book is the relationship between pediatric and adult studies of the same disorder, or normal process. Despite the fact that substantial progress has been made in pediatric neuroimaging, the adult literature is far larger and may grow increasingly more so with the greater ease of carrying out studies in adults. The individual chapters in this book vary in how they deal with the relationship between findings in children or adolescents and those in adults. This comparison is important for a variety of reasons, including the fact that some disorders (e.g., depression) exist similarly in both populations or alternatively are expressed in a developmental stage-specific manner or might even represent a vulnerability factor for later-onset conditions.

The chapters on affective disorders deal with the adult/pediatric contrast particularly well, covering bipolar disorder (Jessica Kalmar, Maulik Shah, and Hilary Blumberg) and anxiety and depressive disorders (Daniel Pine). In reading these chapters, it becomes apparent that the findings that form the cornerstone of adult neuroimaging studies, such as reduced hippocampal volume in depression, have not been observed in children or adolescents. Similarly, for bipolar disorder, decreased volumes are found in the amygdala of adolescents with the disorder but not in adults. While few studies exist that shed light on these developmentally modulated disease phenotypes, by highlighting the similarities and differences between pediatric and adult studies, these chapters encourage the use of a broader developmental model for understanding affective disorders. This perspective ties in well with the title of the book, which emphasizes development, and how Rumsey and Ernst formulate their Future Directions chapter at the end of the book. Given the continuing exciting advances in this field, I look forward to seeing what the next edition of the book brings.

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