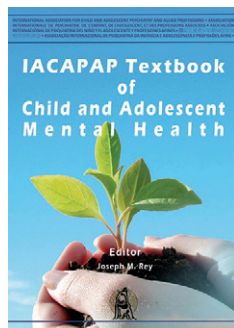# Book Forum

IACAPAP Textbook of Child and Adolescent Mental Health

edited by Joseph M. Rey, M.D., Ph.D. Geneva, International Association for Child and Adolescent Psychiatry and Allied Professions, 2015 (downloadable PDFs).

The e-textbook from the International Association for Child and Adolescent Psychiatry and Allied Professions (IACAPAP), freely available online, is an easily accessible e-book for any professional working in the field of child and adolescent mental health. In the book, world authorities in child and adolescent psychiatry cover diverse topics from the clinical assessment and development of children and youths to major psychiatric disorders. The book also covers some cultural, social, legal, and administrative aspects of this field.

Reviewing the chapter on bipolar disorder, I found basic concepts, clear and updated information, and tables that allow readers to readily appreciate the content. In addition, the authors suggest illustrative and valuable links to videos of authorities in bipolar disorder and to other documentaries, which exquisitely complement and deepen the text. In this way, reading becomes easy, concise, and enjoyable. The chapter on attention deficit hyperactivity disorder (ADHD) accurately covers the main literature on the subject, illustrating the evolution of ADHD throughout life, explaining the different presentations of the disorder, and also covering current controversies about ADHD. Once again, the suggested links to expert videos, guidelines from the National Institute for Health and Care Excellence, and other materials make it a versatile and very novel chapter.

In general, the manner in which this book has been developed makes it a good basic text to support the teaching of future psychiatrists. Some sections also contain self-assessment questions to reinforce knowledge, and some offer additional teaching material such as downloadable PowerPoint presentations, "ready to go" material to teach future generations. Some chapters have been translated into French, Portuguese, Japanese, Spanish, Russian, and Hebrew. This strength is in turn a huge challenge for the future: to cover different languages in all chapters.

The intention of Joseph M. Rey to develop a high-quality, innovative, didactic textbook of child infant mental health and to reach various countries of the world is well fulfilled through this effort of the IACAPAP.

Juan David Palacio, M.D., M.Sc.

Dr. Palacio is Director of the child psychiatry training program at the University of Antioquia, Medellin, Colombia.
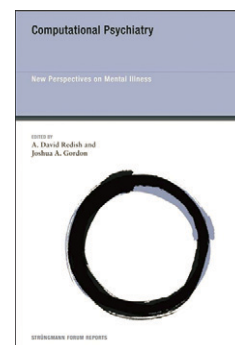
Computational Psychiatry: New Perspectives on Mental Illness

edited by A. David Redish, Ph.D., and Joshua A. Gordon, M.D., Ph.D. Cambridge, Mass., MIT Press, 2016, 424 pp., $45.00 (hardcover).

Psychiatry faces many challenges, including a diagnostic system that relies mainly on symptom lists and a dearth of clinically relevant biomarkers to inform treatment. This book is a comprehensive summary of the exciting potential of computational psychiatry to address these challenges. Computational psychiatry aims to apply mathematical formalism to tackle the complexities inherent in psychiatric research. It encompasses many techniques and theories, which hold promise for major advances such as including etiological features in our diagnostic nosology and personalized prediction of prognosis and treatment outcome. The book represents the collective endeavors of some of the best and brightest in this rapidly developing field, as it is the culmination of an Ernst Strüngmann Forum. These forums bring together leading researchers from around the world and across multiple disciplines, in this case to discuss "how new computational perspectives might be used to broaden our mechanistic understanding of psychiatric dysfunction and improve identification and treatment of psychiatric disorders" (p. viii).

The forum was divided into four workgroups, and the book is correspondingly divided into four sections. The first section discusses issues surrounding the massive amount of complexity and heterogeneity in psychiatric disorders. Its central tenet is that this complexity should be modeled rather than dismissed as noise. The second section introduces a diverse set of computational techniques and their potential applications. The section maintains a bird's-eye view of these techniques; although equations are included, the chapters generally remain accessible to researchers who do not have an extensive computational background. The third section of

the book focuses on ways in which the computational techniques can be applied to improve psychiatric nosology, emphasizing the importance of more tightly linking clusters of symptoms to their underlying biological processes. In particular, this section's flagship chapter introduces a framework for how Bayesian inference can be applied to improve our understanding of the etiology of psychiatric disorders (chapter 10). The fourth section presents examples illustrating computational approaches that have already been applied to a variety of psychiatric problems, including addiction, depression, and schizophrenia.

The book has many strengths. It is extremely timely, including a clear and contextually rich comparison of DSM and Research Domain Criteria (RDoC) approaches to understanding psychopathology (chapter 8). The book's attitude toward these two approaches, which have often been erroneously viewed as directly in competition, is refreshingly nuanced. The benefits and limitations of both approaches are discussed, and strategies for integrating across DSM and RDoC conceptualizations are frequently referenced.

The book also introduces several novel concepts and ideas that have the potential to significantly shift how many readers conceptualize and study psychiatric disorders, such as Bayesian inference (chapters 7, 10, 11, and 14) and failure modes (chapters 2 and 9). Furthermore, although computational approaches can at times be perceived as involving complexity for complexity's sake, this book notably insists that psychiatric research should be held to the benchmark of improving patients' lives and promotes computational psychiatry as an improved means with which to do this.

In general, the book showcases the diversity of approaches and types of problems that computational psychiatry tackles. In addition, each chapter can stand alone, and the chapters do not overly depend on one another. The chapters also vary substantially, with some including dense, technical details while others provide a broader and more conceptual overview of key issues in the field.

Taken together, the diversity and independence of the chapters allow readers to choose their own adventure and make the book accessible to readers with limited computational background. However, a consequence of the independence of the chapters means that there are occasional redundancies on the one hand and occasional inconsistencies on the other. For example, a notable missed opportunity of this book is that it lacks a consistent definition of what is meant by "computational psychiatry." Each chapter is given latitude to define the term, which is done with varying amounts of clarity and precision. For example, chapter 2 simply restates the terms "computational" and "psychiatry" when it defines computational psychiatry as "using formal computational perspectives to address psychiatric dysfunction" (p. 15). While some definitions imply that a certain level of model complexity is required ("the application of sophisticated mathematical and theoretical tools to complex biological systems" [p. 81]), others are so broad that the reader is left wondering whether conducting a simple regression qualifies as computational psychiatry ("mathematical formulations of hypotheses" [p. 162]).

Ultimately, the lack of a unifying framework does not diminish the book's thorough, interesting, and very timely examination of the depth and breadth of computational psychiatry. The potential for computational approaches to link causal biological dysfunction to trans-diagnostic psychiatric symptoms, or to generate a mechanistic understanding of trajectories of illness and recovery, is extremely exciting. This book therefore represents the forefront of a new frontier in the study of psychiatry.

Tali M. Ball, Ph.D.
Andrea N. Goldstein-Piekarski, Ph.D.

Dr. Ball and Dr. Goldstein-Piekarski are affiliated with the Department of Psychiatry and Behavioral Sciences, Stanford University, Stanford, Calif. Dr. Goldstein-Piekarski also is affiliated with the VA Palo Alto Healthcare System, Palo Alto, Calif.