## SECTION

## DISORDERS OF DEVELOPMENT

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Until recently, the developmental aspects of psychiatry were at best tenuously connected to the rapidly advancing neuroscience research informing adult psychiatry. To a significant extent, this reflected the historical accident that child psychiatry evolved out of the child guidance movement, which had a psychosocial orientation and was not associated with medical schools. Nevertheless, the last decade has witnessed a remarkable advancement in the appreciation of the neurobiologic underpinnings of behavioral disorders affecting children.

With increasing evidence of genetic risk factors for psychiatric disorders, the developmental features that transform genetic risk to phenotype have become of particular interest to psychiatric research, especially with regard to prevention. Thus, the seeds of Alzheimer's disease are sown early in the formation of the nervous system, not in the seventh decade of life. Furthermore, family studies are disclosing the early manifestations of serious psychiatric illness including affective disorders, anxiety disorders, and schizophrenia in children, raising the question of appropriate pharmacologic treatments. To this end, the Food and Drug Administration (FDA) is now requiring the pharmaceutical industry to carry out controlled studies of the efficacy of all drugs that might be used in the treatment of children, and the National Institute of Mental Health (NIMH) has funded the Research Units on Pediatric Psychopharmacology (RUPP) to provide the infrastructure to support clinical trials of psychotropic medications in children.

The chapters in this section demonstrate the scientific vigor and rigor that are transforming pediatric neuropsychopharmacology. This is especially so for those disorders that have traditionally been at the borderlands between psychiatry and developmental pediatrics that now provide fertile grounds for linking behavioral pathology to specific developmental processes.

Wassink and his colleagues review the very promising and rapidly advancing area of the genetics of autism and related pervasive development disorders. From being misperceived as being caused by poor maternal care ("refrigerator mother"), autism is now known to be highly heritable, resulting from the interaction of several genes. McDougle reviews the evidence that psychotropic medications can attenuate specific subsets of symptoms and pathologic behaviors that occur in the pervasive development disorders. For too long, this area of the psychopharmacologic management of developmental disorders has rested on anecdotes and hunches; but, increasingly now, these issues are being addressed in well-controlled clinical trials.

Attention-deficit/hyperactivity disorder (ADHD) is one of the most common psychiatric diagnosis in children. Long the subject of criticism by those who oppose psychopharmacology, recent research has elucidated the pathophysiology of the disorder, thereby establishing face validity for the diagnosis. Faraone and Biederman provide a thorough review of the area with special emphasis on the genetics of ADHD. In a related and often co-morbid clinical condition—learning disorders—much progress has been made in understanding the neurobiologic mechanisms as well as characterizing effective interventions, as reviewed by Conners and Schulte.

Psychosis is the most extreme manifestation of psychiatric illness and in children can lead to diagnostic confusion. Joshi and Towbin provide a lucid analysis of the causes of psychosis and how to treat them. Finally, Harris provides an overview of the emerging area of behavioral phenotypes of neurodevelopmental disorders. Careful analysis has differentiated subtypes of developmental disorders in which

specific behaviors can be linked to specific genes or groups of genes in the case of deletions or reduplications. These advances have important implication for the field of behavioral genetics.

The results from clinical trials with psychotropic medications in children disabuse us of the simplistic notion that

children are simply small adults, who should exhibit comparable responses to treatment. Nevertheless, the advances in pediatric neuropsychopharmacology raise important questions about the interaction of family environment and social risk factors that must be considered and addressed along with or in place of psychotropic medications.