
BRAIN, MIND, AND DEVELOPMENTAL PSYCHOPATHOLOGY IN CHILDHOOD

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Brain, Mind, and Developmental Psychopathology in Childhood

Edited by M. Elena Garralda
and Jean-Philippe Raynaud

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IACAPAP BOOK SERIES

The Child in His Family Series (1970–1994)

Vol.	Year	Title	Publisher	Editors
1	1970	The child in his family	Wiley	E. J. Anthony and C. Koupernik
	1970	<i>L'enfant dans la famille</i>	Masson	
2	1973	The impact of disease and death	Wiley	
	1974	<i>L'enfant devant la maladie et la mort</i>		
3	1974	Children at psychiatric risk	Wiley	E. J. Anthony, C. Chiland, and C. Koupernik
	1980	<i>L'enfant et haute risque psychiatrique</i>	PUF	
4	1978	Vulnerable children	Wiley	
	1980	<i>L'enfant vulnérable</i>	PUF	
5	1978	Children and their parents in a changing world	Wiley	E. J. Anthony and C. Chiland
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	1985	<i>Prevention en psychiatrie de l'enfant dans un temps de transition</i>	PUF	
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	1985	<i>Enfants dans la tourmente: Parents de demain</i>	PUF	
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	1992	<i>Le développement en peril</i>	PUF	
9	1992	New approaches to infant, child, adolescent and family mental health	Yale University Press	C. Chiland and J. G. Young
	1990	<i>Nouvelle approches de la sante mentale de la naissance a l'adolescence pour l'enfant et sa famille</i>	PUF	
10	1990	Why children reject school: View from seven countries	Yale University Press	
	1990	<i>Le refus de l'ecole: Un apercu transculturel</i>	PUF	
11	1994	Children and violence	Jason Arosen	
	1998	<i>Les enfants et la violence</i>	PUF	

The Leadership Series (1998–2004)

<i>Vol.</i>	<i>Year</i>	<i>Title</i>	<i>Publisher</i>	<i>Editors</i>
12	1998	Designing mental health services and systems for children and adolescents: A shrewd investment	Brunner/Mezel	J. G. Young and P. Ferrari
13	2002	Brain, culture and development	MacMillan	J. G. Young, P. Ferrari, S. Malhotra, S. Tyano, and E. Caffo
14	2002	The infant and the family in the 21st century	Brunner-Routledge	J. Gomes-Pedro, K. Nugent, J. G. Young, and T. B. Brazelton
15	2004	Facilitating pathways: Care, treatment and prevention in child and adolescent mental health	Springer	H. Remschmidt, M. Belfer, and I. Goodyer

The Working with Children & Adolescents Series (2006–)

<i>Vol.</i>	<i>Year</i>	<i>Title</i>	<i>Publisher</i>	<i>Editors</i>
16	2006	Working with children and adolescents: An evidence-based approach to risk & resilience	Jason Aronson	M. E. Garralda and M. Flament
17	2008	Culture and conflict and child and adolescent mental health	Jason Aronson	M. E. Garralda and J. P. Raynaud
18	2010	Increasing awareness of child and adolescent mental health	Jason Aronson	M. E. Garralda and J. P. Raynaud
19	2012	Brain, mind, and developmental psychopathology in childhood	Jason Aronson	M. E. Garralda and J. P. Raynaud

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Preface

Just like the theme of the twentieth International Association for Child and Adolescent Psychiatry and Allied Professions (IACAPAP) Congress to be held in Paris, the book for this Congress, "Brain, Mind, and Developmental Psychopathology in Childhood," is timely. This publication reveals that the care of the mind and body of a child is one whole and that it should start before conception and continue through infancy, childhood and adolescence. Important aspects of different professional contributions to the field of child and adolescent mental health (CAMH) are covered in this study of the brain, mind, and development. This book is fuel for our CAMH melting pot.

The book represents IACAPAP's purpose as highlighted in Article 2 of the association's constitution:

To advocate for the promotion of mental health and development of children and adolescents through policy, practice, and research. To promote the study, treatment, care and prevention of mental and emotional disorders and disabilities involving children, adolescents and their families through collaboration among the professions of child and adolescent psychiatry, psychology, social work, paediatrics, public health, nursing, education, social sciences, and other relevant disciplines.

CAMH is now receiving more attention than it ever has. In 2011, for the very first time, mental health was designated as an area of importance by the United Nations General Assembly. In addition, the World Health Organization's "Ten Facts on Mental Health" highlight the reality that one in five children and adolescents has a mental disorder and that half of all psychiatric disorders start before children reach the age of fourteen years. Attention

is also drawn to the greatly uneven distribution of CAMH resources. This is evidenced by the huge treatment gap in resource-poor regions where the majority of the children in the world live and where more than half of the population are children and adolescents.

One way in which CAMH care can be significantly improved all over the world and especially in resource-poor regions is to bridge the divide between physical and mental healthcare that is common in developing regions and to integrate the work of all the healthcare professionals in contact with children and adolescents. Investing early in both the mental and physical healthcare of children is extremely important as this will yield significant benefits for families, communities and countries at large, when the children grow up to be responsible and creative citizens in society. In this way, our care for infants, children, and adolescents is not only holistic but also focused on the critical period of child development in the spirit of "Brain, Mind, and Development."

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September 2011, Abuja, Nigeria

Editorial Introduction

M. Elena Garralda and Jean-Philippe Raynaud

The IACAPAP book series marks the 2012 IACAPAP Paris Congress with the publication of this volume along the lines of the Congress theme: "Brain, Mind, and Development." As with previous books in the series, it aims to reflect emerging evidence to support clinical work in the field of child and adolescent mental health worldwide.

The first IACAPAP Congress was hosted in Paris in 1937 with Georges Heuyer as Congress President. Seventy-five years later it is fitting for a Congress focusing on links between brain and mind to be based in Paris, as French thinking has left a legacy which is central to our understanding in this field of enquiry. Descartes, as a major exponent of ontological dualism, has been credited with separating bodies from the immaterial thinking mind. As W. H. Auden put it, using an interesting psychological perspective, "Devoid of a mother to love him, Descartes divorced mind and body." Nevertheless, instances of mutual influences where the mind becomes "mixed-up" with the body have always been acknowledged. This book should contribute to "nurturing" and increasing our understanding of the bodily, brain and mental processes that underlie developmental and psychiatric disorders in children and young people.

Authors have been chosen as expert writers in their field with an ability to meet the tight submission time deadlines imposed by the fixed Congress dates! We also chose contributions that open perspectives for clinical practice in child and adolescent mental health. As the Congress takes place in Paris there is a predominance of European contributors, but IACAPAP has a worldwide remit and writers from different continents have been approached to make sure that a broad range of perspectives are represented. There are background conceptual and empirical chapters on biological and

psychological influences on developmental psychopathology in childhood, clinical updates with a main focus on the biological underpinnings of individual child neuropsychiatric disorders, as well as a chapter on how to integrate biological and psychological therapies in child mental health. In addition there is discussion on broader psychological/social problems with chapters on the effects of child maltreatment on the developing brain, an update on understanding and managing self-harm, and advocacy papers on learning disorders and child and adolescent mental health.

BIOLOGICAL AND PSYCHOLOGICAL INFLUENCES ON DEVELOPMENTAL PSYCHOPATHOLOGY

The first four chapters address biological models for understanding child development and psychopathology, the interplay between biological and psychological processes as antecedents in infancy for personality disorders, as well as insights into childhood psychiatric disorders derived from new developmental neuro-imaging techniques and genetic findings.

David Cohen discusses the need to consider not just gene-by-environment but gene-environmental-developmental aetiological interactions for psychopathology. He uses mathematical models from cellular network development to describe probabilistic or statistical dimensions. He describes how environmental factors contribute to mental conditions and draws from key animal studies that help us understand how stress and early life adversities impact on development and behavior, and how environment can shape DNA and neural structure. He reviews ways in which genetic factors affect human behavior and how transmission/inheritance occurs during human development and he proposes an integration of these factors in a nonhierarchical developmental model of probabilistic epigenesis, one that (in contrast to the deterministic/vulnerability model) relies on the possibility of accepting bidirectional interactions in the development of psychopathology.

Miri Keren and Sam Tyano cover antecedents in infancy for personality disorders, with a special emphasis on the interplay between biological and psychological processes. They outline neurobiological studies in the context of developmental psychopathology and links between early interpersonal experiences, brain development, and personality organization later in life. They mention links between right brain limbic dominance and attachment experiences in early years. They also point out that exposure to stressful and traumatic experiences at a time when the brain is undergoing enormous change may leave an indelible imprint on the structure and function of the brain, especially for individuals with genetic vulnerability. They comment on the precursors of personality disorders which can be traced to early traumatic attachment experiences and childhood emotional and behavioural

disturbance, as well as on concepts of resilience, vulnerability and sensitivity, and on specific “maladaptive personality traits” in childhood and their generational transmission.

Philip Shaw’s review focuses on the application of structural longitudinal neuroimaging to our understanding of neurodevelopmental deviations in children. Insights have been made possible due to unprecedented access to the anatomy and physiology of the developing brain afforded by magnetic resonance imaging without the use of ionizing radiation. He examines the complex patterns of structural brain development in healthy children in relation to neurodevelopmental deviations. Using attention deficit hyperactivity disorder (ADHD) as a primary example of the latter he argues that—as with other neuropsychiatric disorders—ADHD can be conceptualized as resulting from perturbations from the trajectory of typical development of brain structure and function. This work shows that much may be learnt from focusing attention on mechanisms which control the timing of postnatal cortical development, anomalies in the developmental sequence of the activation and deactivation of genes that sculpt cortical architecture, and substances such as neurotrophins which are essential for the proliferation, differentiation, and survival of both neuronal and non-neuronal cells. The clinical potential of this approach might inform a move away from a nosology based purely on clinical symptoms to one which incorporates patterns of brain growth, and to the need for longitudinal studies to help unravel the neural bases of differential clinical outcomes and, by implication, lead to more targeted treatments.

Genetic research is changing our outlook on many medical disorders. Marie Christine Mouren, Thomas Bourgeron, and Richard Delorme provide an update on common and rare genetic variants recently identified as risk factors for autism spectrum disorders. These variants point to biological pathways that may be at play in autism through their ability to influence synaptic homeostasis (such as synaptic cell adhesion molecules and scaffolding proteins relevant to synaptic development, proteins related to axonal growth and synaptic identity, and genes regulating synaptic protein levels). They note, however, that beyond technological advances future progress to understand the complex genotype-phenotype relationships in autism and the detection of subtle effects on relative risk will require close research collaborations between clinicians, neurobiologists and molecular geneticists, and large well-characterized clinical samples.

INDIVIDUAL DISORDERS/PROBLEMS: UPDATES

The clinical chapters address obsessive compulsive disorder (OCD), autism and child schizophrenia, and developmental dyslexia. They are

complemented by contributions on the effects of traumatic and abusive experiences on brain development and on deliberate self-harm.

Recent years have witnessed an important increase in our understanding of the neuroanatomical and neurophysiological bases of OCD, and Luisa Lazaro and Josep Toro provide an update of biological and clinical knowledge on OCD in children. They note that this work has resulted in OCD being conceptualized as a neurodevelopmental disorder in which psychosocial factors play only a comparatively limited part. Nevertheless, the authors highlight gaps in our knowledge; for example, with regard to the biological underpinnings of the links between OCD and tics and early-onset OCD. They draw attention to areas for future research, such as endophenotypes and possible family biomarkers which may help put into place preventative strategies, and into the study of how psychosocial stress influences the onset and clinical manifestation of OCD.

The empirical basis for links between autism and schizophrenia is addressed by Saskia Palmen and Herman van Engeland. Their historical background makes clear how much of what we know about the relationship between the two disorders has changed over the years. Their review of current evidence leads the authors to conclude that both autism and schizophrenia are neurodevelopmental disorders sharing—on a clinical phenotypic level—deficits in social behaviour, oddness of speech, unusual responsiveness to the environment and inappropriate affect. They make the case for overlapping brain abnormalities, possibly accounted for by shared vulnerability factors both environmental (in-utero disease and stress exposure, pre- and perinatal complications, season of birth, urbanicity and parental age) and genetic (large and rare CNVs). However, there is no explanation for how these shared genetic and environmental risk factors result in quite different illness picture and progressions, differences in age of onset, sex-distribution and co-morbidity with mental retardation. Clarifying this should remain a work in progress.

Early-onset schizophrenia is one of the most devastating and yet comparatively little studied of child psychiatric disorders. Helmut Remschmidt and Frank Theisen draw on their unique experience of researching and managing children with this condition. Their systematic approach to definition, epidemiology, description of clinical features and management is aided by excellent tables and figures, and is a first class resource for clinicians who are unlikely to see affected children very frequently but where their clinical skills as child psychiatrists are pivotal.

Developmental dyslexia is a common co-morbidity amongst children attending child and adolescent mental health services. Its neurobiological correlates have been particularly well studied and Andreas Warnke, Gerd Schulte-Körne and Elena Ise outline recent findings. They provide a detailed description of the deficits involved, the research into underlying neurobio-

logical anomalies, and of treatments that may be put in place—some of these informed by underlying deficits. They also discuss the importance of cultural factors and structural language aspects that influence the development of reading and writing disorders in different countries.

Danya Glaser provides an account of the increasingly compelling empirical evidence for the effects of child maltreatment on brain development and function. The study of sensitive and critical periods in brain development and the response to environmental experiences is central to this work. Deprivation, neglect and abuse are associated with changes in brain function and these changes are either not at all or only partially reversible with improved environments. Significant reductions in the size of the corpus callosum in children who have been maltreated, larger amygdala volumes correlating with longer time spent in institutional care and with difficulty in emotion regulation, and reduced eye contact mediated by increased amygdala activity are all cases in point, as is the growing evidence of both genetic vulnerability and resilience to the effects of maltreatment.

The chapter by Dennis Ougrin, Troy Tranah, Eleanor Leigh, Lucy Taylor and Joan R. Asarnow addresses recent knowledge on self-harm and implications for clinical practice. Whilst biological and psychological correlates (i.e., impulsive aggression, emotional dysregulation, poor problem solving, and impaired selective attention) are likely to reflect gene-environment interactions underpinning the development of self-harm, psychosocial influences undoubtedly play a central part. The authors describe in detail desirable ways of conducting assessments and engaging and treating children and adolescents. They also provide a critical account of existing empirical evidence (or lack of) for treatments currently in use; special mention is made of the SOS (signs of suicide) prevention programme, therapeutic assessment programmes and dialectical and cognitive behaviour therapies. This review will be particularly helpful for clinicians involved in this area of work.

TREATMENT AND ADVOCACY

Duke University has for some time taken a leading role in the evaluation and integration of treatments for child psychiatric disorders, and in the practice of evidence-based child and adolescent psychiatry. Jeffrey Sapyta and John March are therefore in an excellent position to remind us that the combined efforts of molecular neuroscience and cognitive psychology are driving a revolution in how we understand the diagnosis and treatment of mental illness. Empirically supported unimodal treatments for children are now available for most disorders seen in clinical practice and a number of strongly powered and well designed large, multi-centre studies, carried out

in the USA predominantly, are all now impacting on clinical interventions. As a result it has become clear that a combination of targeted medication and psychosocial therapies skilfully applied across time will afford the most plausible basis for sustained benefit in children and adolescents with a variety of major mental illnesses. The authors describe how to implement evidence-based medicine in the child psychiatric context with multi-disciplinary practice in child psychiatry—as always—being best, and they outline ways of making research relevant for clinical practice. This chapter is a must-read for clinicians wishing to integrate research into clinical practice.

Daniel Fung and Liying Su have written a thought-provoking essay on the concept of learning disabilities as it applies to the field of child and adolescent mental health from a broad socio-educational and cultural perspective. They highlight the importance of education and schooling for social mobility and prosperity which leads to parents setting high store by the educational progress of their children and also to becoming highly stressed in the presence of learning failure. They discuss the strengths and weaknesses of the concept of intelligence, different models of understanding learning disability—including a critique of learning disorder as a diagnostic entity—cultural and structural language influences and links with mental disorders. They make suggestions for how learning disorder may be helpfully incorporated into current and future medical classification systems and, importantly, they describe carefully applied, sensible, helpful treatment approaches.

The final chapter by Gordon Harper addresses the past and present of child and adolescent mental health advocacy. The child protection movement, recognising the special educational rights of children, the early programmes for children's emotional and behavioural problems and schools for delinquent children were all early advocates. However, attitudinal changes enabled the development of clinics for child and adolescent mental health problems, and current advocacy involves numerous organisations, institutions and voluntary agencies. He points out that advocacy for child and adolescent mental health has become a vast field encompassing patients and families, mental health professionals, lawyers that are experts in rights litigation, professional advocates and researchers from the biological, behavioural and social sciences. The challenge inherent in so rich a field is also its greatest asset; to speak for the historically voiceless using methods not available even a generation ago in a way that still allows the voice of the child to be heard clearly.

Our discipline of child and adolescent psychiatry is fed by its history and ability to evolve and be open to the future and progress while taking into account cultural diversity. We thank all the authors and hope this new IACAPAP book, due to the diversity and richness of its contributions, is a forerunner to a twentieth World Congress of IACAPAP full of exchanges and forged links between researchers and clinicians from all countries.

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