

# Contents

<i>List of contributors</i>	xi
<i>Preface</i>	xiii
<i>Acknowledgements</i>	xv
<b>1 Introduction</b>	<b>1</b>
FLORENCE LEVY	
<b>2 Introduction to the genetic analysis of attentional disorders</b>	<b>7</b>
DAVID A. HAY, MICHAEL McSTEPHEN, AND FLORENCE LEVY	
<i>The aims of behaviour genetics</i>	7
<i>Why are people different?</i>	9
<i>The tools of behaviour genetics</i>	10
<i>An example of genetic analysis of ADHD</i>	14
<i>Is ADHD a continuum or a discrete category?</i>	25
<i>Discussion</i>	30
<i>References</i>	32
<b>3 The diagnostic genetics of ADHD symptoms and subtypes</b>	<b>35</b>
FLORENCE LEVY, MICHAEL McSTEPHEN, AND DAVID A. HAY	
<i>Introduction</i>	35
<i>Diagnostic genetics</i>	36
<i>Categorical versus dimensional systems</i>	37
<i>Heritability</i>	38
<i>Australian Twin ADHD Project (ATAP)</i>	38
<i>Concordance data</i>	39
<i>Genetic analysis</i>	42
<i>Item analysis</i>	45
<i>Univariate item analysis</i>	46
<i>Multivariate item analysis</i>	49

*Discussion* 52

*References* 55

#### **4 The developmental genetics of ADHD**

**58**

DAVID A. HAY, MICHAEL McSTEPHEN, AND FLORENCE LEVY

*Introduction* 58

*Stability and changes in symptomatology* 62

*The long-term outcome of ADHD* 68

*Psychopathology in adult relatives of young people with  
ADHD* 71

*Trends in molecular studies* 72

*Discussion* 73

*References* 76

#### **5 Familial and genetic bases of speech and language disorders**

**80**

BARBARA A. LEWIS

*The search for phenotype definitions* 81

*Studies of phenotypes* 82

*Incidence/prevalence* 84

*Gender as a risk factor* 84

*Familial aggregation* 85

*Studies that suggest a genetic component/genetic studies* 85

*Comorbid disorders* 87

*Pilot data* 90

*Genetic explanations* 92

*Summary* 94

*References* 94

#### **6 Comorbidity of reading/spelling disability and ADHD**

**99**

JIM STEVENSON

*Defining reading and spelling disabilities* 99

*Epidemiological evidence for the high comorbidity of ADHD  
and RSD* 101

*Quantitative genetic studies of RSD* 104

*Molecular genetic studies of RSD* 107

*Evidence for shared genetic influences on ADHD and  
RSD* 108

*Conclusions* 110

*References* 110

<b>7</b>	<b>Causes of the overlap among symptoms of ADHD, Oppositional Defiant Disorder, and Conduct Disorder</b>	<b>115</b>
	IRWIN D. WALDMAN, SOO HYUN RHEE, FLORENCE LEVY, AND DAVID A. HAY	
	<i>Method</i> 119	
	<i>Results</i> 124	
	<i>Discussion</i> 133	
	<i>References</i> 136	
<b>8</b>	<b>Aetiology of the sex difference in the prevalence of DSM-III-R ADHD: a comparison of two models</b>	<b>139</b>
	SOO HYUN RHEE, IRWIN D. WALDMAN, DAVID A. HAY AND FLORENCE LEVY	
	<i>Differences between ADHD boys and girls</i> 139	
	<i>Sex differences in the prevalence of ADHD</i> 141	
	<i>Present study</i> 145	
	<i>Results</i> 151	
	<i>Discussion</i> 152	
	<i>References</i> 154	
<b>9</b>	<b>Single gene studies of ADHD</b>	<b>157</b>
	ALAN ZAMETKIN, MONIQUE ERNST, AND ROBERT COHEN	
	<i>Introduction</i> 157	
	<i>Genetics</i> 157	
	<i>Molecular studies</i> 158	
	<i>Recent studies investigating single genes</i> 161	
	<i>Gene to brain</i> 162	
	<i>Fragile-X syndrome</i> 163	
	<i>References</i> 167	
<b>10</b>	<b>Molecular genetics of ADHD</b>	<b>173</b>
	CATHY BARR, JAMES SWANSON, AND JAMES KENNEDY	
	<i>Introduction</i> 173	
	<i>Characterisation of the ADHD phenotype for genetic studies</i> 176	
	<i>Design of studies for molecular genetics</i> 181	
	<i>Molecular genetics</i> 182	
	<i>Genetic data analyses</i> 184	
	<i>Molecular genetic studies of ADHD</i> 186	
	<i>Summary and future directions</i> 188	
	<i>References</i> 189	

<b>11 The genetic relationship between ADHD and Gilles de la Tourette syndrome</b>	<b>196</b>
DAVID PAULS, NANCY FREDINE, KIMBERLY LYNCH, CHARLES R. HURST, AND JOHN P. ALSOBROOK II	
<i>Phenomenology and natural history of ADHD</i>	197
<i>Neuropsychological assessment of GTS and ADHD</i>	198
<i>Molecular genetic studies of GTS and ADHD</i>	208
<i>Summary</i>	208
<i>References</i>	209
<b>12 Implications of genetic studies of attention problems for education and intervention</b>	<b>214</b>
DAVID A. HAY AND FLORENCE LEVY	
<i>Diagnosis</i>	215
<i>Comorbidity</i>	216
<i>Intervention</i>	216
<i>Family dynamics</i>	217
<i>Language and ADHD</i>	217
<i>Comorbidity and schooling</i>	218
<i>Implications of molecular genetics</i>	219
<i>Ethical issues</i>	221
<i>Agenda for psychiatric genetics</i>	221
<i>Conclusion</i>	222
<i>References</i>	223
<b>13 Child psychiatry in the era following sequencing the genome</b>	<b>225</b>
MICHAEL RUTTER	
<i>Introduction</i>	225
<i>Clinical concepts</i>	226
<i>Genetic risk mechanisms</i>	229
<i>Searching for susceptibility genes</i>	232
<i>Finding out what genes do</i>	235
<i>Clinical benefits of genetic research</i>	237
<i>Diagnosis</i>	239
<i>Conclusion</i>	242
<i>References</i>	242
<i>Author index</i>	249
<i>Subject index</i>	263