## Hyperactivity and attention disorders of childhood

Building on the success of the first edition and addressing the advances in the field since its publication, Seija Sandberg has brought together a distinguished international team to review the area of attention deficit and hyperactivity disorders (ADHD) in children and young adults.

This new edition is thoroughly revised and updated. Some chapters, such as those dealing with the genetic background and the adult form of the disorder, are completely new. And some of the areas dealt with in the first edition are being covered by new authors in the second. The writers are among the world's leading experts, both researchers and clinicians, in the area. This will be essential reading for all professionals involved in the management and care of people with ADHD.

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## Second edition

Edited by
Seija Sandberg
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# Preface

Hyperactivity is still sometimes portrayed as an arbitrary, unreliable and even invalid diagnostic entity that adds nothing to, or even obscures, our understanding of disruptive behaviour disorders in children. The evidence, however, supports a different view. The diagnosis, based as it has been largely on clinical observation and consensus, has proven useful for clinical practice and science. The studies performed in the past decade indicate a prevalence of between 5 and 10%, with the higher rate mostly found among primary school-age boys. Lower figures have been reported for girls, preschoolers and adolescents. The disorder shows a high degree of persistence over time, and a substantial comorbidity with learning problems, oppositional/conduct disorders, depression and anxiety disorders.

This second edition not only presents thoroughly updated reviews of the topics covered in the first edition, but also ventures into new fields such as genetics, the effects of early institutional rearing and the adult form of the disorder. As was the case first time round, a group of internationally renowned experts and leading researchers in the fields of psychology, psychiatry and brain sciences have been brought together to present a multifaceted but interlocking account of the condition.

Despite recent attempts at harmonization, differences in diagnostic practice continue to influence the prevalence of the disorder, resulting in 10- or even 100-fold differences being quoted between the USA and the UK, for example. Including or excluding coexisting disorders and preference for a categorical over a quantitative approach are some of the reasons for this. However, as the criteria in both were developed with school-age boys in mind, they share a continuing ambiguity as to whether and how they should be adjusted when applied to very young children, girls, adolescents and adults.

Indeed, until quite recently, the literature may have given the impression that hyperactivity was solely a problem of male children, as study after study concentrated on boys only. The strategy was justified to a point. Male predominance is a consistent finding, with girls appearing to be protected against the development of hyperactivity. However, it is now acknowledged that, once their symptoms reach the threshold of caseness, girls exhibit behav-

iour that is similar to that of boys, while clear differences exist regarding the forms of social maladjustment in teenage years, for example.

The study of cultural influences on the expression of childhood psychiatric disorders is another relatively recent development. The studies that have so far been carried out have shown that, even in disorders with a strong biological basis such as hyperactivity, cultural influences nevertheless exert an impact on how individuals and their families experience, interpret and respond to the disorder, and on how society responds to the individual's behaviour.

Many attempts have been made to validate the clinical concept of hyperactivity in the laboratory. Given that the manifestation of its primary symptoms largely depends on the type of environment in which the child is observed, the laboratory approach also has its limitations. The somewhat unexpected finding from laboratory studies has been that children with attention deficit, as defined by behavioural descriptions by parents, teachers and clinicians, are not deficient in their basic attentional abilities, but that their task efficiency is highly sensitive to state manipulations. Clinicians may therefore be presenting parents and teachers with the wrong questions, and the parents may be accurate when they report that the child's symptoms show themselves especially in boring conditions, but practically disappear when the child is truly interested in what he or she is doing, or is motivated by the task.

The situation regarding cognition and learning is more complex than at the time of the first edition. This is partly due to the introduction of subtypes of the disorder, and to the increasing rate of diagnosis of attention problems in children who in the past might have ended up as 'controls'. Hence, the questions have changed from which cognitive problems occur in children with attention disorders to which problems occur in which particular attention disorders. The question of the heterogeneity of attention problems has become a key issue. There is also new evidence suggesting that hyperactivity, language learning disability and reading disorder share a common inherited aetiological component.

Family, adoption and twin studies allow several general conclusions to be drawn about the aetiology of hyperactivity and attention disorders. The most important of these is that the symptoms are highly heritable. Molecular genetic studies have to date concentrated mainly on the candidate genes in the dopamine system. Recent studies also provide converging evidence that the phenotype of hyperactivity/inattention is characterized by neuropsychological deficits in executive functions and reduced size of neuroanatomical regions in the frontal lobes, basal ganglia and cerebellum. Primary genetic factors are proposed to have their strongest direct effects on the development and function

of the cerebellum, thus leading to dysregulated neurotransmission in childhood and adolescence, and to deficient neuronal networks in adulthood. The fact that medications, such as stimulants, temporarily improve the dysregulated systems is consistent with the model of the underlying deficit.

The role of early caregiving in the development of hyperactivity is likely to be more significant than was previously assumed. Evidence for this comes from recent attachment research, and from studies incorporating attachment constructs with wider socioecological influences, broader patterns of family relationships, biological influences on parent–child relationships and psychosocial contributions to brain biology. Thus, there clearly seem to be multiple pathways to hyperactivity, and to its later outcomes. Furthermore, risk factors associated with negative outcomes appear to be additive within developmental periods and cumulative across time.

Psychosocial factors likely to have causal importance for hyperactivity and attention disorders include maternal depression and negative parent–child interaction. As these factors often occur together with other psychosocial adversity, the mechanisms by which they lead to hyperactivity may vary from case to case. New in this area of research are studies showing that experiences can determine brain growth, or cause organic brain pathology, especially when impacting on very young immature brains. Furthermore, important interconnections appear to exist between genetic and environmental influences on behaviour and cognition. Studies of Romanian child adoptees also suggest that an institutional rearing in early years predisposes to a pattern of inattention and hyperactivity, often associated with a lack of specificity in selective attachments and a lack of social boundaries, as reflected in an undue friendliness with strangers.

Despite decades of research on treatment, few controlled studies have examined the effectiveness of long-term treatments. The reported (MTA) study exceeds other studies of child treatment in size, scope and length. The findings indicate that long-term treatments involving systematic frequent medication management with parent guidance greatly reduce children's symptoms of hyperactivity, oppositional-aggressive behaviours and anxiety, while also enhancing other areas of functioning. In certain circumstances, however, psychosocial treatments offer a definite advantage over medication.

The recognition that hyperactivity and inattention symptoms may persist into adulthood is a recent development. Many authorities, however, continue to question the very existence of the disorder in adults, and there are keen debates about its prevalence and indications for pharmacological treatment. Future studies need to address these issues using population-based samples,

preferably taking as their starting point the longitudinal studies of childhood cohorts, and employing uniform standardized diagnostic procedures. More also needs to be known about the consequences of the remitted syndrome for subsequent personality and cognitive development, and for social and occupational adjustment.

Seija Sandberg