

CHILD PSYCHIATRY



BABY'S OWN BED MOST HYGIENIC

Illustration. Last century the emphasis in child care was on the avoidance of contagious diseases. There has been a subsequent explosion in our understanding of the emotional development and needs of children.

Introduction

Child psychiatry is a specialized area. Textbooks are devoted to the field, and even to particular aspects of the field. The aim here is to provide a brief introduction.

In an earlier chapter, mental health (of adults) was identified as a utopian/optimal state. By contrast, the stated aim of the DOP is to provide a guide to the treatment of mental disorder, rather than a guide to the achievement/maintenance of mental health. With children, however, the distinction between mental health and a mental disorder is much less clear, and child psychiatrists deal with deviations from mental health in addition to mental disorder.

Mental health in childhood and adolescence is defined as the achievement of expected developmental, cognitive, social and emotional milestones, and by secure attachments, satisfying social relationships and effective social skills.

Child psychiatric disorders must be viewed in the context of normal development (a process of change and increasing complexity). Many disorders are identified as failure to reach developmental milestones. Students must therefore study accounts of normal development from appropriate sources (only a brief introduction is presented in the following section).

Child psychiatric disorders must also be viewed in the context of the family, social and cultural setting. Environmental factors are important in adult psychiatry; but as children are dependent, lack certain capacities and perspectives and are vulnerable, these factors assume even greater importance.

In child psychiatry (in contrast to adult psychiatry) it is rare for the “patient” to initiate contact with the psychiatric service; first contact is usually made by a parent or an educational or welfare authority. It is usually important to speak at length with the referrer and the family. Not only do family members provide much of the history, the family is the medium in which the child exists and will continue to grow (and hopefully, recover). The manner in which the family operates and the place/role of the child within the family must be understood. The manner in which the family functions may be part of the problem, and aspects of family functioning may need to be modified. Thus, the family may be a significant therapeutic modality, and must be involved and kept “on side” (wherever possible).

Normal development

We begin life with little awareness. We can cry and suck. We don't know why we are crying, and hardly even know that we are crying. We grow into fully functioning adults: walking, standing on wave-catapulted surfboards, learning and reading the newspaper, negotiating, forming relationships and providing love and guidance for our own babies. An amazing achievement.

The rate of change (physical growth, skill acquisition, intellectual and emotional development) is greatest during childhood and adolescence.

The basics of physical and social development of the child include:

0-6 months: rolls over, smiles and laughs, passes objects hand to hand, places objects in the mouth, vocalises syllables.

6-12 months: crawls, sits unsupported, stands with support, finger thumb opposition, shy with strangers.

1-2 years: walks, runs, 3 word sentences, feeds with spoon, parallel play

Early infancy: continent, draws figures, asks questions, hops, dress and undress, cooperative play.

Middle childhood: schooling, peer group activities, developing autonomy.

Adolescence: increasing independence, autonomy and peer group activities.

Pioneers in human development have taken different perspectives. All describe “stages” and tasks/skills which must be mastered during these stages in order to achieve smooth progress through to functional adulthood. No one perspective provides a complete account, and different concepts are helpful in dealing with different patients (or disorders).

Freud (Austrian; 1856-1939) provided the first description of “psychosexual development”. His theory of personality development focused on the effects of the sexual pleasure drive upon the mind. He believed that at particular points along the developmental path a body part is particularly sensitive to sexual, erotic stimulation – the erogenous zones: mouth, anus, genitals. The stages the child passes through are the oral (0-18 months), anal (18-36 months), phallic (3-6 years), latency (6 years to puberty) and genital (puberty and beyond).

Piaget (Swiss; 1896-1980) provided an account of cognitive development; the child’s increasing capacity to understand the world. He taught that children are unable to undertake certain tasks until they are psychologically mature enough to do so. He described three transition or “take off” points.

Piaget’s stages were:

Sensorimotor (0-2 years) child’s experiences come through the senses

Preoperational (2-7) acquisition of motor skills

Concrete operational (7-11) children begin to think logically about concrete events

Formal operational (after 11 years) development of abstract reasoning.

Erickson (Swede; 1833-1887) described himself as a Freudian. However, rather than focus on the basic drives (as did Freud), Erickson emphasised the importance of the ego (or executive function of the mental apparatus) in personality development. Also, while Freud’s five stages take development up to about 12 years of age, Erickson lists eight stages which cover the entire life-span. Successful completion (resolution of a conflict/task) leads to a favourable result (virtue):

Stage One (0-1 years)	task: trust vs. mistrust	virtue: hope
Stage Two (1-2 years)	task: autonomy vs. doubt	virtue: will
Stage Three (3-6 years)	task: initiative vs. inadequacy	virtue: purpose
Stage Four (6-puberty)	task: industry vs. inferiority	virtue: confidence
Stage Five (adolescence)	task: identity vs. confusion	virtue: fidelity
Stage Six (early adulthood)	task: intimacy vs. isolation	virtue: love
Stage Seven (late adulthood)	task: generativity vs. stagnation	virtue: care
Stage Eight (old age)	task: integrity vs. despair	virtue: wisdom

Bowlby (1907-1990) (British; 1907-1990) and **Ainsworth** (USA; 1913-1999), described “Attachment Theory” which spawned a range of treatments. Attachment (the making of strong affectional relationships with others) is a characteristic of human beings, and many other species. Stable relationships are a source of enjoyment and security, and separation, loss or threatened loss of a relationship is a source of anxiety, anger, sadness and depression. Attachment Theory is the dominant current theory in the study of infant and toddler behaviour and is used in the field of infant mental health diagnosis and treatment.

The Circle of Security Project

The Circle of Security Project is an intervention program based in Spokane, Washington (Glen Cooper, Kent Hoffman and Bert Powell) and Charlottesville, Virginia (Robert Marvin). It is based on the attachment work of Bowlby and Ainsworth, among others. Additional information can be found on the net.

The Circle of Security uses “The Strange Situation” paradigm (Ainsworth, 1969) in the assessment of attachment and early psychological difficulties. The Strange Situation is a series of contrived settings which allows staff to observe attachment relationships between the child and caregivers.

The child is observed playing for 20 minutes while caregivers and strangers enter and leave the room. The child experiences the following situations:

1. Mother and infant enter the room
2. Mother sits quietly on a chair, responding if the infant seeks attention
3. A stranger enters, talks to the mother then gradually approaches the infant with a toy. The mother leaves the room
4. The stranger leaves the infant playing unless he/she is inactive. The stranger then tries to interest the infant in toys. If the child becomes distressed this episode is ended
5. Mother enters and waits to see how the infant greets her. The stranger leaves quietly and the mother waits until the baby settles, and then she leaves again
6. The infant is alone. This episode is curtailed if the infant is distressed
7. The stranger comes back and repeats episode 3
8. The mother returns and the stranger leaves. Reunion behaviour is noted and the situation is ended.

Two aspects of the child’s behaviour are observed:

- A. The amount the child explores (playing with new toys) and engages, and
- B. The child’s reactions to the departure and return of the caregiver.

Based on these observations the attachment style is categorized/diagnosed, and management implications are decided.

Attachment therapy practitioners explain to parents the needs of the child, the importance of security and the need for the opportunity to explore, and help them to develop good parenting skills. With the advantage of good parenting the child has the opportunity to develop in a health manner. “It is through the repeated process of parents helping their children organize internally that children learn how to manage feelings by themselves and in relationships.” The following illustration is used by the Circle of Security Project in that process.

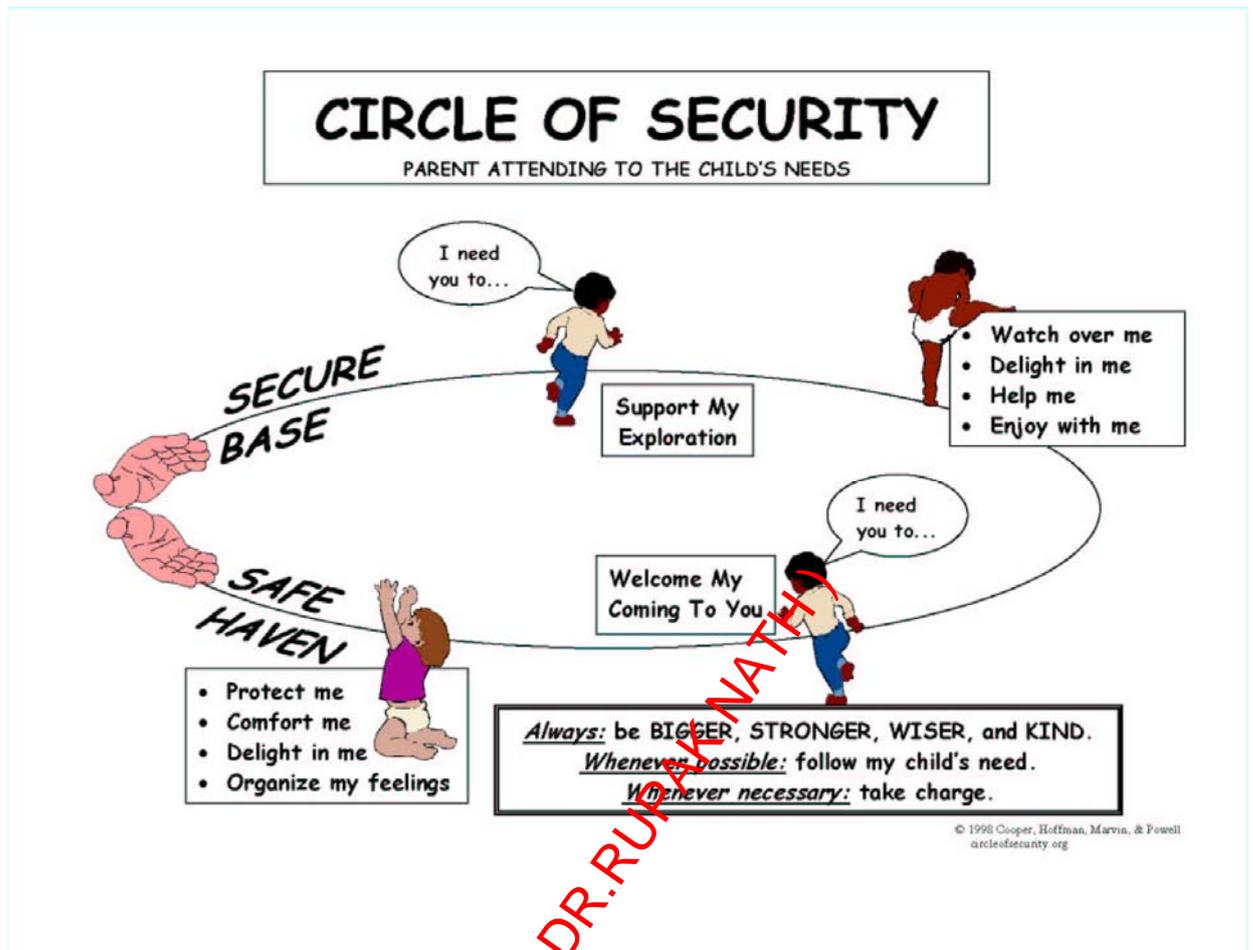


Illustration. The Circle of Security, reproduced with permission. In the top half the child is feeling safe and secure and there is a natural tendency to explore the world. The role of the parent is to allow safe exploration. Older children stay away longer. At times the child needs the parent to watch-over without taking-over. In the bottom half the child is tired, frightened or no longer interested in exploring and needs to return to safety.

DSM-IV disorders usually first diagnosed in infancy, childhood or adolescence

The DSM-IV provides an extensive list of childhood disorders. An abbreviation is presented. A glance confirms the complexity of modern child psychiatry.

Learning disorders

315.0-315.9 Includes reading disorders, mathematics disorder etc.

Motor skills disorder

315.4 Developmental coordination disorder

Communication disorders

307.0-315.39 Includes expressive language disorder, stuttering etc.

Pervasive developmental disorders

- 299.00 Autistic disorder
- 299.80 Rett's disorder
- 299.10 Childhood disintegrative disorder
- 299.80 Asperger's disorder

Attention-deficit and disruptive behavioural disorder

- 314.xx Attention-deficit/hyperactivity disorder (and variations)
- 312.xx Conduct disorder (various ages of onset)
- 313.81 Oppositional defiant disorder

Feeding and eating disorders of infancy or early childhood

- 307.52-307.59 Includes Pica, Rumination, Feeding disorder of infancy etc.

Tic disorder

- 307.2-307.23 Includes Tourette's disorder, transient tic disorder etc.

Elimination disorders

- 307.7 Encopresis without constipation and overflow
- 787.6 Encopresis with constipation and overflow
- 307.6 Enuresis (not due to a general medical condition)

Other disorders of infancy, childhood, or adolescence

- 309.21 Separation anxiety disorder
- 313.23 Selective mutism
- 307.3 Stereotypic movement disorder

Prevalence of childhood psychiatric disorders

The National (Australia) Survey of Child and Adolescent Mental Health (Sawyer et al, 2000) surveyed 4500 children aged 4-17 years, and found the following:

Any mental health problem, 14%

Depressive disorder, 3.7%

Attention Deficit/Hyperactivity Disorder, 11.2%.

Prevalence was higher in low income families.

Mental health problems were associated with higher rates of cigarette smoking, alcohol use and suicidal behaviour.

The Dunedin (New Zealand) Longitudinal Study (Silva and Stanton, 1997) surveyed 782 children aged 11 years and found the following:

Any disorder, 17%

Depressive disorder 1.8%

Attention Deficit/Hyperactivity disorder, 6.7%

Separation anxiety, 3.5%

Overanxious, 2.9%

Phobia, 2.4%

Oppositional defiant disorder, 5.7%

Conduct disorder, 3.4%

Environmental factors

Environmental factors are of enormous importance.

Intrauterine exposure to high cortisol levels (due to maternal stress) during the late second and third trimester is associated with heightened stress response and cortisol release in the neonate (Davis et al, 2010).

Intrauterine alcohol exposure has been associated with social skills deficits (Rasmussen et al, 2010).

Socio-economic disadvantage may make family life more difficult and impact on the adjustment of children. Schooling calls for separation from mother (usually) and may trigger/reveal separation anxiety. The overactive or poorly socialized child may be punished or ostracized. Child abuse (physical, emotional and sexual) is not infrequent, and can have long-term deleterious effects on mental health. Mental illness or criminality of parents may lead to emotional neglect or periods of parental absence.

While divorce is common and frequently leads to emotional trauma for the child, the experience of parental divorce in childhood is not an indicator of adult psychiatric or somatic need for care (Linberg & Wadsby, 2010).

Bullying behaviors are distinct from other forms of aggressive behaviors. They are characterized by repeated hurtful actions between peers where a power imbalance exists, and being bullied is considered a significant stressful life experience. Bullying appears to be common, and is reported by 13% of children and adolescents during a school year world wide (Craig et al, 2009). Direct bullying (physical acts) is more common among boys and indirect bullying (exclusion and ostracism) is more common among girls.

Genetic factors

Genetic factors have been identified in many childhood psychiatric disorders.

Separation anxiety, which is known to be influenced by environmental factors (including paternal absence), has significantly heritable components in large twin studies (Eley et al, 2003; Cronk et al, 2004).

Attention Deficit/Hyperactivity Disorder is familial and highly heritable, and the disorder is being refined to identify phenotypes for use in the search for susceptibility genes (Thapar et al, 2006). Associations have been reported with variations in genes for the dopamine receptors 4 (DRD4) and 5 (DRD5) and a dopamine transporter (DAT1) (Collier et al, 2000). The most robust of these is the association between ADHD and a repeat within the coding region of DRD4 (Faraone et al, 2001).

Autism has a complex mode of inheritance. Twin studies report MZ concordance rates of 60-90% compared with DZ concordance of 5%, giving an estimated heritability of over 90% (Rutter et al, 1999). There is some evidence for a locus on

chromosome 7 and another on chromosome 2, but multiple genes of small effect is the probable mechanism (Klauck, 2006).

For the latest on the genetics of autism and Tourette syndrome, see State (2010).

Separation anxiety disorder

Separation anxiety is characterized by inappropriate or excessive anxiety which occurs when the child is separated from the people or home to which he/she has developed strong emotional attachment. It may be seen when children first begin to attend school, but may occur at other stages.

There may be recurring distress at the anticipation of separation, or worry about losing the subject of attachment. There may be fear about being alone, refusal to sleep separate from the attachment figure or nightmares about separation. There may be complaints of physical symptoms when separation is imminent.

Separation anxiety is often managed by advice on parenting skills. Individual therapy for the child may be necessary.

Separation anxiety is difficult to distinguish from generalized anxiety in children (some regard these as synonymous terms). In the epidemiology study of Silva and Stanton (1997) separation anxiety was reported at 3.5%. In a recent report (Keeton et al, 2009) generalized anxiety was reported at 10%, with a mean age of onset at 8.5 years. A combination of CBT and SSRI was recommended, with the continuation of medication for 1 year following remission of symptoms.

Failure to thrive (non-organic)

Failure to thrive (non-organic) is a serious attachment disorder. There may be delayed motor and language development and the infant may be excessively clinging or withdrawn. There is need of full assessment of the mother-infant relationship and parental training is frequently helpful.

Elimination disorders

Secondary enuresis

Secondary enuresis is wetting which follows 12 months of urinary control. It is often linked to family conflict or stressful events. Behavioural treatment with a bell and pad alarm is the most effective, especially when reinforced with a star chart. Tricyclic antidepressants are effective in the short term (although often followed by relapse) and can be useful when the child is sleeping away from home.

Functional encopresis

Functional encopresis is the passing of faeces in inappropriate places, usually the clothes. It may be involuntary, or voluntary. Organic causes and "overflow" incontinence need to be excluded. It often reflects a dysfunction family setting. Treatment includes regular defecation and high fibre diet.

Attention deficit/hyperactivity disorder (ADHD)

The DSM-IV-TR criteria are as follows:

A. Either (1) or (2):

- 1) six (or more) of the following symptoms of **inattention** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental level:

Inattention

- a) often fails to give close attention to details or makes careless mistakes in schoolwork, work, or other activities
- b) often has difficulty sustaining attention in task or play activities
- c) often does not seem to listen when spoken to directly
- d) Often does not follow through on instructions and fails to finish schoolwork, chores or duties in the workplace
- e) often has difficulty organizing tasks and activities
- f) often avoid, dislikes, or is reluctant to engage in tasks that require sustained mental effort
- g) often loses things necessary for tasks or activities
- h) often easily distracted by extraneous stimuli
- i) often forgetful in daily activities

- 2) six (or more) of the following symptoms of **hyperactivity-impulsivity** have persisted for at least 6 months to a degree that is maladaptive and inconsistent with developmental levels:

Hyperactivity

- a) often fidgets with hands or feet or squirms in seat
- b) often leaves seat in classroom or in other situations in which remaining seated is expected
- c) often runs about or climbs excessively in situations in which it is inappropriate
- d) often has difficulty playing or engaging in leisure activities quietly
- e) is often "on the go" or often acts as if "driven by a motor"
- f) often talks excessively

Impulsivity

- g) often blurts out answer before questions have been completed
- h) often has difficulty awaiting turn
- i) often interrupts or intrudes on others

- B. Some hyperactive-impulsive or inattentive symptoms that caused impairment were present before age 7 years.
- C. Some impairment from the symptoms is present in two or more settings (school, work, home)
- D. There must be clear evidence of clinically significant impairment in social, academic or occupational functioning.

- E. The symptoms do not occur exclusively during the course of a Pervasive Developmental Disorder, Schizophrenia, or other Psychotic disorder and are not better accounted for by another mental disorder (eg, Mood Disorder, Anxiety Disorder, Dissociative Disorder, or a Personality Disorder).

The above diagnostic criteria can be difficult to apply and special training may be necessary. This diagnosis is frequently made incorrectly, often by teachers, parents or patients themselves. This diagnosis may be used to excuse disruptive behaviour or may be sought by those (usually adults) who are seeking stimulant medication.

Cardinal features include inattention, hyperactivity, and impulsivity. The differential diagnosis includes age appropriate behaviour and a mismatch between parents and child (e.g., a very active child in a small home of sedate parents), oppositional behaviour, or other mental disorders (e.g., mood or anxiety disorder).

ADHD has recently been associated with obesity (Ptacek et al, 2010). This is somewhat counterintuitive as increased activity might be expected to cause weight loss. The explanation is unclear, but may involve impulsivity and eating habits.

The prevalence is around 4% of primary school children, boys being three times more commonly affected than girls. Genetic factors have been mentioned above. Dysfunctions of prefrontal/subcortical pathways have been identified, but a neural basis of subtypes is yet to be identified (di Michele et al, 2005). An association between early attachment problems and ADHD is probable.

Treatment calls for a comprehensive approach. Parents and teachers need to be educated about the disorder and involved in the designing and provision of management strategies. Where symptoms interfere with learning or social integration and family life, psychostimulants (methylphenidate and dexamphetamine) may be useful, as they enable children to participate in other aspects of management.

Debate continues about the place of medication in ADHD. Usage differs from one region to another, for example, use is five times higher in Iceland than Sweden (Zoega et al, 2010).

Conduct disorder

Conduct disorder is characterized by repeated patterns of dissocial, aggressive or defiant behaviour that exceeds normal age appropriate behaviour. The DSM-IV diagnostic criteria list symptoms under the following headings

- 1) aggression to people and animals
- 2) destruction of property
- 3) deceitfulness and theft, and
- 4) serious violations of rules.

Conduct disorder is identified in about 5% of children aged 5-10 years. It is more common in boys than girls, and in inner city areas compared to country areas.

There may be overlap with ADHD, in which case the diagnosis of ADHD should be made.

Conduct disorder is distinguished from Oppositional defiant disorder (in which conduct does not violate the law or the rights of others).

Reef et al (2010), in a 24 year longitudinal study report that “childhood externalizing behaviour” (aggression, oppositionality, property violations and status violations) show a significant associations with disruptive disorder in adults.

50% of highly antisocial children become antisocial adults. 60% of adult sociopaths have a childhood history of highly antisocial behaviour, and a further 30% have a childhood history of moderately antisocial behaviour.

Management may involve advice on parenting, behavioural management techniques, family therapy and cognitive behaviour therapy in older children.

Pervasive developmental disorders (Autism spectrum disorders)

Autism

The term autism is derived from Greek word “autos” meaning self, and was coined to reflect the fact that autistic children seem to lack interest in other people. It was first described by Dr Leo Kanner (USA) in 1943.

Autism is a neurodevelopmental disorder which manifests as markedly abnormal social interactions and communication ability, abnormal patterns of interest and patterns of behaviour. The disorder should be present before 3 years of age. The prevalence appears to be 1 in 150-200 (ADDM, 2007), much higher than previously estimated, and the disorder is highly heritable. Head circumference (HC) is greater than the 97th percentile in 20% of autistic children. However, HC is apparently normal at birth (Hobbs et al, 2007) suggesting an increased rate of head growth in the post-natal period.

Autistic children prefer objects to faces, they avoid eye contact and have difficulty learning to engage in social interaction. This may be apparent in the first few months of life. These children appear to prefer being alone and seldom seek comfort from others.

Autistic children have been described as lacking a “theory of mind” (see Chapter 33), by which is meant they are unable to understand the world from the perspective of others. If they know where something is which is out of sight (lost car keys) they assume that everyone knows the location of that thing. They are unable to read social cues, such as a smile or scowl and are therefore unable to understand other the reactions of other people.

They prefer predictable routines and familiar environments. If overwhelmed by change or adversity they may respond with anger, self-injury or withdrawal.

There are difficulties in sensory integration, and such people may have difficulty tolerating normal sensory input. McCleery et al (2007), have shown 'at risk' infants to be twice as sensitive as to controls to certain visual stimuli. People with autism tend to be clumsy, have poor body awareness and difficulty learning new movements. There are often delays in speech, language and motor skills. Specific learning difficulties occur.

Such people may remain mute throughout life, communicating using images, sign language or typing. Some develop large vocabularies but nevertheless have difficulty sustaining a conversation.

Social situations are usually highly stressful for people with autism. However, companionship is important to them, and they are often conscious of being outcasts and this is distressing rather than desired.

Autistic people often engage in self-stimulation, which is observed by others as repetitive behaviours, such as spinning objects. They may flap their hands or arms or wiggle their toes for long periods. They often arrange toys in rows rather than play with them in the usual manner. They may become preoccupied with certain subjects, such as computers, numbers, symbols or particular aspects of science.

Education presents difficulties, as could be expected from the above. Difficulty understanding gestures leads to difficulty understanding and communicating with teachers and peers. Teaching autistic people in pairs is recommended.

Autistic savants are autistic people with extraordinary talent in a certain area. They are rare.

There is controversy regarding the best ways of treating people with autism. Special education has much to offer.

Asperger's disorder

The term Asperger's syndrome/disorder was first used in 1981. It celebrates the work of **Hans Asperger** (Austrian; 1906-1980) who had described the condition decades earlier. As he travelled little and published in German, his work was not "discovered" by the rest of the world was late to hear of his work.

People with Asperger's disorder usually have normal or above average intelligence, but poorly developed or delayed development of social skills. They are at greater risk of depression or poverty than members of the general population. The prevalence is about 0.04%.

There are similarities with autistic disorder. There are social difficulties and stereotyped behavioural features, but not delayed and deviant language development.

Social difficulties are universal. The lack of "theory of mind" mentioned under autistic disorder is also a prominent problem in Asperger's disorder, leaving these people unable to perform subtle and socially appropriate communication.

There are often narrow intense interests, and people with Asperger's disorder may have little patience with things outside their areas of interest. Before understanding this point the author made numerous attempts to interest a patient in a range of topics and felt disappointed, if not somewhat aggrieved, when his efforts to please were unceremoniously and apparently ungratefully dismissed.

A pedantic manner of speech, using language in a manner more formal and structured than usual may be noted.

The tendency to stimulation overload described in autism is also a feature, with sensitivity to touch, smells, sounds, tastes and sights. These may combine to produce particular food preference with great difficulty or refusal to attempt to swallow "other foods".

There has recently been a reaction, in some quarters, to identifying Asperger's syndrome as a disorder or pathological condition. Some regard the syndrome as a "gift and a curse". Others claim gifted people (Einstein; Satoshi Tajiri, creator of Pokemon) who have contributed much to the world have suffered the syndrome.

Special psychological assistance can be helpful and any psychiatric disorders (depression) should be treated. It is thought that most people with Asperger's disorder learn to cope with their social impairments in later life.

Neuroimaging in Autistic spectrum disorders

Imaging studies of children with autistic spectrum disorders have demonstrated abnormalities. Freitag et al (2009) reported autistic spectrum disorder was associated with increased total brain volume, gray matter and white matter, and decreased thickness of the posterior corpus callosum. Toal et al (2009) report significantly less grey matter bilaterally in the temporal lobes and the cerebellum, and increased grey matter in striatal regions. Children with autistic spectrum disorder and psychosis have reduction of the grey matter of the frontal and occipital regions. At first glance these studies appear inconsistent, but Freitag et al (2009) were looking at total brain quantities and Toal et al (2009) focused on specific structures.

Diffusion tensor imaging (DTI) in children with autism spectrum disorder has shown wide spread white matter deficits (Noriuchi et al, 2010).

Further studies are needed.

Other Psychiatric Disorders

Tic disorders

A tic is a sudden, recurrent, stereotyped motor movement or vocalization. These may be simple (involving only a few muscles or simple sounds) or complex (involving various muscle groups or phrases).

Coprolalia (the uttering of unacceptable words) is of public interest, but occurs in <10% of those with tic disorder.

Tics are often associated with OCD (Chapter 13).

Tourette's disorder is diagnosed when there are multiple motor tics and at least one verbal tick, which occurs every day for at least 1 year.

An MRI study of boys with Tourette syndrome (Roessner et al, 2010) shows bilateral increased volume of putamen (which may reflect dopaminergic dysfunction or neuroimmunologic alterations) and sub-region of the corpus callosum (which may be the consequence of daily tic disorder).

Management includes behavioural therapy and low dose haloperidol.

Anxiety disorders are similar to those seen in adults, with the addition of separation anxiety. Treatment is with CBT, behavioural therapy and relaxation.

Depression occurring in children and adolescents may have an atypical presentation with irritability rather than apparent depressed mood. Eating and sleeping may increase rather than decrease. Initial treatment should be psychological, except in severe cases.

Mania and **schizophrenia** are encountered, and early treatment is believed to improve the outcome. Lithium and antipsychotics should be used as necessary.

References

- ADDM Network Principal Investigators. Prevalence of autism spectrum disorders – Autism and Developmental Disabilities Monitoring Network, 14 sites, United States. *MMWR Surveillance Summary* 2007; 56:12-28.
- Ainsworth M. Patterns of attachment: a psychological study of the strange situation. Lawrence Erlbaum Associates, 1969 ISBN 0898594618
- Bowlby J. A secure base: parent-child attachment and health human development. London: Routledge, 1988.
- Collier D, Curran S, Asherson P. Mission: not impossible? Candidate gene studies in child psychiatric disorders. *Molecular Psychiatry* 2000; 5:457-460.
- Craig W, W, Harel-Fisch Y, Fogel-Grinvald et al. A cross-national profile of bullying and victimization among adolescents in 40 countries. *International Journal of Public Health* 2009; 54: 216-224.
- Cronk N, Slutske W, Madden P, Bucholz K, Heath A. Risk of separation anxiety disorders among girls: paternal absence, socioeconomic disadvantage, and genetic vulnerability. *Journal of Abnormal Psychology* 2004; 113:237-347.
- Davis E, Glynn L, Waffarn F, Sandman C. Prenatal maternal stress programs infant stress regulation. *Journal of Child Psychology and Psychiatry* 2010. doi: 10.1111/j.1469-7610.2010.02314.x

- Di Michele F, Prichep L, John E, Chabot R. The neurophysiology of attention-deficit/hyperactivity disorder. *International Journal of Psychophysiology* 2005; 58:81-93.
- Eley T, Bolton D, O'Connor T, Perrin S, Smith P, Plomin R. A twin study of anxiety related behaviours in pre-school children. *Journal of Child Psychology and Psychiatry* 2003; 44:945-960.
- Faraone S, Doyle A, Mick E, Biederman J. Meta-analysis of the association between the 7-repeat allele of the dopamine D4 receptor gene and attention deficit hyperactivity disorder. *American Journal of Psychiatry* 2001; 158:1052-1057.
- Freitag C, et al. total brain volume and the corpus callosum size in medication-naïve adolescents and young adults with Autism spectrum disorder. *Biological Psychiatry* 2009; Apr 30 [Epub ahead of print]
- Hobbs K, Kennedy A, Durbray M, Bigler E, et al. A retrospective foetal ultrasound study of brain size in autism. *Biological Psychiatry* 2007; 62:1048-1055.
- Keeton C, Kolos A, Walkup J. Pediatric generalized anxiety disorder: epidemiology, diagnosis and management. *Paediatric Drugs* 2009; 11:171-183. doi: 10.2165/001481-200911030-00003.
- Klauck S. Genetics of autism spectrum disorder. *European Journal of Human Genetics* 2006; 14:714-20.
- Lindberg T, Wadsby M. Psychiatric and somatic health in relation to experience of parental divorce in childhood. *International Journal of Social Psychiatry* 2010 Sep 17 [Epub ahead of print]
- McCleery J, Allman E, Carver L, Dobkins K. Abnormal magnocellular pathway visual processing in infants at risk for autism. *Biological Psychiatry* 2007; 62:1007-1014.
- Noriuchi M, Kikuchi Y, Yoshiura T, et al. Altered white matter fractional anisotropy and social impairment in children with autism spectrum disorder. *Brain Research* 2010 Sept 18 [Epub ahead of print]
- Ptacek R, Kuzwlova H, Papezova H, Stepankova T. Attention deficit hyperactivity disorder and eating disorders. *Prague Medical Report* 2010; 111: 175-181.
- Rasmussen C, Becker M, McLennan J et al. An evaluation of social skills in children with and without prenatal alcohol exposure. *Child Care Health Development* 2010. doi: 10.1111/j.1365-2214.2010.01152.x
- Reef J, Diamantopoulou S, van Meurs I, Verhulst F, van der Ende J. Developmental trajectories of child to adolescent externalizing behavior and adult DSM-IV disorder: results of a 24 year longitudinal study. *Social Psychiatry and Epidemiology* 2010. doi: 10.1007/s001-010-0297-9.
- Roessner V, Overlack S, Schmidt-Samoa C, et al. Increased putamen and callosal motor suregion in treatment-naïve boys with Tourette syndrome indicates changes in the bihemispheric motor network. *Journal of Child Psychology and Psychiatry* 2010. doi: 10.1111/j.1469-7610.2010.02324.x
- Rutter M, Silberg J, O'Connor T. Genetics and child psychiatry : II. Empirical research findings. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 1999; 40: 19-55.
- Sawyer M, Kosky R, Graetz B, Arney F, Zubrick S, Baghurst P. The National survey of mental health and wellbeing: the child and adolescent component. *Australian and New Zealand Journal of Psychiatry* 2000; 34:214-220.
- Silva P, Stanton W. *From Child to adult: The Dunedin multidisciplinary health and development study*. Oxford University Press, Oxford, 1997.

State M. The genetics of child psychiatric disorders: focus on autism and Tourette syndrome. *Neuron* 2010; 68: 254-269.

Thapar A, Langley K, O'Donovan M, Owen M. Refining the attention deficit hyperactivity disorder phenotype for molecular genetic studies. *Molecular Psychiatry* 2006; May 16; [Epub ahead of print].

Toal F, et al. Psychosis and autism: magnetic resonance imaging study of brain anatomy. *British Journal of Psychiatry* 2009; 194:418-425.
doi:10.1192/bjp.107.049007.

Zoega H, Furu K, Halldorsson M, et al. Use of ADHD drugs in the Nordic countries: a population-based comparison study. *Acta Psychiatrica Scandinavica* 2010; doi: 10.1111/j.1600-0447.2010.01607.x

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