

Giftedness and ADHD

Judith Safford

What is giftedness?

“Golden lads and girls all must,
As chimney-sweepers, come to dust”
William Shakespeare, *Cymbeline*

That people's gifts vary is intuitively obvious. However, exact definitions of giftedness are difficult to make and attempts have been varied and controversial (for a thorough account of this area see Mackintosh, 1999). The Marland Report, an American study by the US Commission of Education, identified six main categories of giftedness:

- general intellectual ability
 - specific school performance
 - creative or productive thought
 - leadership qualities
 - plastic and performing arts
 - bodily kinaesthetic ability
- (cited in Webb *et al.*, 2004: p. 17).

These categories cover a very wide range of ability, but in practice the understanding of giftedness is generally limited to the first two: intellectual ability and high performance in the skills taught in school. People with autism occasionally have remarkable artistic or other skills: in the film *Rain Man*, Dustin Hoffman portrayed an individual who had phenomenal arithmetic abilities. Such people are unquestionably very talented; however, as their intellectual skills do not match these specific talents, they are not considered to be gifted in the more common sense.

Intelligence and IQ tests

Studies have emphasized that high intellectual ability is not the same as intelligence as a key to success in life. Like giftedness, intelligence is a controversial concept. Gardner (2005) defines seven types of intelligence, including intrapersonal (understanding oneself) and interpersonal (understanding others).

Box 1 Online sources

On Sternberg's triarchic theory of intelligence

- http://en.wikipedia.org/wiki/Robert_Sternberg#Bibliography

On intelligence tests and IQ

- http://findarticles.com/p/articles/mi_g2602/is_0003/ai_2602000326
- <http://www.psyonline.nl/en-iq.htm>
- <http://en.wikipedia.org/wiki/IQ>

Goleman (1992) importantly extends the definition to include emotional abilities.

Despite the difficulties in defining intelligence and caveats against trying to measure it (e.g. Sternberg, 1985; Gardner, 2005; also Box 1), a widely accepted measure of intellectual intelligence or giftedness is the 'intelligence quotient' – the IQ. The concept of the IQ was introduced by the French psychologists Alfred Binet and Theodore Simon over a century ago (Cohen, 2004: p. 131). Binet and Simon saw their IQ test as a measure of an individual's ability (both inborn and environmentally influenced) to solve tasks in the best way by recognising patterns and rules. Thus, the IQ test measured problem-solving ability in new situations. The modern version of their test – the Stanford-Binet IQ test – assesses a range of skills, including verbal, numerical, spatial and speed skills. The scores on each component are added together give a total IQ score. Thus, a given IQ score can be achieved with very varied skills.

The Stanford-Binet IQ test is based on comparative norms of achievement in the US population, with the average IQ for each age normed at 100. A useful characteristic of the IQ measurement of intelligence is that it displays a normal distribution across a given population (see Figure 1 on page 2). To be considered 'gifted', a person will generally have an IQ above 130, or two standard deviations above the norm. About 2%

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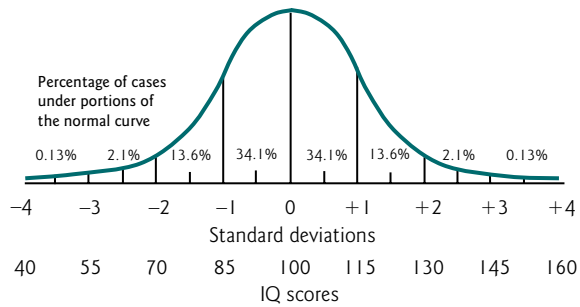


Figure 1 The theoretical curve of intelligence distribution according to IQ scores. The average and peak of the curve is 100. Half the population have IQ scores greater than 100, and half have scores less than 100. Two-thirds have an IQ score between 85 and 115; the number of people with scores below or above these values declines rapidly.

of the population fall into this category. Only about 0.1% of people are ‘highly gifted’, with an IQ of 145 or higher. IQ tests generally go up to scores of between 145 and 160 (Silverman, 2000: p. 8). However, there are no measurable limits to intelligence, and scores as high as 200 have been extrapolated (although an IQ of 180, as estimated for Einstein, might occur in only one in 2 million).

Special needs

It is important to remember that the IQ scale is linear: a difference of 10 IQ points is equally large whether it is between 90 and 100 or 130 and 140. In most high-income countries a child with an IQ of 70 or less (two standard deviations or more below the norm) is recognized as having special needs, will be protected by public mandate and will have special individualized school teaching. Children with the same difference of ability above the norm, i.e. IQ scores of 130 and higher, are usually placed in regular classes, and in many countries no special teaching facilities are available to them in public sector (state) schooling.

Dabrowski’s theory of positive disintegration

A high IQ reveals a potential ability for exceptional performance, but it guarantees neither success nor happiness (Box 2). Why is this so, at least in intellectual fields? Kazimierz Dabrowski, a Polish psychiatrist and psychologist, has developed a comprehensive theory of personality development containing provocative concepts that shed light on the affective (emotional) aspects of gifted people. It extends the discussion of intelligence beyond intellectual abilities to include

emotional, social and moral factors. This theory has been widely adopted in the study of giftedness, because it incorporates emotional and psychological aspects that have been frequently observed but never integrated into a theoretical framework. (For a summary of the literature on the sensitivity of gifted people see Silverman, 2000: p. 5.)

Dabrowski’s theory of positive disintegration (Dabrowski, 1964) is a stage theory of personal development in the tradition of Piaget’s (1924, 1932) theory of cognitive development or Erikson’s (1950) theory of life span. As a model of human development from initial egocentrism to a high level of altruistic existence it can be considered a precursor of Grave’s model, elaborated by Beck & Cowan (1996) in the spiral dynamics model, or of Wilber’s quadrant model (2000). An individual can proceed through five stages of personal growth. Most people (85% according to Dabrowski) do not progress beyond the lowest level. A tiny proportion, perhaps people such as the Dalai Lama, Ghandi and Mother Theresa, reach the highest level (values and ideals have been integrated into the individual’s living and being, and life is lived according to the highest principles of loving and compassion).

In Dabrowski’s theory, positive disintegration is the process by which development occurs. Growth is the result of a series of psychological disintegrations and re-integrations, which are initiated by crises. In a person with high developmental potential, even the normal events of life lead to intense experiences and frequent crises. These crises can be positive if they break down existing psychological structures such as belief systems or behaviours and motivate the individual to explore and perform at new levels of ability, emphasizing increasing morality, ethics, aesthetics and spirituality at each new level. In negative disintegration the crises bring no new insight or personal development.

Box 2 Hidden gifts

The biographies of gifted people demonstrate that many initially did badly at school and their abilities were not recognized until much later in life. Two famous examples are Albert Einstein and Winston Churchill. Interestingly, both are also cited in the literature on ADHD as people who displayed characteristics typical of the disorder such as hyperactivity and oppositional behaviour (see e.g. Hallowell & Ratey, 1994; Aust-Claus *et al*, 1999). Sadly, many gifted people are never recognized as such at all and their lives are blighted by their giftedness.

Giftedness according to Dabrowski

“To believe in your own thought, to believe that what is true for you in your private heart is true for all men, – that is genius.”

Ralph Waldo Emerson, *Prudence*

Dabrowski posits two prerequisites for personal development to higher stages: a facilitative social environment and ‘development potential’. Predictive of this development potential is innate intellectual ability combined with high sensitivity, in the sense of an “over-excitement of energy and response to minor stimulus” that would not have similar effects on all people (Dabrowski, 1964). Thus, development potential can be understood as a definition of giftedness that goes beyond intellectual powers and talents to incorporate high sensitivity. Potential for higher development cannot be learnt. It requires the presence of inherent, i.e. genetically determined, sensitivities in the perception of and reaction to various stimuli. Dabrowski calls these the ‘over-excitabilities’ and defines five areas in which they occur.

Psychomotor over-excitability

Psychomotor over-excitability expresses itself in low sleep requirement, fast and compulsive talking, love of movement, an ability to be drawn into things (enthusiasm), impulsiveness, nervous habits, restlessness, addiction to work and obsessive organization.

Sensual over-excitability

This shows itself in aesthetic sensitivity to beautiful objects, language or other art forms. It can also manifest itself in over-sensitivity towards, for example, textiles, foods, smells or noises. It can lead to over-eating, an obsession with sex, over-spending and the need to be the centre of attention.

Intellectual over-excitability

Intellectual over-excitability is characterized by persistence in asking questions, examining and testing objects and people, love of knowledge and discovery, and theoretical analysis and synthesis. Early reading skills and the ability to concentrate for long periods are typical, as is the ability to anticipate the processing of acts or events. Thinking introspectively from an early age and understanding moral dilemmas are also characteristic. The inclusion of intuitive and moral aspects of thought means that the definition of intellectual over-excitability goes beyond the IQ definition of intelligence.

Imaginational over-excitability

This feature is closely related to creativity. Children who have an over-excitability of imagination often invent fantasy friends or objects in their lives. They have a strong sense of humour, which may border on the bizarre. They have complex and colourful dreams and may be susceptible to nightmares. They have a great ability to fantasize, with detailed visualization; their thinking is strongly influenced by metaphors and physical images. These qualities can lead to a great fear of the unknown. The child’s fantasy is more creative than their ability to emotionally process experiences.

Emotional over-excitability

The most important of the five over-excitabilities is probably emotional (affective) over-excitability, because it is so central to a child’s well-being. Emotional over-excitability expresses itself in intensity, sensitivity and empathy in relationships with people and often animals. Things or events – such as successes and suffering – that do not disturb others in their peer group often disturb children who are emotionally over-excitability. They are usually moody and can change from moment to moment. They cry easily, are very anxious and react strongly to environmental changes.

The feelings of the emotionally over-excited can be positive and express themselves in enthusiasm and happiness. But because those around them are often indifferent to the issues of concern, emotionally over-excitability children can easily develop a feeling of being different and – in the words of Harris (1967) – of not being OK. If they cannot learn to value and use their emotional powers in a positive way, then Dabrowski predicts that feelings of anger, fear, worry, guilt, depression, loneliness, boredom and shame will result. The typical expressions of misunderstood emotional over-excitability are obsession with death, inability to adapt to the environment, the feeling of being different and conflict with others.

Pathologizing

The five forms of sensitivity described by Dabrowski combine differently in each gifted individual to create a unique personality and a different expression of giftedness. Dabrowski believes that the crises engendered in gifted people by their over-excitabilities are a chance for positive disintegration and attainment of a higher level of personal development towards an integrated ethical and moral self. Unfortunately, we live in a culture that does not view heightened sensitivities very positively. Attempts to help gifted people in crisis often frame over-excitability as a pathology and treat it accordingly.

The problems and difficulties encountered by gifted children

“Wherefore have these gifts a curtain before ‘em?”
William Shakespeare, *Twelfth Night*

The understanding of giftedness in Dabrowski’s theory is suited to exploring the problems and difficulties of gifted children because it goes beyond the field of intellect and talents to explicitly consider emotional, social and moral aspects. Over-excitability and crises are typical for gifted children, and have often been documented (e.g. Lind, 2001: p. 3; Webb, 2004: p. 22; Sword, 2003: p. 2). Such reactions and behavioural patterns are often not observed, or seen much later, in other children. Therefore the behaviour of over-excitability gifted children may be interpreted as unacceptable and abnormal and requiring treatment, correction or punishment. Gifted children may be pressured into adapting to norms of behaviour that are significantly at variance with their integral ‘real self’. This leads to a heightening of the crisis and to negative disintegration, instead of the positive disintegration that takes the personality onto a higher level of development.

Herein lies the principal dilemma faced by gifted children. They are constantly torn between adapting to the norm and faithfulness to the real self. Gifted children feel that they are different, but they must behave as if they are not. Adjustment to the norm is necessary to fit into society, but it may lead to loss of authentic identity. For their personal integration and development gifted children need to recognize and cultivate their different nature, but their environment rarely provides the support they need to do this. The exact expression and intensity of this phenomenon varies, but the fundamental problem remains the same for all gifted children.

However, high levels of excitement can also have other causes. The most common of these, ADHD, is examined in the next section.

What is ADHD?

Attention-deficit hyperactivity disorder (ADHD) is a medical condition affecting children and adults that is generally characterized by problems with attention, impulsivity and over-activity (Box 3). Fictional examples well-known to many children are Fidgety Philip (Figure 2, page 5) and Johnny Look-in-the-Air, from Heinrich Hoffmann’s stories of *Struwwelpeter* (1844). It is the most common behavioural disorder, estimated to affect as many as 8% of children and 6% of adults (Brown, 2002: p. 910). Since its recognition as a medical diagnosis over a century ago, what we now know as ADHD has had many names, including ‘brain

Box 3 Diagnosing ADHD

The most commonly used criteria for diagnosing mental disorder are the DSM–IV (used more in the USA) and the ICD–10 (more common in Europe).

The DSM–IV criteria for ADHD are summarized at <http://www.cdc.gov/ncbddd/adhd/symptom.htm> sym

‘Hyperkinetic disorder’, the ICD–10 diagnosis equivalent to ADHD, uses a narrower definition, but describes much the same disorder.

Original sources

- American Psychiatric Association (2000) *Diagnostic and Statistical Manual of Mental Disorders* (4th edn, text revision) (DSM–IV–TR). American Psychiatric Association.
- World Health Organization (1992) *Tenth Revision of the International Statistical Classification of Diseases and Related Health Problems* (ICD–10). WHO.

damaged syndrome’, ‘minimal brain dysfunction’ (MBD), ‘hyperkinetic impulsive disorder’ and ‘attention deficit disorder’ (ADD).

The conceptualization of ADHD has gradually shifted from focus on hyperactivity and impulsivity to the recognition of cognitive impairments as the central and most persistent symptoms of this disorder. Recent research suggests that ADHD is essentially a developmental impairment of a complex range of the brain’s executive functions. Broadly stated these are the “variety of functions within the brain that activate, organize, integrate and manage other functions” (Brown, 2000).

ADHD has been the subject of a huge amount of research, and the scientific literature documenting the reality of this condition is immense (for an accessible study of the disorder see Brown, 2005). In the medical and psychological world the diagnosis of ADHD is well-accepted (Box 4). However, public perceptions of ADHD are replete with myths, misconceptions and

Box 4

“AD/HD is one of the best-researched disorders in psychiatry, and the overall data on its validity are far more compelling than for most mental disorders and even many medical conditions”

Council on Scientific Affairs, American Medical Association, Chicago, Illinois, quoted in Goldman *et al.*, 1998: p. 1100.

The Story of Fidgety Philip



“Let me see if Philip can
Be a little gentleman;
Let me see if he is able
To sit still for once at table.”
Thus spoke, in earnest tone,
The father to his son;
And the mother looked very grave
To see Philip so misbehave.
But Philip he did not mind
His father who was so kind.
He wriggled
And giggled,
And then, I declare,
Swung backward and forward
And tilted his chair,
Just like any rocking horse;-
“Philip! I am getting cross!”



See the naughty, restless child,
Growing still more rude and wild,
Till his chair falls over quite.
Philip screams with all his might,
Catches at the cloth, but then
That makes matters worse again.
Down upon the ground they fall,
Glasses, bread, knives forks and all.
How Mamma did fret and frown,
When she saw them tumbling down!
And Papa made such a face!
Philip is in sad disgrace.



Where is Philip? Where is he?
Fairly cover'd up, you see!
Cloth and all are lying on him;
He has pull'd down all upon him!
What a terrible to-do!
Dishes, glasses, snapt in two!
Here a knife, and ther fork!
Philip, this is naughty work.
Table all so bare, and ah!
Poor Papa and poor Mamma
Look quite cross, and wonder how
They shall make their dinner now.

misinformation about its nature, course and treatment. This is partly because almost all children are on occasion inattentive, impulsive and hyperactive, and it is indeed difficult to draw an exact border between these manifestations as typical childish behaviour and as a medical disorder.

ADHD is usually inherited. If a parent or close relative has ADHD there is a 30% chance that the child will have it too. When heredity does not seem to be a factor, difficulties during pregnancy, prenatal exposure to alcohol and tobacco, premature delivery, significantly low birth weight, excessively high levels of lead in the body and postnatal injury to the prefrontal regions of the brain have all been found to contribute to varying degrees to the risk of ADHD (<http://www.mentalhealthchannel.net/adhd/causes.shtml>).

ADHD as a neurobiological disorder

Although the precise causes of ADHD have not yet been identified, research has demonstrated that it has a very strong neurobiological basis resulting from problems in the neurotransmitter systems in the brain. Explanations of the neurological cause of ADHD – even those in parental guidebooks – are usually quite incomprehensible for non-specialists. An exception is that of Brown (2005), whose account of the neurology of the disorder is so clear that it deserves citation in full:

“Complex neuronal networks link the various structures in the brain that sustain executive functions. Rapid-fire messages of input and output travel these networks via low-voltage electrical impulses that can traverse the entire system in much less than a millisecond. The efficient movement of these electrical impulses along the network depends on the rapid release and reuptake of neurotransmitter chemicals, which carry each message across synapses, or the connections between neurons, much as a spark jumps the gap of a sparkplug.

To do this work, each of the 100 billion neurons in the brain depends on one of the fifty or so neurotransmitter chemicals manufactured within the brain. Without the effective release and reuptake of the needed neurotransmitter chemical, that portion of the neural network cannot effectively carry its messages.” (Brown, 2005: p. 16).

Figure 2 The story of Fidgety Philip

Pictures by Heinrich Hoffmann, *Der Struwwelpeter: oder lustige Geschichten und drollige Bilder für Kinder von 3-6 Jahren* (Literarische Anstalt von Rutten & Loning, 1900). English translation from *Slovenly Peter or Cheerful Stories and Funny Pictures for Good Little Folks* (John C. Winston Company, 1900). Reproduced from <http://www.shockheadedpeter.com/struww.html> ©1994–1999 Robert Godwin-Jones, Virginia Commonwealth University.

If messages are ineffectively carried, then the executive functions of the brain are impaired. That is the neurological explanation of ADHD.

Much is still to be learnt about the brain's neural networks. However, evidence from over 200 medical studies shows that the executive functions affected in ADHD depend primarily, though not exclusively, on two particular neurotransmitter chemicals: dopamine and norepinephrine (also called noradrenaline).

Behavioural and psychological characteristics of ADHD

When the brain is not getting adequate neurotransmitter chemicals, it tries to find ways to increase their release. Movement and physical activity, focusing on things that are stimulating in themselves and doing things that cause stimulation are common ways in which people with ADHD stimulate their brains. Unfortunately, running around the classroom and picking fights, playing Nintendo all day, or doing dare-devil tricks are often not acceptable in daily life and get the affected individual into trouble in school and at home.

The exact expression of ADHD in children varies enormously. Some children are fidgety, have difficulty remaining seated, act as if driven by a motor, talk excessively, interrupt or intrude on others and cannot wait for their turn. They may also be forgetful and absent-minded, untidy, have difficulty sustaining attention and be unable to follow instructions. Others may be moody and have outbreaks of anger, fits of depression or irrational fears. Their motor skills may be poor, they cannot tell the difference between left and right, and they may have problems with articulation, sleeping and tics. About two-thirds of children with ADHD suffer from at least one other condition such as depression, anxiety or a learning disability (Children and Adults with Attention-Deficit/Hyperactivity Disorder, 2004a).

People who can only focus on things that interest them are often faced with additional difficulties such as academic underachievement, lack of social skills and an inability to stay organized or complete important tasks. Untreated ADHD may have serious consequences, for example family stress, difficulty with personal relationships, depression, substance misuse, delinquency, and failure in education or employment. People who find stimulation in doing reckless or dangerous activities risk accidental injuries and legal problems.

Giftedness and ADHD combined

As mentioned above, giftedness in the sense of a high IQ occurs in around 2% of the population. ADHD

occurs in perhaps 8% of the population. With such rarity for each, one might expect their occurrence in combination to be very rare indeed. However, children with ADHD often appear to be very intelligent, which suggests that the combination is more frequent than we would think. Indeed, some believe that giftedness and ADHD are interrelated (Rossi, 2001). Why this should be so is unclear. However, it is interesting that the openness to stimuli and hypersensitivity of children with ADHD are strikingly similar to features of the over-excitabilities, particularly in the psychomotor and emotional areas, described by Dabrowski. On the one hand, this can lead to oversensitive gifted children being diagnosed as having ADHD (Webb *et al*, 2004: p. 31). On the other, the sensitivity and openness to stimuli that are characteristic of ADHD will often advance specific talents, such as creativity and intuition, which are gifts in themselves.

The terminology reveals the crucial difference: ADHD is a medical disorder that can prevent a child from reaching its potential. Giftedness is a given talent that increases a child's potential. Even though they are very different phenomena and should be treated accordingly, this can be very difficult. They can both lead to similar behaviour and both can have the same secondary effects, such as a loss of self-esteem and depression. Therefore if giftedness and ADHD are combined in a child, the best approaches are those that can be applied to and are appropriate for both conditions.

Standard approaches to treating ADHD and living with giftedness

There are many approaches to treating ADHD and living with giftedness and an enormous literature on the subject. My own experience as a Tri-Energetics counsellor helping a child and his family (see "Philip, a gifted child with ADHD" and "The role of Tri-Energetics in parenting" on my website) suggests that a 'multimodal' approach incorporating the measures outlined below would have the most chance of success.

Behavioural management techniques

In ADHD, behavioural management techniques are widely used to improve – well, behaviour. However, behavioural management can also be used to relieve anxiety, stress and depression (Children and Adults with Attention-Deficit/Hyperactivity Disorder, 2004), to which gifted children with over-excitabilities are very susceptible. Stress management in particular can be very helpful for gifted children (Webb *et al*, 2004: p. 121).

The idea of behavioural management is to learn specific techniques and skills that modify and

Box 5 Behavioural management techniques

The American organization CHADD (<http://www.help4adhd.org>) lists the following programmes:

- Triple P (Positive Parenting Program)
- CLASS (Contingencies for Learning Academic and Social Skills)
- COPE (Community Parent Education Program)
- RECESS (Reprogramming Environmental Contingencies for Effective Social Skills)

Outside the USA the use of these techniques is much less common. In Germany the OptiMind-Konzept (<http://www.opti-mind.de>) is probably the most well-known behavioural technique.

improve behaviour. It differs fundamentally from psychotherapeutic approaches in which the child spends time talking to a therapist about his (or her) problems. There are many different programmes (Box 5), but most have the following common characteristics.

- The techniques are aimed not just at the child: for successful change, parents and teachers should also learn new techniques and skills in their interaction with the child.
- A specialist designs an individualized programme for the child concerned, beginning with a complete evaluation of the child's problems in daily life. Target behaviours or goals are identified: negative behaviours that need to stop and positive behaviours that need to be developed. Thus, the behaviour itself – the over-activity, inattention or impulsivity – is not targeted directly. Rather, specific issues that these cause in daily life at home or at school are the focus. For example, targets to stop negative behaviour might be “do not interrupt the teacher” or “do not hit your sister”. Those to encourage positive behaviours might be “do your homework carefully and without argument”, or “get to school on time”.
- The training for parents will include establishing house rules and structure, learning to praise good behaviour, planning ahead, and using appropriate commands, “if... then rules” contingencies, positive and negative reinforcement, and charts and notes with rewards and consequences.
- Consistency is essential for success, and this poses high demands on both the child and his or her parents and teachers.

Applying behavioural management techniques successfully is hard work and takes more than a few months. However, if the skills can be mastered, real improvements in behaviour and relationships and the child's well-being have been widely documented (Aust-Claus *et al*, 1999; Greene, 2004).

Changing the environmental conditions

If a child does not fit into his or her environment, it may be possible to change the environment rather than the child. The most obvious example is finding a school, whose programme and supports are well adapted to the child's needs. Both gifted children and those with ADHD often benefit enormously from special educational services that are appropriate to each individual's learning needs.

The home environment is obviously very important for any child's well-being. Conflicts at home – between parents, with other brothers and sisters – particularly affect sensitive children, who may feel that they are at least partially responsible for the atmosphere of home life. If, for whatever reason, home life is very stressful, measures to simplifying it and reduce stressors are two of the most beneficial courses.

Medication for ADHD

For most children with ADHD medication is an integral part of treatment. It is used not to control behaviour, but to reduce the symptoms of the disorder so that the individual can function more effectively. Indeed, medication is often necessary for the child to become accessible to other approaches.

The primary effect of medication used for ADHD is to stimulate the brain to release a greater amount of the neurotransmitter chemicals (dopamine and norepinephrine) needed for smooth transmission of messages through the brain. Interestingly, stimulants are usually prescribed to reduce the hyperactivity, impulsivity and inattentiveness of ADHD. Thus, this medication has the opposite effect in people with ADHD than in those without. One of the most well-known stimulants for ADHD is methylphenidate (more commonly known in by trade names such as Ritalin, Concerta and Metadate). Methylphenidate has been used for over 50 years to treat ADHD symptoms. They produce a dramatic alleviation of ADHD symptoms in 70–80% of persons diagnosed with the disorder (Children and Adults with Attention-Deficit/Hyperactivity Disorder, 2004b). Although they are controversial in the public eye, in the medical world they are generally considered to be safe and effective when prescribed correctly and used as prescribed.

From the neurobiological viewpoint any substances that increase the release and block the reuptake of dopamine and norepinephrine can be effective in

alleviating ADHD symptoms. If methylphenidate does not work, has severe side-effects or is otherwise contraindicated, dextroamphetamine (e.g. Dexedrine, Adderall) or a tricyclic antidepressant may be helpful.

For a detailed discussion of medication of ADHD see Brown (2005: p. 246), Huss (2002) and *Children and Adults with Attention-Deficit/Hyperactivity Disorder* (2004a).

Neurological treatment for ADHD

The basic assumption of neurological treatment approaches is that the electrical activation of the brain described above can be improved by physical training. The electrical activity of the brain is different in a person in a focused and attentive than in a drowsy or day-dreaming state. It has been observed that many children with ADHD show very low levels of arousal in certain brain areas. Because the brain is extremely flexible and capable of learning, neural pathways can be improved by training and new ones can even be built. Neurological training programmes teach individuals either consciously or unconsciously to increase their level of arousal. If this can be achieved in individuals with ADHD, then improvements in attention and reductions in hyperactive and impulsive behaviour can be expected. These methods have been used for many years, and a number of published reports document that they have been extremely helpful for children with ADHD (e.g. Anastopoulos *et al*, 1993; *Children and Adults with Attention-Deficit/Hyperactivity Disorder*, 2004c). The approaches are complementary to medical and behaviour training therapies for the disorder and aim at a long-term improvement of the identified weaknesses in sensory processing, which are expressions of neurological dysfunction.

Here I will outline two methods. The first is electroencephalogram (EEG) biofeedback or neurofeedback treatment. In this, the electrical activity of the brain is measured and reproduced on a computer screen in the form of animated pictures or games. Individuals learn through feedback from the screen to control their own brain waves or cerebral activity and to increase arousal levels in under-activated brain regions, so that they are more similar to those found in people without ADHD. The therapy takes some time to learn: perhaps 30–40 sessions. However, the child can then use what has been learned to improve attention and reduce hyperactive and impulsive behaviour.

The second is the HANDLE programme (the acronym for Holistic Approach to NeuroDevelopment and Learning Efficiency; <http://www.handle.com>). This American approach uses questionnaires and specially designed observational tools to assess the

neurological development of the child and identify weak neurological functions. Various functions may be affected in people with ADHD (and also, for example, in those with disorders such as autism, dyslexia and Tourette's syndrome): there may be a poor vestibular system (functions of the inner ear that affect balance), a poor sense of the body in space, and hypersensitivities in other processing systems. The HANDLE therapy aims to strengthen the neurological functions of the brain by simple daily exercises that stimulate and gradually improve the weak functions of the central nervous system. The exercises, which range from massage to simple juggling games, are done at home and supervised by the therapist at regular intervals.

Nutritional medicine

"We are what we eat". Many people suspect that diet can affect behaviour. There are two basic approaches to nutritional medicine, which can be combined. Dietary interventions are based on the assumption that certain foods are unhealthy and cause negative effects in some people. These foods should be eliminated from the diet. Nutritional supplementation is the opposite and is based on the assumption that something is missing from the diet in an optimal amount and should be added.

The most publicized of the diet elimination approaches is the Feingold Diet. This is based on the theory that many children are sensitive to dietary salicylates and artificially added colours, flavours and preservatives, and that eliminating the offending substances from the diet could improve learning and behavioural problems, including ADHD (see e.g. Marcia Zimmerman, 1999). Despite a few very positive studies (e.g. Warner *et al*, 2004, reported in *The Independent Review*, 16.08.04, p. 8), most controlled studies have failed to support this hypothesis.

This does not mean that excessive sugar intake, food additives, thyroid dysfunction, allergies or mineral deficiencies (e.g. zinc, iron and magnesium) never cause behavioural problems. A small percentage of children do appear to have food sensitivities and react hyperactively, but few experts believe that food sensitivity directly causes ADHD. In fact an element of serious ADHD diagnosis should be medical tests to eliminate causes of hyperactivity such as sensitivity to foods.

The most interesting theories of nutritional supplementation in the treatment of ADHD are those that recognize that ADHD is a brain-based disorder in which the chemistry of the brain (its neurotransmitters) is not functioning as it should. Nerve cell membranes contain large amounts of polyunsaturated fatty acids (omega-3 and omega-6). Thus, it would not be

surprising if an inadequate intake of these fatty acids were to have neurological consequences. It may be that an omega-3 and omega-6 deficiency can cause or worsen ADHD symptoms (the internet abounds in material on the topic). Fatty acids are found in high quantities in fish oil, and supplementation does appear to have positive effects on ADHD in some cases. However, further controlled studies are needed, as the idea is still controversial.

For more detailed information on diet and ADHD see Children and Adults with Attention-Deficit/Hyperactivity Disorder (2004d).

Conclusions

Given the complexity of the difficulties faced by children who are both gifted and affected by ADHD, it is not surprising that the standard treatment methods described here might all be helpful to some degree and that a multimodal approach would probably be recommended by many professional practitioners.

In my experience as a Tri-Energetics counsellor, a multimodal approach within the integrative framework of Tri-Energetics was the best way to resolve the acute difficulties a young boy and his family found themselves in when they came to me for advice. Several of the methods described above were useful to the child, but the decisive factor in my work with him was the Tri-Energetics counselling framework, which I applied to the whole approach to his difficulties. It helped to give the work with him unity and a consistency that otherwise would have been missing. A case study of our experiences and the usefulness of Tri-Energetics generally as a tool in parenting are described in two separate articles on my website: "Philip, a gifted child with ADHD" and "The role of Tri-Energetics in parenting".

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