Specific language disability — a medical or an educational problem?

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Summary

Specific learning disabilities are often regarded as a medical problem for which medication or other treatment and investigation is requested. However, when problems of concentration are the result rather than the cause of the learning problem, medication is not indicated. This applies to specific language disabilities, which handicap seemingly normal children who do not understand or comprehend the spoken or written word and are therefore failures in a language-orientated classroom. The cause may be an organic disorder of the left hemisphere or a dominant right hemisphere, but the management should be educational, using unconventional learning techniques utilizing right hemisphere abilities.

Many intelligent children are failures at school. Why? They come from any racial group and economic or social stratum, there is no emotional reason for their problem, and the recognized remedial procedures do not help. This problem falls into the category of specific language disability.

It is suggested that a specific language disability is a neurological disorder but that the management is educational. Although there is no obvious handicap, children with this disability are none the less severely disadvantaged in our language-orientated educational system, and because the handicap is not obvious it is not recognized or treated. These children are virtually left by the wayside educationally, which is not only unfair to them as individuals but means that their usefulness to society, particularly in industry, is wasted.

Definitions

'Minimal brain dysfunction' was the term first used to describe specific learning problems until it was felt to be too damaging, and 'specific learning disabilities' took its place. Peters1 gave this general definition to cover a broad spectrum of problems: 'Children with specific learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written language. These may be manifest in disorders of listening, thinking, talking, reading, writing, spelling or arithmetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do not include learning problems which are due primarily to visual, hearing or motor handicaps, to mental retardation, emotional disturbance or to environmental disadvantage.'

Speech therapists have looked more specifically at language disability in childhood aphasia, which Myklebust2 describes as 'referring to one or more significant deficits in essential processes as they relate to facility in the use of auditory language. Children having this disability demonstrate a discrepancy between expected and actual achievement in one or more of the following functions: auditory perception, auditory memory, integration, comprehension, expression. The deficits referred to are not the result of sensory, motor, intellectual or emotional impairment, nor of the lack of opportunity to learn. They are assumed to derive from dysfunctions in the brain, though the evidence for such dysfunctioning may be mainly behavioural, rather than neurological, in nature.'

Ross,3 without excluding a neurological cause, gives an educational explanation of the problem: 'A learning disabled child (my emphasis) is neither damaged nor permanently impaired. The disability is an inability to make use of the unspecialized instruction usually found in the typical classroom. Given proper and specialized instruction, the disability disappears. The problem is thus an educational problem, not a psychological problem or a medical problem. The responsibility for helping these children ultimately rests with the educators, for a learning disability is not so much a lack in the child's ability to learn as it is a lack in the educator's ability to identify and teach children with educational needs.'

Farrald and Schamber4 also lay the blame on the educational system: 'A child with a learning disability (my emphasis) is any child who, for whatever reason, consistently fails to meet the demands of the curriculum to which he is assigned and whose unique learning characteristics necessitate extensive remodelling and reconstruction of teaching interventions for efficient learning.'

From these definitions we can infer that the child with a specific language disability is not retarded or physically, emotionally or environmentally disadvantaged, although he is underachieving at school in terms of his intellectual potential. He cannot understand the content of language, and is weak in all the language skills required in the classroom. His deductive abstract reasoning ability, however, may be very good. In this situation there appears to be an underlying neurological disorder or immaturity of the left hemisphere. The child seems normal but is unable to benefit from conventional teaching methods which do not involve the right cerebral hemisphere.

Identification

Children with specific language disabilities usually present with behavioural problems resulting from frustration. They are assumed to be achieving in terms of their ability, there being no evidence in the classroom of their true potential.

The earliest sign is delayed acquisition of speech and slow speech development, although the problem may only become evident in a reading-readiness programme when the child starts school. Auditory language deficits, which affect reading and spelling, may only be identified late in primary school or even in high school. There may also be complex disturbances of auditory perception and auditory memory.
The child underachieves in terms of intellectual potential. There is a discrepancy between his level on standardized scholastic tests and an individual IQ assessment measuring potential, the subtests of which indicate areas of ability and disability. The nonverbal IQ score is generally significantly higher than the verbal score, possibly even falling into the 'gifted' range, although the child is failing in school.

The child has a poor vocabulary and difficulty in verbal expression, and the content of his speech is usually immature, at a concrete rather than an abstract level. Articulation and hearing may be unimpaired, and the mechanics of reading and writing may be intact while he does not comprehend the content. If the neurological disorder is due to temporal lobe epilepsy there may also be a behavioural disturbance.

Spatial ability is good. This is a right hemisphere function, the psychological opposite of verbal ability. It is described by MacFarlane and Smith (1964) (quoted by Lowenberg,5 p. 274) as 'a pervasive trait similar in importance to such traits as verbal or social intelligence'. People with this ability are competent in nonverbal directions, namely the technical and mechanical skills required for industrial occupations, but deficiencies in the verbal area handicap their educational and vocational advancement.

Aetiology
The most likely cause of specific language disability appears to be neurological, e.g. minimal brain dysfunction, temporal lobe epilepsy, left hemisphere immaturity or dysfunction, or a dominant right hemisphere.

Most learning functions are localized in the temporoparietal lobes of the brain, with language in the left hemisphere. These areas cover the largest part of the brain and are the last to mature (Dekaban (1970) (in Lowenberg, 5 p. 33) says that their maturity is not complete until after the age of 5 years), and are therefore particularly susceptible to cerebral insult in the early and optimal years of learning. Seizures are more likely to occur in an immature brain, and hypoxia, brain infection, early malnutrition or perinatal factors may have a detrimental effect on the developing brain, especially if there is a genetic predisposition to neurological disorder. Brown6 says that brain damage before 3 years of age may actually slow down the rate of brain development.

The temporal regions are highly differentiated with regard to brain function and include the auditory cortex, so that any abnormality in the left temporal area interferes with language development. Speech is usually a function of the left hemisphere, even in the left-handed.

Temporal lobe epilepsy
The term 'temporal lobe epilepsy' is used here, because although the terminology of epilepsy has changed in the light of new knowledge, certain terms have persisted. In the new terminology 'temporal lobe seizures' are referred to as 'complex partial seizures'. However, since these 'partial' seizures may in fact be very complete local attacks, the term 'temporal lobe epilepsy' continues to be used.7

Temporal lobe epilepsy may cause a specific language disability, varying in severity from a minor to a major disturbance and involving 'absences' or behavioural aberrations. Hansota and Wadia (1971) (quoted by Lowenberg, 5 p. 94) define these absences as 'brief interruptions of consciousness without conspicuous motor convulsions'.

Sutherland8 estimated that temporal lobe epilepsy accounted for one-third of all cases of epilepsy. It differs from petit mal in that it occurs at any age, a focus may be evident on the electroencephalogram, it is less frequent, it is followed by confusion, and it is often nocturnal and therefore unnoticed. Some seizures are subtle, taking the form of an interrupted train of thought, inexplicable sensations, champing or sucking movements of the mouth, compulsive thinking, memory disturbances, things appearing strange or familiar, unusually clear memory images, or hallucinations of smell, taste, hearing or vision. There may be temporary confusion, the patient not being aware of where he is or why. Each person has his own particular experience which occurs regularly during seizures. Seizures occur suddenly, and nothing may be remembered afterwards. If the seizure is in the dominant hemisphere there may be an aura of dysphasia. Learning disabilities and lack of retention are associated with lesions of the left hemisphere without being related to the level of intelligence.

Psychomotor epilepsy
The term 'psychomotor seizure' has been reintroduced in the new terminology because it describes the attack, and is different from complex partial seizure.

Psychomotor epilepsy can also involve specific language disabilities and is thought to originate in the underlying limbic system. It is characterized by automatisms or automatic behaviour (unconscious repetitive motor behaviour), which can range from an unnoticed continuation of normal behaviour to bizarre activity and may include aphasia or speech automatisms. It is often confused with temporal lobe epilepsy and is frequently misdiagnosed in children because of the variety of possible clinical manifestations, which differ from one child to another. It may last for minutes or hours and may account for the learning-disabled child's variable performance in school, e.g. 'good' and 'bad' periods within a day or 'good' and 'bad' days. The electroencephalogram may be normal, thus complicating the issue.

Hemispheric differences
Roger Sperry found in split-brain surgery that each hemisphere independently contains the ability to learn and that the right hemisphere, far from being inferior to the left, is superior in some respects, such as the capacity for intuitive thinking, interpreting auditory impressions and comprehending spatial relationships.

According to Sperry there appear to be two modes of thinking, verbal and nonverbal, represented separately in the left and right hemispheres respectively. The two hemispheres work together, or singly if there is damage in one area. Each hemisphere gathers the same information but handles it differently. The left hemisphere analyses, abstracts, counts, marks time, plans step-by-step procedures (sequencing), verbalizes and makes rational statements based on 'rational'. The right hemisphere 'sees things in the mind's eye' so to speak, in imagination, and recalls things that may be real (e.g. visualizing one's own front door). It sees how things exist in space and how parts go together to make up a whole.9

Brown6 states that the brain is anatomically asymmetrical, especially in the speech area, and that the two hemispheres differ in their rate of development. In boys the slow overall rate appears to affect the left hemisphere more than the right and girls are said to be susceptible for a shorter time than boys, which may account for the higher incidence of learning problems in boys than in girls. Brown also mentions a likelihood of a maturational lag between the hemispheres, accounting for the peculiar 'predilection of epileptic discharges to arise in the left temporal lobe in the male and the right temporal lobe in the female'.

Behavioural and personality aspects
There is inevitably a secondary emotional and possibly a behavioural problem when an intelligent child cannot cope at
school, but if there is also temporal or psychomotor epilepsy there may be a psychiatric disorder. The right hemisphere is associated with depression and the left with schizophrenia. A small focus causes an intermittent psychosis and a large lesion a chronic psychosis.

Stress can precipitate a seizure, and Bellak has suggested that time pressure reduces the performance level, the anxiety increasing with pressure. Certain individuals respond poorly to any kind of overload, be it time pressure, excessive noise or even social contact. Catastrophic reactions may be mistaken for schizophrenia, although at times the two conditions coexist. A child with a specific language disability who has difficulty in verbal expression and comprehension may also develop motor acting-out behaviour to replace verbal communication, and temper tantrums, aggression, hostility, irritability and destructiveness may be seizure outbursts.

Language in education — left hemisphere preference

Language is essential to communication, so much so that educationalists attach little value to practical subjects, which are gradually being phased out of the school system. Hosking writes that the purpose of education is to promote the personal development and social competence of pupils. He associates language with personality, stating that if there is a restriction in linguistic development, the concept of "ideal-self" will inevitably be an impoverished one, which happens to many pupils receiving special education. He relates linguistic competence to four interconnected abilities, viz. listening and speaking, reading and writing, which are all aspects of a single speech faculty. Listening and speaking are the natural forms of verbal communication and reading and writing are complementary and fundamental to modern civilization. He goes on to say that speech and thought are very close and that certain concepts only achieve definition when they have a verbal label or name.

It is clear that linguistic ability is of great academic significance, because communication affects all aspects of social and intellectual growth. But to promote linguistic ability to the exclusion of practical skills may be improved so that a child acquires the mechanics of reading, but the comprehension problem remains and he makes little sense out of what he reads. It is, however, necessary to work the child up to his highest possible level in reading and other language skills. Likewise, speech therapy is necessary to improve speech development to the highest possible level, together with comprehension, vocabulary and auditory skills, although a disability remains and remedial methods other than those utilizing language are necessary.

Hosking also considers the whole brain should include training in drawing skills as an occupational therapy may be necessary to improve these skills. Teachers would have to be specially selected and trained not to be "rooted in language".

Diagnosis

Many cases of specific language disability do not come to light because it is assumed that the child is achieving at his optimal level, which is judged in terms of language skills. A learning disability is inferred when there is a discrepancy between scores on standardized scholastic tests and a measure of intellectual potential, such as an individual IQ test.

A detailed case history gives information with regard to delayed or slow speech development in the absence of a hearing deficit. There may be a family history of specific learning disabilities or epilepsy.

A speech therapist's assessment is of value to confirm the assumption of immature speech development, lack of comprehension and auditory disorders. Speech therapists are seldom consulted because speech is articulate in these children, and although content is expressed on a concrete rather than an abstract level and vocabulary is limited, these signs are not taken as symptomatic. It is also necessary to assess hearing to exclude a partial or temporary loss, as these children are often thought to be deaf. A neurological examination is required when epilepsy is suspected so that medication can be prescribed.

Management

If any form of epilepsy is diagnosed anticonvulsants are prescribed, but they alone are not the solution. Remedial management is also necessary, and will be facilitated by the improved concentration and calming effects produced by the medication. Medication to improve concentration (such as methyphenidate (Ritalin)) is frequently requested, and while it may be useful as a temporary measure to make the child more manageable it certainly does not overcome the educational disability. Poor concentration in the presence of a specific language disability is the inevitable outcome of not understanding language, rather than the cause.

Psychotherapy and parent counselling also have their place in helping the child and his family to accept his normality together with his problem.

Conventional forms of remedial teaching have not proved successful in children with specific language disabilities. Reading skills may be improved so that a child acquires the mechanics of reading, but the comprehension problem remains and he makes little sense out of what he reads. It is, however, necessary to work the child up to his highest possible level in reading and other language skills. Likewise, speech therapy is necessary to improve speech development to the highest possible level, together with comprehension, vocabulary and auditory skills, although a disability remains and remedial methods other than those utilizing language are necessary.

Vision is important and optometrists can also play a role in management. The child's vision may be normal, but poor eye co-ordination induces fatigue and reduces concentration. Acuity, perception, depth perception and eye co-ordination should therefore be assessed periodically and corrected when necessary.

Teaching methods should utilize right hemisphere functions such as vision and spatial ability. These children should learn from computers, videofilms, pictures and diagrams and through art and drama. They should present their work using these techniques rather than writing, because written expression is also a language skill. An adequately functioning right hemisphere is a prerequisite for success in specific language disabilities, and occupational therapy may be necessary to improve these skills. Teachers would have to be specially selected and trained not to be 'rooted in language'.

Deveni finds that photography, an obvious visual process, might be an effective stimulus in developing the visual right hemisphere, and uses this technique with students at the University of British Columbia. Some children have also been found to be creative in this area and are again not using their talent.

Computers are coming into their own in education overseas. According to Papert, a South African mathematician teaching at the Massachusetts Institute of Technology, computers can be used to acquire and gradually develop various skills, including mathematics, music and even language. He says that paper and pencil techniques employed in schools are static in contrast to 'the dynamic technology of computers'. He advocates experimental classrooms working around given problems and envisages an educational system in which technology is not used in the form of machines for processing children but as something children will learn to manipulate, extend and apply to projects. In this way they should gain greater mastery of the world and a sense of the power of applied knowledge. Papert's aim is to design a new learning environment, connecting the computer experience and the familiar informal experiences of children.
This may well be a solution for children with specific language disabilities.

Conclusions

We have been aware of the existence of specific learning disabilities for many years, and although we have excellent remedial facilities in South Africa we do not cater for the child with a specific language disability. He therefore becomes an educational drop-out despite having the potential to become an asset to industry and technology. He is severely disadvantaged in our language-orientated educational system because he does not have a visible defect. There are techniques for teaching physically handicapped children without their having to read, write or depend on auditory skills, but these techniques are not available to the apparently 'normal' child.

The child with a specific language disability is normal in all other respects, often good at sport, art or music, and is therefore expected to conform to a school curriculum designed for the so-called 'average' child with adequate language skills. We do not expect a person with a disabled foot to play football, but we do expect a child with a specific language disability to learn in a language context. We try to remedy the defect by treating the effect, the attentional deficit, with medication, and thus do not achieve the desired results or even touch upon the real problem.

Although the cause may be neurological, the management is most likely to be educational. As Winschel and Lawrence (1973) (quoted by Lowenberg, p. 17) put it: 'most children with learning disabilities are not born; they are manufactured by a well-meaning educational industry. More often than not a learning disability is, in reality, a deficiency of the educational enterprise; it is above all a failure of the school rather than a deficit of the child.'

Let us help the child by changing the educational system so that these children can achieve, use their full potential, become happy citizens and contribute to industry and technology, where they are badly needed in this country.

REFERENCES


Nuus en Kommentaar/News and Comment

The long and the short of it

In the Royal Air Force, there used to be a rather diffuse, vociferous organization which was disparagingly dubbed 'The League of Little Men' (LOLM) by the tall, and which consisted of little chaps whose stature made it difficult to reach all the switches or put on full rudder when piloting an aircraft. This was, of course, a flight safety hazard, and in the days before switches or put on full rudder when piloting an aircraft. This was, of course, a flight safety hazard, and in the days before

Liquorice intoxication

There are some things which are too awful to contemplate, and those familiar with the joys of sipping an apéritif on the sidewalk cafes of France may well feel that anyone who could contemplate drinking an alcohol-free pastis deserves all that is coming to him. However, it was in all innocence that a 50-year-old man who had been advised to stop drinking, came across such a beverage (‘Blancard’) while on holiday in France. (Cereda er al., Lancet 1983; i: 1442). Blancard contains glycyrrhizinic acid 1.13 g/l, and he consumed approximately 0.33 g daily for 2 months before being advised to stop drinking, came across such a beverage (‘Blancard’) while on holiday in France. (Cereda er al., Lancet 1983; i: 1442). Blancard contains glycyrrhizinic acid 1.13 g/l, and he consumed approximately 0.33 g daily for 2 months before being admitted to hospital with progressive fatigue and uncontrolled hypertension due to liquorice intoxication. Apparently, liquorice is used as an additive in many products, especially in France, and the observation is made that its consumption should be controlled more rigorously.