Letters to the editor

‘Unexpected artistic creativity’

SIR–The following two examples suggest that the human brain can have surprising and hidden potentials for creative functions. Nadia was an autistic child described by Selfe1. Between 3 years 6 months and 6 years 6 months, with severe learning disabilities and little use of language, Nadia showed an amazing ability to draw horses, other animals, and latterly humans. Nadia started at a school for autistic children at 7 years 6 months, where her language function improved. At 9 years old, she could use simple sentences, but seldom drew spontaneously. Her drawings of people were recognizable, which is still unusual, but no longer an extraordinary talent at this age.

Why did the acquisition of one talent, that of language, lead to the diminution of another, the child’s drawing ability? There may be similarities to so-called idiot-savants, but it is not only the development of a particular talent in a child with severe learning difficulties that needs to be emphasized, but also the alteration of two different ones.

At the other end of life it has been shown that the onset of dementia may result in the development of new artistic skills2 (Miller et al. 1998). Sixty-nine patients with fronto-temporal dementia were interviewed and five were found to have developed these new talents. Examination with single photon emission computed tomography, or histology, showed that four of them had the temporal variety of this type of dementia in which the anterior temporal lobes are involved but the dorsolateral frontal cortex is preserved. As a result, visual skills were spared but language and social skills were severely affected.

As Gombrich3 suggests, children draw what they know, not what they see, and it may be that Nadia, with her very delayed language development and severe learning disorders, drew what she saw uncontaminated by language and intellect, and that her internal visual imagery was further developed by her drawing. Perhaps as her use of language increased and developed, her mental imagery was supplanted; as language is a way of describing reality3.

In both incidences, it is interesting to speculate on the reasons for the loss and gain of artistic skills. Is it a question of the brain only being able to cope with a certain number of skills at one time? This seems very unlikely in view of the brain’s adaptability. There is definite evidence that Nadia suffered damage to the left side of her brain, and therefore there may well have been compensatory development of intact areas in the right hemisphere, particularly those involved in visuospatial functions. In patients with dementia it may be that, as suggested by Miller et al.2, degeneration of the anterior temporal and orbital frontal cortices decreases inhibition of the more posteriorly located visual systems involved with perception, thereby enhancing artistic interests and abilities.

Inhibitory and excitatory mechanisms seem to be the most likely explanation of these phenomena. Talent in one area may be accompanied by dysfunction in other areas such as social skills, and if one part of the brain is damaged, inhibition of another may be lessened so that a different function is facilitated, as normally underlying various brain functions, there seems to be a delicate balance between inhibitory and excitatory mechanisms. Kapur4 uses the term, paradoxical functional facilitation. The results of a lesion in the brain are not just the loss of a function in a particular area, but the efforts of the rest of the brain to re-establish its maximum potential.

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References

‘Multidisciplinary appraisal of the British Institute for Brain Injured Children, Somerset, UK’

SIR–We are an independent multidisciplinary group from the UK which has recently completed an appraisal of the British Institute for Brain Injured Children (BIBIC) and published the results in a report1. The BIBIC is the largest exponent in the country of the Doman Delacato approach to the treatment of children with neurodisability, which has been criticised widely2 and censured by the American Academy of Paediatrics3. While the BIBIC has made several changes to the original programme it obtained 30 years ago from Philadelphia, the same underlying influences remain strong. We evaluated all aspects of the work of the BIBIC and their families before starting therapy. Nine of these 12 were reassessed after 1 year (of the other three children, two did not continue and one died). Three of the nine children made modest improvements, partly attributable to the programme, three made no change, and three deteriorated directly as a result of the programme.

We felt concerned about many aspects of the BIBIC and made a number of observations and recommendations for change. The BIBIC’s practice of ‘masking’ to encourage rebreathing of exhaled air, thus elevating carbon dioxide levels and developing deeper breathing, was condemned, as was ‘suspended inverted rotation’ which serves little purpose other than to upset disabled children and rob them of their dignity. Excessive amounts of time (up to 8 hours a day) were spent on the therapy, and especially on pattern ing which was inappropriate for most if not all children. Consequently, we suggested drastic reductions to the individual programmes. The BIBIC’s developmental profile for assessments was inaccurate and misleading, although it was used honestly. The part of the programmes devoted to ‘intelligence’ depended on the superficial recognition of words only and denied the rich learning opportunities which come from play. Inappropriate advice was given,
particular for feeding and nutrition, which often had to be relied on by families abandoned by local services. Carers often felt exhausted by the time-consuming therapy and often suffered financially because of it. Nevertheless, they did feel supported by the BBIC and particularly appreciated the local volunteers who came to their houses to help in the programme. We were encouraged by the number of parents who had developed a greater sense of interaction with their child. Many had enlisted the help of the Institute because of shortfalls in local medical and therapy services.

The BBIC has responded positively to the recommendations and we plan to repeat our observations and publish an additional report later this year.

We do feel that some aspects of complementary medicine may benefit children with disability and their families. Nevertheless, it should be subject to the same scrutiny as mainstream provision, to extract the good parts from which we can all learn.

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‘Who is a visually impaired child? A model is needed to address this question for children with cerebral visual impairment’

SIR–The recent article by James Jan and Roger Freeman in this journal highlights the need for an improved diagnostic and interventional approach for visually impaired children. The authors provide a clear distinction between impairment of vision due to disorders of visual input and the problems which arise on account of impaired processing of visual information.

Disorders of the eyes, optic nerves, and chiasm lead to image degradation and visual field impairment. The parameters of reduced visual acuity, contrast sensitivity, colour perception and visual field can all be measured, and recommendations made for educational materials and strategies which fall within such limits of perception. Disturbances of cerebral tissues subserving vision are more difficult to understand and we believe that a model of clinical categorization is needed to classify paediatric cerebral visual impairment in accordance with observations of parents, teachers, and carers. Such a model needs to be consistent but flexible, to allow development and extension.

Detailed history-taking from parents of children with cortical visual impairment combined with careful examination and assessment of large numbers of children, has led us to patterns of visual disability emerging. We believe that these can be helpful for the clinician and teacher, both to understand the problems, and to devise educational strategies which take into account specific difficulties within the realm of visual processing. Figure 1 illustrates the cognitive visual functions which may be impaired.

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Simultaneous visual processing problems are common in children with impaired movement of all four limbs and may, for example, manifest as difficulty in finding a toy on a patterned carpet. Crowding is a clinical manifestation of the disorder and, therefore, a complex visual scene can take time to discern. Such children may read short words easily but can struggle with long words. Enlargement and simplification of educational material, with sequential presentation against a plain background can be recommended.

Depth perception disorders can manifest as difficulty in discerning whether a line across the floor is a step, or whether the ground is elevated. Visually guided movements may not be correctly matched to the surroundings and estimates of the space required to allow action may be incorrect. Such problems are features of dorsal pathway disorders. Accommodation and convergence is required for tracking in the third dimension and can be impaired. In children who are long-sighted, failure to accommodate results in image blur and can even cause amblyopia. Retinoscopy before dilating the pupils is required to detect impaired accommodation and can reveal manifest hypermetropia which is not corrected by the accommodative reflex. The use of spectacles is such cases can give gratifying results.

Figure 1: Cognitive visual functions which can be impaired in children with brain damage. (Reproduced by permission of the Royal College of Ophthalmologists.)
Orientation difficulties occur but are not only visual in origin. Children blind from eye disease can be adept at navigation, while children with posterior cerebral pathology (particularly on the right) may have good acuity but become disoriented and cannot find their toys. In addition, limited mobility and constant supervision do not give opportunities to develop navigational skills. Educational strategies and mobility training, which compensate by using, for example, language or music memory for standard routes, can prove very helpful. A structured, perhaps colour-coded, work station at school warrants consideration.

Problems of perception of movement are common because of impaired tracking, associated, for example, with supranuclear disorders of gaze. Children may consequently prefer TV programmes with limited movement to fast-moving cartoons. Damage to the part of the brain responsible for movement perception (area V5) rarely accounts for such problems.

Recognition of people, shapes or objects can be selectively impaired, particularly in children with occipital periventricular leukomalacia. A child may be able to see a small toy in the distance but unable to recognize a close relative in a group. Affected children may compensate by recognizing voices, shoes, or other objects of reference. Impaired object and shape recognition requires a structured educational strategy.

Visual memory is used for copying tasks, which can prove difficult for children with cerebral visual impairment. In new environments, affected young children may have much worse vision, with impaired recognition and navigation.

Visual imagination is also subserved by the occipital brain, and descriptions given by parents may indicate good language processing, but difficulties in handling imagined visual concepts such as those required for art and design.

An intermittent lack of visual attention is often seen in children with visual processing difficulties. The child may look away from the material, possibly to prevent overload, and may tire rapidly with new material. In contrast, familiarity with the environment appears to enhance visual performance.

Prolonged processing of visual tasks is a common feature. Sufficient time should be given for a child to demonstrate his or her ability. The child's performance speed should be recognized and educational strategies devised accordingly.

Profoundly disabled children may well suffer from any of the above problems but lack of communication and other difficulties can render it impossible to delineate specific deficiencies.

This simplified model is aimed at providing a means of understanding, categorizing, and giving practical advice concerning the range of complex visual problems which are common in children with cerebral damage. Technical terms are avoided and the descriptions accord closely with day-to-day observations of parents, carers and teachers. The problems outlined are analogous to the wide range of visual agnosias described in adults, but impaired acquisition of a cognate function is not the same as loss of an established function.

Most children undergo gradual vision improvement with time, and early intervention programmes can favourably affect visual development. A report by a visual assessment team summarizing the visual abilities and disabilities, with recommendations for developmental and educational material, can be an invaluable adjunct to the child's care plan.

We suggest that this simplified model could form the basis for a more highly developed classification of disorders of appreciation and understanding of the visual world due to brain dysfunction.

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References: