CORRESPONDENCE

The Diagnosis and Management of Dyscalculia

by Prof. Dr. rer. nat. Liane Kaufmann, Prof. Dr. med. Michael von Aster
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Specific Developmental Disorders of Scholastic Skills

Specific developmental disorders of scholastic skills, which include dyscalculia but also dyslexia, are often diagnosed far too late. This can lead to secondary psychiatric symptoms, which can be categorized as secondary neuroses. Ignorance on the part of parents and teachers in some cases will lead to severe humiliation and denigration of such children, including rejection and bullying by fellow students, which over time will result in serious self-doubt and lack of self-worth.

At the hospital where I work we regularly treat children and adolescents who fail at school and psychosocially, although their intellectual capacity is good, because no-one recognized that they had specific developmental disorders of scholastic skills, rather than being lazy, stupid, or obnoxious.

In my opinion, the topic of specific developmental disorders of scholastic skills needs to be broached especially with teachers, so as to enable early intervention and prevent a history of suffering and secondary neurosis.

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Conflict of interest statement

The author declares that no conflict of interest exists.

Blind and Deaf?

The authors of the article were looking for the causes of dyscalculia and corresponding disorders such as dyslexia and attention deficit-hyperactivity disorder (ADHD) only in the center of the brain. They did not question how information captured by reading letters and numbers reach this center: exclusively through the eyes and ears. I am an ophthalmologist and have for many years treated children with dyscalculia, ADHD, and dyslexia. It has been my observation that visual input is disrupted by defective vision and binocular

deficits in the sense of associated heterophoria, where the visual lines of the two eyes do not intersect at the point of fixation.

Double vision and rapid exhaustion as a result of fusional overstrain will inevitably lead to dyslexia/dyscalculia.

How on earth could an unfortunate student, for whom numbers start dancing around in front of his eyes and the lines in geometrical tasks start shifting, possibly meet his/her required mathematical tasks—especially as things will get worse with increasing fatigue, the longer the students tries?

Optimal correction of hyperopia and astigmatism with spectacles, and prismatic correction of heterophoria regularly eliminates the problems, so that educational measures can then help to rapidly work through the sequelae.

This means that careful examination of visual acuity in cycloplegia and analysis of binocular vision—recommended according to the measurement and correction method of Haase and the Pola—are required, and that this should happen before educational or even psychiatric treatment is sought. The retinal neurons are the part of our brain that is mobile and positioned in front of the skullcap, and their importance and function should be recognized accordingly by neuroscientists in their analyses of the problems of dyscalculia and dyslexia.

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Dr Gorzny is the vice president of the international association for binocular vision (IVBV). As such he has received conference participation fees.

In Reply:

As Dr Gorzny rightly states, sensory deficits (for example, visual disorders) should be excluded before a diagnosis of dyscalculia is made. According to anecdotal case reports, learning disabilities are sometimes associated with heterophoria, which Dr Gorzny mentioned. It should be emphasized, however, that many children with a diagnosis of dyscalculia do not have visual impairments and that the main symptoms of dyscalculia—that is, massive difficulties in acquiring basic calculating skills in spite of adequate schooling and good intellectual capacity (1)—can therefore occur independently of vision defects. In this context it is worth mentioning the results of recent psychophysical studies, according to which children with severe

dyscalculia (a PR<10) have reduced sensitivity to coherent motion perception (2). These subtle problems of visual processing are, however, measurable only by using special experimental testing procedures and do not seem specific to dyscalculia (that is, they may be associated with different learning disabilities). Whether such reduced sensitivity for movement perception is associated with heterophoria, as was stated by Dr Gorzny, remains an unanswered question for now.

The letter by Dr Calia refers to psychosocial difficulties, which are often associated with learning disabilities and is a plea for greater attention for these secondary problems, especially in the school environment. We would like to thank Dr Calia for his committed position. The psycho-emotional and psychosocial problems that are often associated with learning disabilities (3) should assume the same order of importance for the diagnosis and treatment planning of learning disabilities as cognitive (learning) disabilities in the narrower sense.

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