

## Dyscalculia, Dyslexia and Maths.

### 1. What is dyscalculia?

The DfE defines dyscalculia as: 'A condition that affects the ability to acquire arithmetical skills. Dyscalculic learners may have difficulty understanding simple number concepts, lack an intuitive grasp of numbers, and have problems learning number facts and procedures. Even if they produce a correct answer or use a correct method, they may do so mechanically and without confidence.'

Dyscalculia is like dyslexia for numbers. But unlike dyslexia, very little is known about its prevalence, causes or treatment. Current thinking suggests that it is a congenital condition, caused by the abnormal functioning of a specific area of the brain. People with dyscalculia experience great difficulty with the most basic aspects of numbers and arithmetic.

Best estimates indicate that somewhere between 3% and 6% of the population are affected. These statistics refer to children who are 'purely' dyscalculic - i.e. they only have difficulties with maths but have good or even excellent performance in other areas of learning.

### 2. Does dyscalculia also affect people with dyslexia?

- Research suggests that 40-50% of dyslexics show no signs of dyscalculia. They perform at least as well in maths as other children, with about 10% achieving at a higher level.
- The remaining 50-60% do have difficulties with maths. Not surprisingly, difficulty in decoding written words can transfer across into a difficulty in decoding mathematical notation and symbols.
- For some dyslexic pupils, however, difficulty with maths may in fact stem from problems with the language surrounding mathematical questions rather than with number concepts - e.g. their dyslexia may cause them to misunderstand the wording of a question.
- In summary, dyscalculia and dyslexia occur both independently of each other and together. The strategies for dealing with dyscalculia will be fundamentally the same whether or not the learner is also dyslexic.

### 3. Typical symptoms of dyscalculia.

- **Counting:** Dyscalculic children can usually learn the sequence of counting words, but may have difficulty navigating back and forth, especially in twos and threes.
- **Calculations:** Dyscalculic children find learning and recalling number facts difficult. They often lack confidence even when they produce the correct answer. They also fail to use rules and procedures to build on known facts. For example, they may know that  $5+3=8$ , but not realise that, therefore,  $3+5=8$  or that  $5+4=9$ .
- **Numbers with zero's:** Dyscalculic children may find it difficult to grasp that the words ten, hundred and thousand have the same relationship to each other as the numerals 10, 100 and 1000.
- **Measures:** Dyscalculic children often have difficulty with operations such as handling money or telling the time. They may also have problems with concepts such as speed (miles per hour) or temperature.
- **Direction/orientation:** Dyscalculic children may have difficulty understanding spatial orientation (including left and right) causing difficulties in following directions or with map reading.

Dyscalculic children may be particularly vulnerable where teachers follow an interactive, whole-class method of teaching as recommended by the National Numeracy Strategy. Asking dyscalculic children to answer apparently simple maths questions in public will inevitably lead to embarrassment and frustration.

#### **4. Testing for dyscalculia**

There is no formal diagnostic test specifically for dyscalculia. However, there is a useful dyscalculia screener for teachers by Professor Brian Butterworth.

More details are available at [www.qi-assessment.co.uk](http://www.qi-assessment.co.uk). This test is particularly useful because it depends very little on other cognitive skills (such as reading, language or short-term memory) or on a learner's educational experience. It makes it possible to assess a child's numerical potential independently of their abilities in other areas.

A critical feature of the test is the time it takes to answer each question in comparison with the average for the child's age group - even young children can answer most questions. This has the advantage of making the same test useable for all age groups.

#### **5. What help is available?**

Dyscalculia is a special need and requires diagnosis and appropriate counselling as well as support away from whole class teaching. However, compared with dyslexia, very little research has focused on dyscalculia and how to overcome it. Consequently, there is relatively little readymade support available.

There are, however, a few very useful publications designed particularly to help teachers: firstly, so that they can recognise dyscalculia, and then so they can adapt their teaching to meet the needs of dyscalculic children. Parents of children with (suspected) dyscalculia may also find it useful to read these publications.

If you are a parent, you may find it helpful to discuss your concerns with the school Special Educational Needs Coordinator (SENCO).

The Dyscalculia and Dyslexia Interest Group:-

(<http://www.lboro.ac.uk/departments/mec/activities/maths-statistics-support/thedyscalculiaanddyslexiainterestgroup>) has helpful links for dyscalculia information and support.

Also useful information can be found on the website of the BDA Technologies Committee (<http://bdatech.org/learning/i-c-t-numeracy-and-maths/>)

**Resources for Maths.**

Books on Dyscalculia/Maths and Dyslexia listed on the BDA website.

BDA New Technologies Committee.

Crossbow Education Limited

- Tel: 01785 660 902.
- Email: [sales@crossboweducation.co.uk](mailto:sales@crossboweducation.co.uk)

Dyslexia Action

- Tel: 01784 222 300

iANSYST

- Tel: 01223 420 101

SEN Books

- Tel: 01924 871 697.
- Email: [info@senbooks.co.uk](mailto:info@senbooks.co.uk) (<http://content.bdadyslexia.org.uk/content/help.php#pd-page-text>)

Sharma- Berkshire Mathematics

- Tel: 0118 948 3476.
- Email [info@berkshireremathematics.com](mailto:info@berkshireremathematics.com)

Unicorn Maths

A structured, cumulative mathematics development programme for the remediation of dyscalculia.