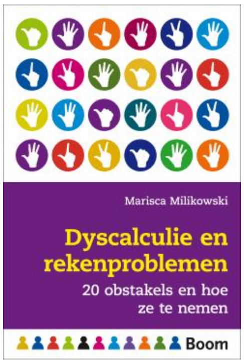
Dyscalculia and problems with Arithmetic



Marisca Milikowski's book Dyscalculia and Problems with Arithmetic (© 2012, 4th printing) is based on her experiences with children who fail in math. The book identifies and explains the many obstacles dyscalculic children meet, and tells teachers and parents how to help them. The book is in Dutch. Here we present an English translation of the introductory chapter.

RECOGNITION

Children with dyscalculia are children to whom the standard laws of learning do not apply. The standard laws of learning say: practice makes perfect. But for a child with dyscalculia, the expected progress will simply not occur, or at least not to any significant degree. This is strange, and people often do not believe it. They think: this child didn't get sufficient practice. This is what I have thought for a long time, as well.

Amber was one of the six children with whom I was working on the Dapperschool in Amsterdam. She was a steady worker, whose dream was to improve her command of mathematics. She was twelve years old, perfectly dressed and ladylike in her behavior.

But when I gave her a speeded addition test, this lady was making child-like mistakes. For 4+3 she **gave** 8, and for 7+2 she gave 10. I observed it in astonishment. I had never encountered anything like it. In the **7th grade!**

'Show me,' I said. '4+3, how do you figure that out?'

She put down her pencil and showed me her hand. 'Normally,' she said, 'I do it like this.' Starting from four, she counted the addition out on her finders: '5, 6, 7.'

'Yes,' I said, 'that is right. But you wrote 8.'

Amber looked at her work and pulled the sheet toward her. 'Can I correct it?'

Amber corrected it, but the correction was only on paper. In her head the things remained as they had been – imprecise. What Amber wanted was to work as fast as the other children; to directly write down the answer and not be bothered with that stupid counting. If the other kids could do it, why could not she? With topography and spelling that worked fine, right? But for her it didn't work with math. If she tried to get the answer without counting it was often wrong by one or two. A calculation like 4 +2 could very well result in 6, but just as well in 7 or 5. Amber could not rely on what her memory presented her with.

'But it's so obvious,' Amber often was told in response to her mistakes. If only it was, she would think. If it were obvious I wouldn't do it wrong. Because Amber was eager to learn.

'But isn't that obvious?' That is what I also thought, the first time I worked with Amber. I was doing a test with her, meant for much younger pupils**.** One of the problems was 40-37. Amber stared at the problem and said: 17?

I could understand how she got there. She first compared the singles and then the tens. The difference between 7 and 0 is 7, and the difference between 4 and 3 is 1. A 7 and a 1 – that had to become 17. Or so Amber thought, and that is what she said. She spoke with a question mark in her voice, because she was *never* sure, if she gave a math answer.

'But Amber,' I said, 'don't you think 17 is a bit large for the difference between 40 and 37? I mean, how could you fit 17 in that small space?'

Amber looked at me **without understanding. '**What do you mean?'

'Well,' I said, 'if you count back from 40, when do you arrive at 37?'

Amber counted back and established that she got there in three steps.

'Quite right. But you said 17. I think that's a bit much.'

Amber grabbed her pencil. 'Can I write down the correct answer now?'

Looking back, I see Amber as a child with dyscalculia. In our practice De Rekencentrale we have become familiar with signals such as these. The errors with the small calculations, the imprecision when the finger counting is abandoned, are clear signals. The laws of learning say: this is supposed to be familiar territory, after five or six years of education. A mistake like 4+3=8 should be *impossible* to make. So, whoever is making them shouldn't be dismissed as stupid, lazy or careless. In such cases, something else is going on.

In the spring of 2011, the long anticipated protocol for dealing with dyscalculia in primary education has made its appearance in The Netherlands. The recognition and acceptance of the existence of something like a learning disorder in simple arithmetic is a milestone. With the recognition of dyscalculia, a first obstacle on the path of many children with problems in this area has been cleared.

Two factors have prevented the acceptance of dyscalculia for a long time.

The first factor is the interpretation of dyscalculia as a sure prediction of failure. Annemie Desoete once wrote an article with the title: Dyscalculia: there is one in every classroom. This is not an outlandish estimation. The percentage of people with dyscalculia is estimated at 3 percent as a minimum: that is one in thirty-three children.

Some people were shocked by this idea. 'Dyscalculia' sounds, they felt, as if a sentence has been passed on that child. As if there would no longer be any perspective.

But the purpose of our diagnostic tests is not to label. The goal is to get the math functioning again. For that purpose it is necessary to know what is going on, and what kind of help and support the student requires.

A second factor that has prevented the recognition and thus also the detection of dyscalculia is the educational model in which *understanding* is the only truly important factor. In this model the development of automatisms is considered to be of lesser importance. One second faster or slower in producing an answer isn't considered to be relevant. But this implies an underestimation of the difficulties that children with dyscalculia are struggling with. To be forced constantly to count and calculate the most elementary number facts, is not an enrichment, but a handicap.

<u>20 obstacles</u>

Dyscalculia is an impairment that appears in degrees of severity. This is the case with many disorders. Another example is ADHD. In case of such a sliding scale we speak of a dimensional impairment. Sandra Kooi explains this in her book about ADHD in adults as follows. ADHD, she states, "is an impairment with symptoms which everyone recognizes in himself now and then, but that are permanent for the one with ADHD, without any control being gained over time. The deficiencies lead to a demonstrably diminished performance and to dysfunction, something that will not happen to someone with occasional problems." The same is the case with dyscalculia.

For a student with dyscalculia, every step forward in math is a Herculean task. What may be obvious or perhaps just a bit tricky for other people, is a real obstacle for that child. In this book I discuss the difficulties hidden in elementary arithmetic. No fractions, just counting up to 100. No long divisions; but simply the memorizing of additions up to 10.

I refer to difficulties on the path of arithmetic as obstacles. Usually these obstacles are inherent in arithmetic itself, of which the structure is more complicated than one may think. Some obstacles are not rooted in arithmetic itself but do influence a child's understanding of it. A weak visual-spatial imagination impairs understanding of arithmetic. And problems with word recognition (as is the case with dyslexia) complicate learning of the tables of multiplication.

The obstacles are presented as far as possible in the order wherein the student encounters them. Each obstacle has its own chapter, each with a similar structure. I present the difficulty or challenge, offer an example from the classroom, and I explain what helps, and what doesn't.