January 2018 Newsletter

A familiar handwriting pattern? – A case of pseudo-neglect

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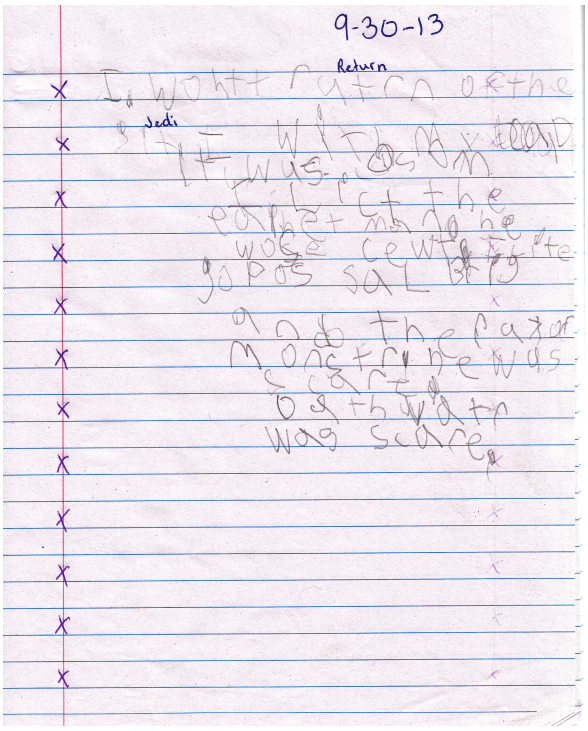

Figure 1: Handwriting of a 7 years old child.

I am writing today about a handwriting pattern that many of you have seen before. This is a handwriting sample from a second grade child with developmental dyspraxia. I want to draw your attention not so much to the dysgraphia that is a typical symptom of dyspraxia, but to the increasing offset that the child uses at the beginning of the line. With each line, the writing shifts further and further from the left side of the page, resulting in the characteristic slanted pattern, despite the fact that the teacher has marked the beginning of the line with an 'x'. This handwriting pattern is indicative of 'pseudo-neglect'. In this short piece, I will explain what pseudo-neglect is, and how it may affect children in everyday life (besides producing these handwriting patterns). In doing so, I will also make some suggestions what can be done to help kids with pseudo-neglect.

What is pseudo-neglect? We know about neglect from clinical neurology. Neglect is a typical symptom that is observed in adults after stroke to the right parietal cortex (the region in blue in the brain shown in Figure 2). As a consequence, the stroke patients have difficulty perceiving sensory input (e.g. seeing, hearing, touch) from everything that's to their left; that is, they are 'neglecting' the left side of space. In the extreme case of stroke, neglect patients eat only from the right side of their plate (not the left), or they put make-up only on the right side of their face (not on the left). In the world of a neglect patient, the left side of space simply doesn't exist (and everything that's on the left has disappeared from existence). Of course, that is not the case in kids with pseudo-neglect. However, pseudo-neglect is a mild form of neglect and implies that the left space is weak and the right side of space is biased. Practically, it means that everything that comes from the left side is more difficult to perceive, while everything

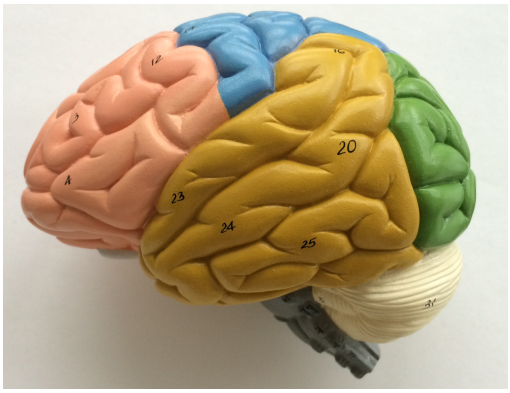

Figure 2: Model of human brain. Green=occipital cortex (vision, back of the brain); yellow=temporal cortex; blue=parietal cortex; pink=frontal cortex.

from the right is more straightforward. We do not know what causes pseudo-neglect in children, but it is likely due to atypical development of the same brain region that is damaged in stroke patients with neglect: the parietal cortex.

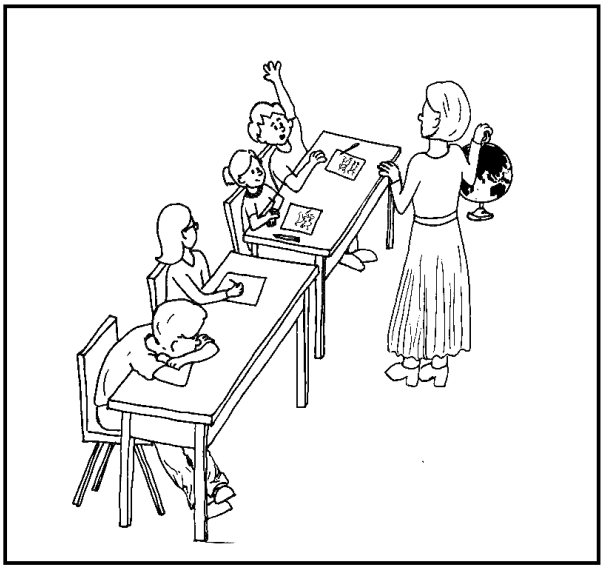

Figure 3: Billy sitting at the rightmost desk in the row struggling to process information from lefthand space.

How does pseudo-neglect affect children in everyday life? Pseudo-neglect affects children in many, many ways – and not only with respect to their handwriting. I will give a couple of practical examples – I am sure you can think about many more. *Example 1: Seating in the classroom, or elsewhere.* If a child with pseudo-neglect is seated to the right in a classroom (in our illustration, Billy is seated at the rightmost end of the desk row), the child may shut down, because he cannot 'read out' the information that is coming from the lefthand side quick and easy enough. If seated on the lefthand side, the problem would be much alleviated! Now, most of the information comes from the righthand space, the space that is more strongly represented in this child's brain. Similarly, if you read together, or work together with your children side-by-side, place them on the left side from you, so that the sensory input comes from the right!! *Example 2: Long multiplication.* A child with pseudo-neglect will have great difficulties learning long multiplication from the left to the right in the number pattern. Moving from the weak left space into the right space will be almost impossible, or at least very difficult. As a consequence, the place values may be easily mixed up. However, working from the strong right space into the left will be much easier, since the right space will provide an anchor for the child to be used in order to move into the weak left space. I know of children who were bewildered about why they could do long multiplication one way, but not the other (so were their teachers). Here you get a brain scientist's explanation!! *Example 3: Invading another person's space.* Due to the fact that the left-sided space is weak, a child with pseudo-neglect has little perspective on that space. The child may lean far to his left into a classmate's personal space in school, which is awkward and strange at first sight, but can be readily explained when you know about the pseudo-

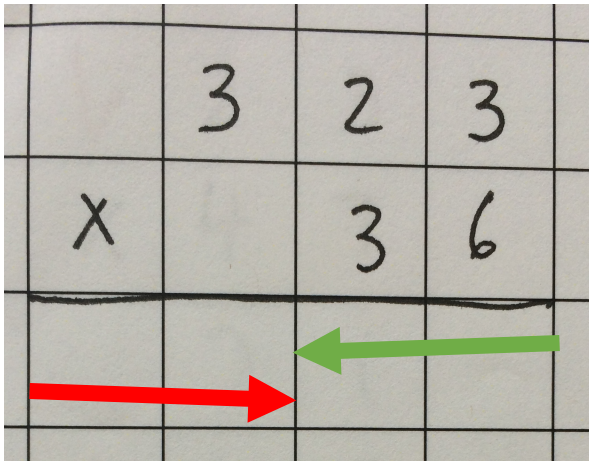

Figure 4: For children with pseudo-neglect, long multiplication will be easier from right-to-left (green arrow) than left-to-right (red

neglect. As a sidenote, my son was expelled from school for such behavior in first grade – he suffers from pseudo-neglect.

How can you help? I gave you already some concrete examples and how to help above. The most important thing is to be always mindful about space and how space is perceived by children with pseudo-neglect. It is a good idea to place a child with pseudo-neglect to the right-hand side from the teacher's perspective, so that the instruction comes from the stronger right part of space. It is also important to give that child more room around him. Math should be taught in specialized ways and with an awareness regarding the weaker left space. And teachers shouldn't get mad, if children seem to ignore their markings (like in the handwriting above) – these children are neither disobedient or odd – they just have a weak left space!! Lastly, tell the kids about it – they need to learn. Once they realize this for themselves, they will find better ways to compensate and will make use of the empowering knowledge about their brain and how it functions.