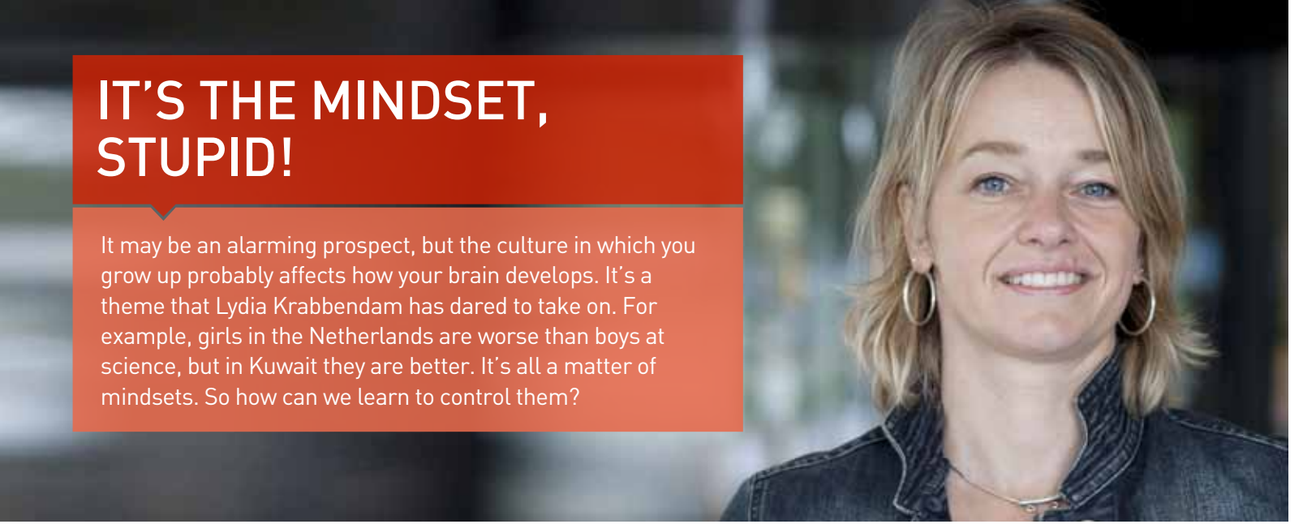

IT'S THE MINDSET, STUPID!

It may be an alarming prospect, but the culture in which you grow up probably affects how your brain develops. It's a theme that Lydia Krabbendam has dared to take on. For example, girls in the Netherlands are worse than boys at science, but in Kuwait they are better. It's all a matter of mindsets. So how can we learn to control them?

By Rianne Lindhout

Are you the same person at work as you are at home? Probably not. You switch between different mindsets, just like everyone else. All kinds of stimuli determine these changes; they happen unconsciously. you may be the boss at work, but not at home. And the culture a child lives in at home can be very different to the culture they encounter at school. If this switch between one culture and another works smoothly, it doesn't seem like anything very special.

But it can have wider implications: on average boys perform slightly better than girls in science subjects. The figures suggest a consistent difference in natural talent that we can do nothing about. But in the Netherlands, this difference between the sexes is greater than in other countries. And in countries like Tunisia, Kuwait, Russia and Kazakhstan it's the girls who come out on top. Could it be that ideas communicated by teachers and parents about what boys and girls are capable of play a role here? In other words, is it all in our mindset? Can we do something about this difference after all?

The mindset is an intriguing phenomenon. Professor of Educational Neuropsychology Lydia Krabbendam unwittingly presents a perfect example of one during our interview: "I can only offer you girlie tea," she tells me apologetically, referring to the rooibos and mint teabags in the box on her desk. They are certainly not my favourite flavours, even though I could be considered a "girlie". But then in some circles it's seen as odd if men drink tea at all. Everyone has mindsets, often beyond their control.

PSYCHOSIS

Krabbendam earned her stripes in Maastricht, where she conducted research into psychosis. It's where her interest in mindsets was born. Where do they come from? What impact do they have? How can you change them? Someone with psychosis suffers from delusions and paranoia. The latter is basically a lack of trust in others, a constant feeling that people are out to harm you. This is also a mindset; one that is only confirmed when people act strangely in response to your paranoid behaviour. You therefore have no reason to change how you act: your reaction has generated its own logic. This insight makes you less likely to simply dismiss paranoia as "disturbed". Together with her colleagues, Krabbendam has combated the stigma that clings to psychiatric disorders, especially psychosis. "We showed, for example, that even normal people hear voices to a greater or lesser extent. And that some people only become psychotic under extreme stress, while others have a predisposition. These discoveries make it slightly less difficult for patients and their families to deal with these symptoms."

NORMAL BRAIN DEVELOPMENT

In 2009, after 14 years of psychosis research, Krabbendam was given the opportunity to investigate normal brain development in relation to education at VU University Amsterdam's LEARN! research institute. This year, her promising research ideas were awarded a Vici grant of 1.5 million euros from the Netherlands Organization for Scientific Research. She wants to demonstrate whether there is a relationship between the culture in which you grow up and how your brain develops. "In an experiment, I want to present stimuli that activate one mindset or another in your brain. This can be done by exposing subjects to certain texts or films, for example, or by giving them certain commands. The beauty of conducting research nowadays is that you are not only able to observe people's behaviour but that you can also look at their brain activity." Because she has serious reservations about putting small children in a brain scanner, she will probably carry out her research on young adults.

> "In an experiment, I want to present stimuli that activate one mindset or another in your brain"

For example, Krabbendam wants to do tests to discover which mindset enables girls to perform better on tasks that are stereotypically associated with boys. By means of the texts, films or commands mentioned above, fleeting changes can be made in the subject's default mindset. Of course, she also wants to know how teachers, for example, can bring about a lasting change to a better mindset in their pupils. Knowing how this switch works and being able to influence it: that's what it's all about.

DANGEROUS

Do not think for a second that Krabbendam is out to prove that boys and girls are basically the same: "I have a son and a daughter. My son is a real boy, my daughter a real girl. There are certainly innate differences. But differences are also evidently shaped by culture and prejudices. This is often the subject of heated debates. Nature and nurture: they both have a part to play. It's unfair and even dangerous to put everything down to predisposition." After all, parents and teachers need to realize they do have an influence on how a child develops. Krabbendam contests the fashionable tendency towards determinism and the argument that brain development is already largely fixed before birth.

Her own two children often inspire her in her work. But she is determined not to do any cute little neuropsychology experiments on them. They have even been spared the famous marshmallow test, which is seen as a predictor of happiness and success later in life. "If I start down that road, there will be no stopping me," Krabbendam fears.

INDIVIDUALISTIC

Krabbendam's focus is not limited to gender differences. She also plans to examine how different cultural backgrounds affect brain development, and the educational potential this holds. In our individualistic Western culture, education focuses on independence and individual achievements. It could well be that such values are of no use to children from a collectivist culture, because they are accustomed to view the community as central. For these children, other forms of motivation might be more effective, such as rewarding group performance.

All this sounds rather abstract. Krabbendam gives some examples: "We're going to translate culture in terms of behaviour. What role does the mother play in the family? How often do you see your family? Is visiting a sick aunt in Paris a natural thing to do? Who do you regard as family? Many Dutch people no longer see cousins as part of their family. In a more collectivist culture, that would be unthinkable." She therefore analyses culture as a collection of mindsets, which manifest themselves in behaviour – a set of structured habits. By being part of a culture, you develop a model with predictions about the world, and they colour your perceptions and behaviour.

EYE OPENER

The neuropsychologist ran up against the limits of her field when she joined the education department as a psychologist. "I was confronted with the question of what knowledge about our brains is actually worth: what does it mean, what can we do with it, what should we do with it? This sparked the realization that we should not see the brain as the cause of everything, but that we should look far more at the interaction between brain and environment."

All that thinking about environment and culture had her skating on thin ice. She wanted to focus on adolescence, but adolescence turned out to be defined differently in different cultures. On a management course at VU University Amsterdam, she met anthropologist Sandra Evers. Krabbendam recalls: "What an eye opener! She has had a very formative influence on the direction of my research. We are sometimes knocked off our feet by the surprising differences between us. Take our measuring methods, for example. We take children out of their own environment to do tests. Sandra and her team sit on a chair in the corner and observe. If we observe behaviour at all, we still keep a tally. We want a number. Sandra and her team don't. They look at the rich context of everyday life. Sandra could sometimes hardly believe her ears. 'What? You stick kids in a scanner?!'"

> Sandra could sometimes hardly believe her ears. "What? You stick kids in a scanner?!"

Krabbendam believes her strength lies in being open to the added value of other disciplines. In Maastricht, for example, she worked with economists to measure complex social processes, such as trust. "Their insights can help advance my own field. As long as you have the attitude that you can learn from each other, you can cope with major differences in vision and approach. Sandra and I have a lot of fun during our meetings."

MISSION

Krabbendam feels right at home at VU University Amsterdam. "Universities don't always encourage cooperation with other areas of research," she says. "At VU University Amsterdam they do. Our research aims to provide concrete tools for teachers, and that's part of the mission of our department. It's an aspect that appeals to me." The icing on the cake is that the university also devotes special attention to students who are the first in their family to enter higher education. "They too have to deal with a huge cultural shift. It all fits together nicely."

In her highly readable inaugural speech (only available in Dutch) Lydia Krabbendam takes you on a journey into her work. Find out why you can't tickle yourself!

"If you expect a child to do well, it more often turns out to be true."