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BCN - SCHOOL FOR BEHAVIORAL AND COGNITIVE NEUROSCIENCES

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university of groningen

Interview with Niels Taatgen, recipient of the European Research Council (ERC) Starting Grant

This year, Niels Taatgen received a European Research Council (ERC) Starting Grant. These grants are awarded to researchers with a convincing track record of research in the field who show great promise. The grant provides Taatgen with 1.5 million Euros to finance a five-year project. I had the chance to meet Taatgen and talk about the project and his plans.

Taatgen has a degree in computer science as well as psychology, both obtained at the University of Groningen. Instead of proceeding to a PhD position right away, he got involved in setting up an educational program, then called technical cognitive science. The program is now known as artificial intelligence. When the program became more and more successful, Taatgen started a PhD project on the side and obtained his degree in 1999. He then became an assistant professor at the department of artificial intelligence.

In 2003, Taatgen moved to Pittsburgh to work with John Anderson at Carnegie Mellon University. He stayed for six and a half years before returning to Groningen. Taatgen has always been interested in cognitive modeling, especially modeling the cognitive processes underlying intelligent behavior. The goal is to make sure the model exhibits the same overall behavior as humans, which is usually tested by fitting behavioral data (e.g. reaction times). More recently, cognitive models have also been used to interpret neuroscience data (e.g. EEG and fMRI) and Taatgen expects some interesting results to come out of that line of work.

In the past, Taatgen has done work on human multi-tasking. Together with Dario Salvucci (Drexel University) he developed the threaded cognition theory that provides a general framework to make predictions about what kinds of tasks people can do simultaneously and which they cannot. The work that is financed by the ERC grant extends this, and aims at expanding our understanding of human multi-tasking.

Previous research has shown that the tasks that are used to study multi-tasking often are not suitable. In a classical experiment, for example, people would be driving in a driving simulator and then told to dial a number and make a phone call. However, this is not a very realistic setting since people usually have some control over when to engage in multi-tasking and the classic experiments do not consider this aspect of the process. That is why one of the main questions of the grant project is under which conditions people decide to engage in multi-tasking.

›› CONTINUATION INTERVIEW NIELS TAATGEN

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Another important aspect is to disentangle concurrent and sequential multi-tasking. Concurrent multi-tasking means that one actually does multiple things at the same time whereas sequential multi-tasking means that one alternates between tasks. While concurrent multi-tasking largely depends on the available cognitive resources, sequential multi-tasking seems to be more about strategy. An interesting question is how rational people are in sequential multi-tasking and whether they can optimize their performance when different tasks have different priorities. One experimental setup that has been used by Taatgen's group, for example, requires people to write e-mails while being interrupted by a flashing chat window that tries to grab their attention.

This e-mail and chat multi-tasking set-up also emphasizes the need for natural tasks. The problem with many classical multi-tasking experiments in psychology is that people only learn them when they get into the lab. As a consequence, people seem to learn both tasks as if they were a single task, which means that one might not really study multi-tasking. This could be avoided by extensive single task training but such training would require a lot more time. Using natural tasks that people already know and treat as independent tasks seems like a more elegant solution.

In summary, Taatgen not only wants to find out how people multi-task but also when. These questions will be investigated using a mixture of cognitive modeling, and behavioral and fMRI experiments. The grant not only provides money for these methods but will also be used to fund two (or perhaps three) PhD projects and a post-doc position within the next five years. So, if you are interested in working on human multi-tasking, you should get in touch with Taatgen and apply for one of the up-coming positions!

FLORIAN SENSE

Introducing new editors

› Florian Sense

I grew up in and near Bremen, Germany, and moved to Groningen in the summer of 2007 to study psychology. I soon developed an interest in cognitive psychology and chose a computational modeling project for my Bachelor's thesis. When I first heard about the BCN research master, I realized immediately that the C-track perfectly matched my interests. I was lucky enough to be admitted and started the BCN research master in 2010. During one of the introduction lectures, someone from the newsletter was looking for people who would be interested in writing for the newsletter. I have never done anything like that before and thought it might be an interesting experience. And I was right! The newsletter is a great opportunity to get to know more about the BCN community and get in touch with people to learn more about their research.

› INTERVIEW WITH ELLEN NOLLEN
RECIPIENT OF THE EUROPEAN RESEARCH COUNCIL (ERC) STARTING GRANT

Protein damage control: regulation of toxic protein aggregation in aging-associated neurodegenerative diseases

First of all, congratulations on receiving the ERC Starting Grant.
Thank you.

What kind of research are you going to do with the 1.5 million Euros?
A couple of years ago we identified a gene that appears to play an important role in the processes that are related to Alzheimer's and Parkinson's diseases. If you lack this gene, those processes are delayed. We have found this gene in very primitive organisms (C. elegans) in models for neurodegenerative diseases. With this grant we will try to discover the molecular function of the gene. We would also like to know how the human counterpart of the gene functions in humans.

Is the gene called moag-4?
Yes, moag-4 is what we call it now, but we have found more moag genes with a similar function. This was only the first gene for which we analyzed its function.

How did you find this gene?
We found it in a genetic screen for suppressors of protein aggregation in C. elegans. We modelled one of the hallmarks of age-related neurodegenerative diseases which is the clustering of disease-specific proteins, the so-called aggregates. We were looking for genes that would suppress the aggregate formation if they were taken away. That is how we found moag-4. Moag stands for modifier of aggregation. We have found nine of these genes and have so far worked out one. But part of the proposal is also to find out what the others do and whether they work together with moag-4.

Why do you think your research was selected for this grant?
I can only say what I found in the review reports of course. People found it innovative to look for genes that normally aggravate or drive aggregation, because usually in this field people are looking for genes that suppress aggregation in the cell or degrade the proteins. It was not a priori certain that the genes we were looking for would exist. Moreover, this research is important because as people become older and older, more and more people get neurodegenerative diseases. So far, there is still no cure for these diseases and we also do not really understand the pathophysiology. So if we understand how it works, we may also be able to develop therapies. That is the societal part, but I think mostly on the scientific part, people thought it was innovative and nice to take it from a worm to a human cell. It is a personal grant based on the track record 'so far', so they believed that I could do it with my team. The grant is said to only be awarded to 'excellent teams'.

Could you explain a bit more how you extrapolate findings in the worm C. elegans to humans?
This is the risky part of the proposal. We are going to take skin biopsies from people and change the skin cells into pluripotent stem cells. These cells can be differentiated in all kinds of cell

›› CONTINUATION INTERVIEW ELLEN NOLLEN

types including neurons. Many people in the neurodegenerative disease field do this and take cells from Parkinson's, Huntington's or Alzheimer patients, but what we want to do is develop assays. Our research really focuses on the first steps that go wrong with the disease proteins. The proteins change their three dimensional structure and then they lose their function, but they also sort of gain a function because they fold in a way that makes them toxic. We want to know what is the first step, what goes wrong and why does it make the protein toxic? We will try to develop assays with these patient cells with which we can visualize the initial steps of these proteins changing their shape. We have all kinds of fluorescent tools we would like to try, which may not work. This is thus risky, but you have to take some risks because if you can develop these assays you can visualize the toxicity and the folding in the cells. Then we can see if the modifiers we have found in worms also drive these conformational changes in human cells. In the future, it might be possible to use these tools in drug development.

Why do you use skin cells?
It is impossible to get diseased brain cells from patients. You can look at dead brains, but we want to look at living cells. It is possible to obtain skin biopsies, so we will try to use skin cells and turn them into neurons.

Do you expect to find new treatment targets for drugs against neurodegenerative diseases?
I cannot say we expect that, but we do hope to find targets.

If you do, are you going to develop it further yourself?
What we do now is test if the mouse orthologs of moag-4 have the same function. That will bring us already a little closer to humans. If that works, we will probably collaborate with people from industry to develop a drug or take it a step further again by looking for chemicals that interfere with the gene function. I do not think we are going to do this ourselves. However, we are already solving the molecular structure of the protein; we are almost done with that. If we have that, we could try to predict what kind of molecules would fit into the structure and could inhibit its functions, so we will provide all the fundamental knowledge for other people to develop drugs. We have some contacts with companies already through other projects, so we will keep in touch with these people. It is exactly what they do; they take a structure and see if they can make a drug. So if we find promising targets, we will probably work with them.

How did you manage to create your own C. elegans research team?
Ah, that developed by accident, of course. First, I was in the US as a Postdoc in a lab where they had just started to work with C. elegans. Together with some people, we set up a C. elegans lab but after two years, my husband wanted to move back to the Netherlands. Then I thought 'oops, my research is not done yet'. So I searched for opportunities to continue my research in the Netherlands. There was one big C. elegans lab belonging to Ronald Plasterk, so I asked him 'Can I come to your lab, but do my own research?' I also said that I would try to get my own money for it. We agreed that if I would get funding, I could work on my research in his lab 100% of the time. If I would not get funding, I could work on my research for 50% of the time and on his research for 50% of the time. Then I got the VENI grant so I could do my own studies. I started by myself, but when we got another grant I was able to hire a PhD student. Then I was asked to move here (to the UMCG) and took my PhD student and a technician from the Hubrecht lab in Utrecht with me. That is how it grew and I kept on writing for funding and hiring more people. That is the way it goes.

It sounds very easy.
It was not so easy. In the beginning, it was not easy at all. In the first year I was here, most funding applications were rejected. I did not get funding for all kinds of reasons, for instance a publication gap, but after a while when the first publication came out, things started running. So, it was not at all easy, but most of the time it was fun.

Do you like to arrange things?
Well, that is new when you start as a PI (principal investigator); you have to do many things you have never done before. I like it a lot, especially when I keep in mind that it is for the science. I try to keep the research part of my research group central to everything I do,

› My research is not done yet.

even teaching or having this interview is done with our research in mind. As long as I keep in mind that it is for the best for the research, I enjoy it a lot.

So, the real science is the most fun?
That is a fun part, but also writing for grants is fun, because you think about what you can do next. If you think you stand a good chance, it is nice to do it and if you get the grant it is even better of course. I am very happy with the ERC grant, because it means that for at least a year or so I am not going to write for any funding. I want to set up these new research lines. I like it all more than I thought before.

Are you going to hire extra researchers with the ERC grant?
Yes, sure. I am going to hire four people. There are still positions open and I am particularly interested in males. I tried to recruit males from open applications in the past, but they all seem to have a job now. It does not matter if someone is male or female of course, they just have to be very good, but I prefer to have a sort of balance in the group. I think it will also be good to have some men. This is different from when I was hired, because a Rosalind Franklin fellow could only be female.

Are you looking for PhDs or Postdocs?
I hired a Postdoc with the ERC grant, but he may get his own fellowship, so then I can hire another one. I am looking for three PhD students as well. I am also always interested in good students who would like to do an internship here. Actually, there were three or four students on the article about moag-4. They were really good and without them we would not have been able to do this, so I am always happy when good students come here.

Is there anything else you would like to share with BCN?
Well, of course I hope that my research will be successful -- it is quite challenging. I would like to mention that I work together with some people from BCN. Sjef Copray will be involved, because he has the iPS methodology already up and running. It's really nice that we can collaborate with him. I also work together with Berry Kremer and Teus van Laar. They are neurologists and Berry Kremer is also the director of the Research Institute BCN-BRAIN. This will be the team with some more people.

I would to like to wish you good luck with your research and thank you for this interview.

■ DAFNE PIERSMA

Introducing new editors

› Dafne Piersma

In September 2010, when I first started as a BCN master student, I was recruited for the BCN Newsletter. I have always liked to write, but before I usually wrote in Dutch. When I was little, my sister and I wrote our own magazine about animals. Before joining the BCN Newsletter crew, I wrote and edited for my student table tennis association's magazine. However, I figured that practicing my English writing would be more helpful for the scientific career I hope to have. Also, it is very much fun to interview BCN people and get to know the BCN community. Thus, I will keep writing for the BCN Newsletter and hope to become a PhD in Groningen next year!

Interview with Jochum Prop, Secretary of Institutional Animal Care and Use Committee (Dierexperimentencommissie)

What is your personal history?
The most important job I do as a secretary is to make sure that the DEC is smoothly organized. At that time clinical transplantation wasn't done yet. So we investigated the immune response after transplantation. About 20 years ago I was invited to become a DEC member. Why I was invited I don't know! I thought it was an interesting job. Back then it was only a small job. There were not too many applications and they were rather short. This is in contrast to the application procedure nowadays.

What is your role as the secretary of the DEC?
The most important job as a secretary is that I have to make sure that the DEC is smoothly organized. The main thing researchers are concerned about is getting their approval as soon as possible. So it is important that we make clear to researchers what we want from them and clearly express how long the approval process will take. My main job is to streamline this process.

How often does the DEC meet?
The DEC has a full DEC committee, which consists of eleven people, and a small DEC committee, which consists of 3 members. The full DEC committee tries to meet every month, but sometimes we meet only 11 times per year, because of the summer break. The small DEC committee meets twice a month, but can only deal with minor adjustments in the DEC application.

How long does it take to evaluate the average application?
For a researcher it takes 3 to 4 weeks to hear from the DEC. We need the time, because first there is a screening by one of the animal welfare officers, to see if there are obvious mistakes e.g. incorrect anaesthesia or blood sampling. Then the secretary has to collect all the applications, that takes a few days. They are submitted to the DEC members, who have to read it, and that takes a week. After the meeting it takes about a week for all the decisions to be formulated and sent to the researchers. So if you're lucky you can get it the next day. If you're smart and you're in a hurry, you can ask if you can get the answer soon. That can save up to a week.

How much time it takes for us varies, because the number of applications can differ. Sometimes it is ten, but sometimes it goes up to as many as thirty. We make sure that each application is judged carefully.

What are the most commonly made mistakes you have encountered?
I can't really say that there is a specific issue at the moment. In the past, mistakes in the experimental protocol were most commonly encountered, but nowadays these are filtered out by the animal officers. That saves us and the researchers a lot of time. Now, I think, the most common mistake is a good description of the project. At the end of each application we ask

›› CONTINUATION INTERVIEW JOCHUM PROP

for a summary about the project, and a few things should be mentioned in this: background information, experimental design, and why this experiment is of importance. And it is surprising to see how many researchers forget to describe their own experiment. They describe in length how important their research is and what the scientific or clinical profit might be. But there is no animal in the summary. Summaries like those, we cannot accept. You need to describe what you will do with the animal. Nowadays, selected summaries are published in the annual report of the University, but in a few years time, all of them will be published. Therefore it should be a decent summary.

But if you ask: "What kind of applications does the DEC find most difficult?", I would say that many researchers are not very good at explaining what their research is about. This is not what you would expect, because in the end everybody has to write a decent publication. The difference of course is that in a DEC application you don't have to explain it for your fellow researchers but for a more general audience. Most of us are academically trained people. But if you're explaining your project in jargon, it is impossible for us to understand.

Another type of error that we encounter are inconsistencies. Probably because researchers changed their mind while writing their application. It has happened that people start to apply for mice and later talk about rats. And then they have to explain what they really want to have.

Do you judge an application on a scientific content?

No, we are not a scientific committee. But we have to make sure that the science is validated. We look at who has reviewed it: "Where does the funding come from?", "By whom is it reviewed?" So we are depending on other organizations to do that. If we have doubts about the scientific content, we can submit it to an external reviewer who gives advice. But we will always contact the researcher first and ask if he agrees. However, this only happens a few times a year.

What will happen in the future with regards to legislation?

There is a new directive for legislation coming from the EU. At the moment the effect of this new directive is unclear for the Netherlands. Some people say we have to change a lot, and others say the organization of the DEC is already according to this new directive. For our DEC, most of the procedures are ok. We think that our procedures are exactly what is proposed by the new EU directive. But it might be that the procedure will be different in an unpredictable way. It also depends on what the ministry decides, what politics decides, but also what researchers want. Our DEC has been really active. But what is missing is a response from the research community. The new law could have a significant impact on animal research, therefore I think the animal research community in the Netherlands should become more active in this process!

INGE RICHELLE HOLTMAN

Introducing new editors

› Kashmiri Stec

I started a Ph.D. in Communication Studies in March 2011. My research looks at how people use space to facilitate communication and share perspective. This means that I'm interested in how people organize the spaces around them and use that organization to structure communication, as well as in how co-speech gesture facilities expression of viewpoint. I joined the BCN Newsletter Staff as an English-language editor, so if you find any grammatical mistakes, you can blame (or thank) me.

› BCN NEWSLETTER MASTER COLUMN

The present and futures of three second-year BCN master students

In the second year of the BCN research master, students find themselves with a lot of freedom. Three courses have to be completed with at least one from another track, but every student can choose for themselves what they feel like doing. After the three courses are completed, the major project starts, and after conducting research and writing a thesis, we all hope to graduate in the coming summer. The final year always finishes before you know it, so we find ourselves already thinking about life after graduation.

This "master" column will inform you about the choices and plans of three second-year BCN master students. Anuka, Florian and I are following nine different courses, which nicely reflect the number of options available to students. Anuka chose the course *The molecular biology of aging* to increase her knowledge about how cells grow and to investigate why some neurons experience neurodegeneration. At the moment, she studies *Behavioural Pharmacology*, which teaches her about animal models and the use of their behaviour in the development of new drugs. Her last course will be *Neuroanatomy*, which is a course Florian will do as well. It will deal with the anatomy and development of the human brain and its relation to the brains of research animals. This information is very handy for Anuka, who is planning to work with animals and imaging techniques. For Florian, this course is a great opportunity to personally work with the human brain instead of on a computer, and this will improve his anatomical knowledge very well. Another course Florian is following, *Function and evolution of behaviour*, will give him insight in what the behaviour (B-) track is doing. His third course is *The philosophy of neuroscience*, because he likes to think about what neuroscientists do and if the methods we use are actually useful or have too many limitations. I myself follow four different courses: *Drug development*, *Language development*, *Neuroendocrinology of behaviour* and *Neuropsychology and psychiatric disorders*. Since drug development is an important goal of many scientists, I wanted to understand the drug development process better. I also love to increase the knowledge I have from my minor in *Language sciences* with the course *Language development*. The *Neuroendocrinology* course will be about hormones and the brain and I believe the importance of hormones is often underestimated, therefore I will pay attention to this intriguing topic. My last course is about psychiatric disorders, because I have always been interested in such illnesses.

For my major project, I will profit from this knowledge while working at the Neuroimaging Center. Here, I will investigate what happens in the brain after a break-up using fMRI. Do you want to participate as subject in my project? Please send an e-mail to onderzoekliefdesverdriet@gmail.com. We are looking for Western, right-handed people who broke up with someone less than six months ago. The age brackets are 18-25 and 35-45 years old.

As for the others, they will not stay in Groningen. Anuka will go to the Max Planck Institute in Cologne, Germany to do research on neuronal stem cells implanted in rats. She will follow their viability and functionality with MRI and bioluminescence techniques. She is very motivated, because the objective is to determine if treatment with stem cells is successful in stroke animals. Florian will travel all the way to Syracuse University, New York, to work with Brad Wyble on a new version of the eSTST model. He will focus on modelling reaction times.

After our major projects, we hope to get PhD positions. Anuka has not looked for a position yet, but Florian has already submitted an NWO Research Talent Grant proposal to expand his major project into a PhD project at the department of psychology here at the University of Groningen. If he will not get the grant, he will look for another PhD position in the field of computational neuroscience and cognitive modelling. I might also like to extend my major project into a PhD, but I still have to get my first experience with human subjects to know if it is really what I want do. Like Anuka, I am still open to many options.

DAFNE PIERSMA
FLORIAN SENSE
ANUKA MINASSIAN

First Summer School on Auditory Cognition

In early July, the department of Artificial Intelligence (AI) at the University of Groningen organised the first summer school on the topic of Auditory Cognition. Together, seven of us (including the head researcher of the Sensory Cognition research group, Dr. Tjeerd Andringa) worked to make this event possible.

I became familiar with organizing summer schools while studying medicine, where there has been an annual event for more than a decade. The concept is simple: Find a diverse bunch of international students willing to give up part of their summer holidays to learn challenging and new material on a specific topic. Arrange accommodation, meals, social events and of course a tight educational programme from expert speakers in the field. What we get in return is an amazing social network of like-minded students.

I thought it was time the Faculty of Mathematics and Natural Sciences started its own summer school. Tjeerd was looking for a way to bring the diverse disciplines concerned with the field of Auditory Cognition together. We soon found a co-organizer when Prof. Susan Denham, the head of Cognitive Neuroscience at Plymouth University, heard about our plans. Aiming for PhD students in the field of Auditory Cognition, we planned on keeping the level of knowledge and discussions as high as possible. This way the participants could learn a lot even from each other. Our 28 chosen participants turned out to be even more diverse than we had hoped for, ranging from biomedical engineers to building architects specialising in auditory design.

In order to provide participants with an authentic Groningen student experience, we organized accommodation in a Selwerd student flat. We also got bikes for them to use during the week and planned social events, like a power point karaoke (in which participants had to present an improvised lecture on novel topics such as 'the geometry of rope tying) and an international cooking event at the headquarters of student society Dionysos. During this dinner, everyone went to great lengths to provide samples of their gourmet heritage, from homemade arepas (cornmeal pancakes from Columbia) to Coca-Cola Chicken from China. It was heartwarming to see how much effort people went to in order to share their love of the food of their home nations.

The first lecture of the educational programme covered the healthy and impaired auditory system, and was given by Dr. Deniz Başkent, a professor at the Audiology Department of UMCG. The lab session comprised techniques used for auditory testing, including experimental paradigms used in auditory cognition experiments with hearing-impaired listeners. After this, group projects were assigned: and participants had 5 days to brain storm and prepare their presentation on topics like 'Sonic environments to grow up in'. But with a heavy educational and social programme, the pressure was on.

Prof. Roy Patterson from Cambridge University thoroughly engaged us with his lecture about his development of auditory images. In the lab session, we explored the freely available AIM software which generates, for example, glottal pulse rate, vocal tract length and display size-invariant representations of messages communicated at the syllabic level.

Saturday was reserved for a group outing to Amsterdam. The evening was spent at cTaste, an incredible fine dining 'in the dark' restaurant. The removal of sight heightens the experience of taste, texture and smell of the food and wine. Blind waiters provide excellent service, but also some amusing Monty Pythonesque moments as plates and cutlery suddenly vanished and we tried to guess the menu. As we discovered, kangaroo presents as a slightly gamey lamb taste

›› CONTINUATION FIRST SUMMER SCHOOL ON AUDITORY COGNITION

with the texture of horse! Not for the faint of heart, or for those of a claustrophobic disposition, but an enlightening escapade as one battles to focus against overwhelming background noise and sensory overload.

Prof. Susan Denham from Plymouth University gave a very interesting lecture concerning neuromorphic models of streaming. Building on the work of Bregman's' Auditory Scene Analysis with her computational background, Sue's current work looks at the competition between rivals in auditory processing and the flexibility of perception by modeling sequences in CHAINS, which considers perception in terms of stochastic perceptual switching.

Dr Robert Mill, also from Plymouth, elaborated, explaining more fully how the model differentiates between the factors of exclusivity, inevitability and randomness in order to ascertain why the (auditory) world appears stable.

Tjeerd presented his work regarding real world sound perception, questioning traditional approaches to listening and differentiating it from hearing. He also explained the process of creating the verbal aggression detection system for unconstrained social environments by his company Sound Intelligence. Research enabling identification of a particular cohort of frequencies (which even actors couldn't match for intention of violence) has been implemented in stations around Holland to great effect, generating philosophical questions concerning the slightly disconcerting 'big brother' overtones.

Dr. David Prior, an electroacoustic composer and ambisonic artist, also lectured. Combining art and science, David founded Liminal with his creative partner Frances Crow and won the PRS new music award with The Organ of Corti. David organized a 'sound walk' through the center of Groningen which included walking around our familiar streets blindfolded. As could have been expected, nothing seemed familiar anymore once sight was lost and we had to rely on our hearing to guide us through town.

In the end, the summer school turned out to be a fruitful event for all of us. Most participants left with new insights into their own research topics. Some even said they had come up with a whole new different way of approaching their own work. A lot of different knowledge was combined to form a clearer picture of the interdisciplinary field of Auditory Cognition. After noticing the enormous amount of knowledge exchange on all these different views, I can recommend a summer school for any discipline, especially for broadly defined fields.

For more information, please e-mail me: A.M.A.Kangur@rug.nl.

AYLA KANGUR, STUDENT IN ARTIFICIAL INTELLIGENCE,
UNIVERSITY OF GRONINGEN
WITH HELP FROM DAWN ROSE

› ALUMNUS COLUMN

Scientific American

I have always been interested in mental health research. I was very fortunate in getting the opportunity to do a Ph.D. at the University of Groningen, where I explored an animal model of schizophrenia using neuropharmacological principles. After I graduated, my husband, Tony Vladusich, decided to take a postdoc position at Boston University in the U.S.A. Wanting to pursue my interest in schizophrenia research, I also took a postdoc position at the Department of Cellular Neuropathology at McLean Hospital. Here I investigate the underlying molecular neuropathology of schizophrenia by examining gene alterations in neuronal populations captured from postmortem brain tissue. Conveniently the Harvard Tissue Resource Center, which provides these postmortem schizophrenia brains, was located at my workplace.

McLean Hospital has been a psychiatric institution for over 200 years. The Mailman Research Center houses some of the biggest names in Psychiatry. Bruce Cohen, Joseph Coyle, and Francine Benes, to mention a few, were now just down the hall from me, and I was definitely a little shell-shocked when I first met these highly regarded researchers. (Speaking of famous people, I have to make a small note that Angelina Jolie and Winona Rider starred in the movie "Girl, Interrupted", which was based on events that took place at McLean Hospital – within the very same halls that I was roaming on a daily basis.)

Research as a postdoc at McLean Hospital is somewhat different from what I had experienced during my time as a Ph.D. student. As a postdoc, we are invested both experimentally and intellectually in our projects and are responsible for nurturing them to their full potential. We therefore have a lot more responsibility for the integrity of the project than we did as students. Instead of a supervisor, there is a principle investigator, who is the one paying your salary. However, like a supervisor, he/she is also your mentor for your long-term career goals and aspirations. The downside is that in order to further the project and your career, you find yourself working almost constantly. I have even woken up from dreaming about how to make my project better, and thinking about what the next project might be. It's a constantly evolving process and a serious lifestyle choice, but it can lead you on a path towards a prestigious academic career in science.

During my time at McLean Hospital, I was also fortunate enough to have the experience of collaborating with the industry sector. Together, we optimized a protocol for the laser-capture microdissection of neurons in combination with microarray profiling. After achieving this goal, I advised others who wanted to use this method in their studies by giving lectures at conferences and workshops. This took me to other cities within the U.S., including Washington DC, and via webinar to Sunnyvale, California. The method was also published in the first online video journal, JOVE (Journal of Visualized Experiments). This was an interesting experience, which included writing up the protocol, getting it into script format (including video shots and animation), and then eventually filming it. On the day of filming, the journal sent a cameraman to my lab to record the techniques I used in the experiment. I even had to memorize lines introducing my work and perform the experiments at different angles to maximize visualization for the camera. It was all very exciting!

After four years at McLean Hospital, I have decided to take a short hiatus from research. I want to spend more time with my now 5-month-old daughter, Amelia, and perhaps explore other options in science. For instance, I would like to become a college lecturer and share what I have learned and experienced. Or perhaps work at a non-profit institution negotiating contracts to fund research that strives to improve the lives of others. The possibilities within science are endless! Don't be scared to follow your dream and see where it may lead.

■ CHARMAINE PIETERSEN

Research exchange with the Donders Institute in Nijmegen

Although there is nothing beyond Groningen, researchers in the Randstad tend to think Groningen is too far away, thus subtly inhibiting potential research collaborations. The board of the university has therefore decided to look for a stronger collaboration with other "peripheral" universities in the Netherlands. The most obvious candidate for such collaboration in the context of BCN is the University of Nijmegen, where the Donders Institute makes a natural partner.

On 20 October a group of BCN members visited Nijmegen for the first round of exchanges. The Donders Institute organizes its school around four themes, (1) language and communication, (2) perception, action and control, (3) learning memory and plasticity, and (4) brain networks and neuronal communication. Our exchange was organized around the same four themes. The perception, action and control part of the meeting started with a presentation by Ruud Meulenbroek from Donders, who, after giving an overview of the PAC theme, presented his research on End-state comfort and Joint Action. End-state comfort refers to the fact that humans have a preference for executing motor actions in such a way that the movement ends in a comfortable position. For example, if you turn the volume knob on your stereo to the right, you start by turning your hand to the left, putting it in an uncomfortable position, and then grab the knob, and turn it right, ending in a comfortable position.

If people have to work together (joint action), the interesting question is whether people recognize this pattern in their coworker, and adapt their own behavior to optimize the exchange. An experiment in which subjects had to undo a knob turn just made by a confederate confirmed this: if the confederate ended the knob turn in a comfortable end-state, the subject would be faster than in trials where the confederate would end the movement in an uncomfortable state.

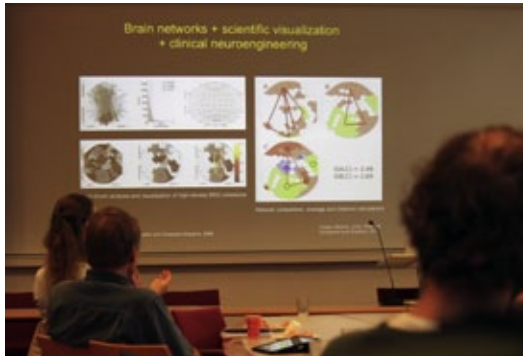
The remaining four talks were by BCN members. Most of us tried to give an overview of research within BCN within our immediate vicinity: Pim van Dijk and Deniz Başkent gave a nice overview of the hearing research at the UMCG, I highlighed the various topics within Cognitive Modeling and Artificial Intelligence, and Natasha Maurits presented research in Neurology with a focus on clinical neuroengineering.

Finally, Frans Cornelissen presented interesting research done in collaboration with Jan Bernard Marsman in which they tried to tease apart eye movements controlled by the environment (e.g., saliency) from more controlled top-down influences.

Apart from the research presentations, there were various individual talks between researchers, which we hope will lead to fruitful results and future collaborations.

On a separate note, I thought it was interesting to compare Donders to BCN. Both consist of a horizontal collection of research groups that are otherwise embedded in more vertical structures within the university and the hospital (they have their DCCN, DCN, etc. research institutes, which superficially resembles our collection of abbreviations like CBN, NIC, etc.). A strong point is that they seem to have a bit more organization within the four themes, and a monthly day in which they all meet (the Dondersdag, on which day we met). Assuming that such organization does indeed work, perhaps these are some ideas to think about for BCN.

NIELS TAATGEN, ARTIFICIAL INTELLIGENCE



Exploring *Ageing of the Brain...*

In 2008, the Universities of Göttingen (Germany), Uppsala (Sweden), Ghent (Belgium) and Groningen joined forces to booster initiatives in research and education, and to stimulate student and staff exchange. One year later, the partners within this strategic partnership, which is also called the U4 University Network, created five thematic clusters: Humanities, Medicine-Life Sciences, Social Sciences, Law, Science and Technology, and Institutional Management. In 2010, during the 3rd Rectors' Meeting, the rectors launched the U4 Graduate Schools Programmes, which grants mobility of PhD students within the U4 Network. Within this network, there are now several joint initiatives between partner universities both on the master's and PhD level.

Last year, the Medicine-Life Sciences cluster adopted 'Healthy Ageing - Ageing Brain' as their research focus of interest. To facilitate discussion on this topic, the cluster organized a U4 symposium, 'The Ageing Brain', in Groningen last spring. The aim of this meeting was to define a research focus and to develop a joint research program (8 joint PhD projects). Within this cluster, several joint PhD projects were recently formulated and prioritized.

On 22nd and 23rd of October, 2011, the 4th U4 Rectors' Meeting was organized in Uppsala, Sweden. During this meeting, participants within the five clusters presented and discussed progress made in the last year. Participants within the Medicine-Life Sciences cluster presented 7 new joint U4 PhD projects. In addition, they discussed the establishment of a multilateral graduate school on 'Healthy Ageing - Ageing Brain'. They also discussed the writing of an application for the 'ERASMUS MUNDUS - Joint Doctorate Programmes'. The focus of future research within the Medicine-Life Sciences cluster will be on characterizing the normal ageing of the brain and early diagnosis of neurodegenerative diseases. The first step, the recruitment of PhD students for the joint U4 PhD projects on 'Ageing Brain', is currently in progress.

See also: http://www.u4network.eu/

MICHIEL HOOIVELD

Workshop: An introduction to probabilistic models of perception

What is the probability that the floor is slippery based on your visual impression of its surface? How likely is it that the person in front of you is the love of your life, given what you know about that person? Probability theory can be applied to simple perceptual judgments and also situations where more abstract decision-making is needed. We had the opportunity to attend the workshop "An introduction to probabilistic models of perception" taught by Wei Ji Ma and Ronald van den Berg of Baylor College of Medicine in Houston. It was organized by BCN in collaboration with the Laboratory of Experimental Ophthalmology of the UMCG.

Probabilities are everywhere

One of the main questions asked by the course was how noisy, and sometimes even contradictory, information from our sensory organs is translated into our perception of the world. The environment works with our sensory organs to shape the way we make inferences. As researchers in the field of cognitive science, we want to know which factors have an influence on decision making processes and how this information can be used to predict the outcomes of perceptual tasks.

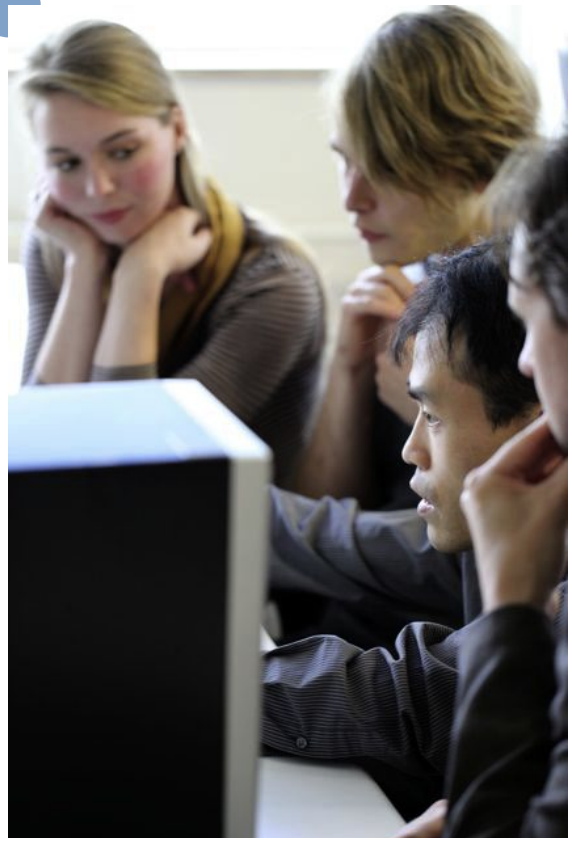
Applying probability theory

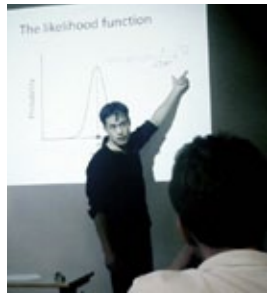
Wei Ji Ma used many daily life examples in his lectures, which gave a conceptual idea of how perception can be modeled as probabilistic inferences. After getting a more intuitive introduction to the topic, the mathematical foundation followed: Bayesian statistics. During the lectures we also learned how to formulate a probabilistic model of cue combination by making use of Bayesian optimality.

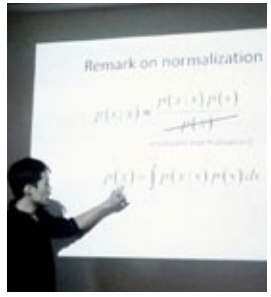
We had the chance to practice these modeling paradigms in the lab sessions where we simulated probabilistic model predictions from various perceptual tasks. The models were applied to several types of perceptual tasks including both binary decisions and more complex situations such as visual searching.

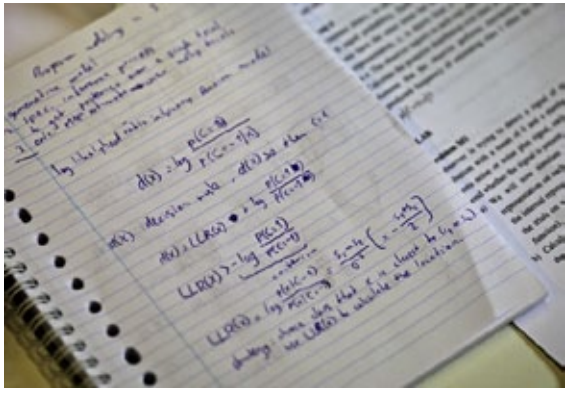
The practical sessions gave us insight into applying probabilistic (Bayesian) inferences to a wide range of perceptual tasks. We used simulations, which enabled us to discuss and interpret various experimental data sets while comparing them to each other. Overall the workshop was interesting, challenging and relevant for both behavioral and neuroimaging research.

FUNDA YILDIRIM
BARBARA NORDHJEM









› BCN RESEARCH MASTER

BCN has provided me with the tools to pursue a successful scientific carrier

I have always been mystified by the human brain. How did such a sophisticated structure come into being? How can human beings learn and retain memory? Why are we capable of thoughts and emotions, and how do we perceive motion? These were some of the questions that initially sparked my interest in the field of neuroscience and were only partially answered during my undergraduate studies.

Medicine was always my first carrier choice because of its wide field of application and great potential. Getting admission into a medical school was a fulfillment of a long cherished dream. During my undergraduate studies I underwent formal coursework in many different subjects such as anatomy, physiology, medicine, pathology and neurology. Indeed, neurology was a subject of special interest to me. At school, I was fortunate enough to have professors who helped me understand the basic nature and functioning of the human brain. However, as I journeyed towards my clinical years, I found that some of the mysteries of the brain still eluded me. As clinicians we are trained not to question, but to follow; to make a diagnosis and to administer symptomatic relief. I have experienced first-hand instances where clinical practice lags because it does not understand the underlying cause. It was then that my interest in the field of research crystallized and I decided to apply and join an excellent research group in order to have the opportunity to develop and work on my own ideas and to learn about different scientific perspectives.

Looking into the various graduate programmes available for neuroscience, I realized that BCN was an ideal place to carry out multi-disciplinary research. I was highly impressed with the emphasis on the integration of theoretical and clinical neuroscience and the various techniques and methods being used at BCN to better understand neurological disorders. I was very excited to study and work in an international multicultural environment.

During the first year here at BCN, our courses were organized in a way so as to give us a glimpse of the various aspects of neuroscience research. For the second year, we had the option to choose our own courses to suit our individual interests. Not only did we have the option to pick from a variety of courses available in the BCN course module, but also from any other faculties involved in neuroscience at the University of Groningen or abroad. I think this is a great opportunity for students to really follow the courses that they are most interested in and which fit their future goals. So far I feel that I have been made well aware of all the different frontiers of research in neuroscience and can make an informed decision for my future research projects. I do plan to take full advantage of this opportunity provided to us by BCN.

I feel that in my short term of one and a half years here I have achieved much, and BCN has provided me with the tools to pursue a successful scientific carrier. The professors and the university staff here at BCN have been extra-ordinarily supportive of me and I feel that such an environment is essential for an international student coming from a different cultural and educational background. So far it has been a very exciting experience and I would highly recommend both this university and the BCN master programme to all future aspiring neuroscientists.

AAYUSH GUPTA
BCN RESEARCH MASTER

› REACTIONS FROM READERS

A Basis for Bias towards Bayes?

In the 82nd BCN newsletter (two issues ago) an ominously titled article "Do we all need to take statistics classes again?" discussed a staggering recent finding that people may be able to significantly foretell the future (Bem, 2011). After an appraisal of Bayesian statistics, it ended with the doubtful question whether a "null-hypothesis significance test is an inappropriate method for everything else we study as well?" Before attempting to put things into another perspective, let me express my delight that the popularity of Bayesian statistics seems to be booming across BCN, because it provides us all with yet another tool to make sense of our data. However, the enthusiasm with which Bayes is widely hailed as our omnipotent statistical savior seems like an overreaction to me.

In the article, the authors argue that frequentist (i.e. null-hypothesis based) approaches may at best reject the null-hypothesis, but can never confirm it (as likely should be the case for parapsychological phenomena). In contrast, Bayesian statistics requires the formulation of both a null- and an alternative hypothesis, which are subsequently compared and weighed against the evidence. To avoid confusion: Bayesian statistics cannot confirm the validity of the null-hypothesis either! It can only say that one hypothesis (perhaps the null-hypothesis) fits better than another. But that conclusion only has meaning in the context of the hypotheses that were compared. "Garbage in, garbage out," comes to mind. For instance, if an effect of interest is hypothesized to have a magnitude of, say, 10% (versus 0%), whereas the true effect is only 1% in size, then the null-hypothesis is likely to be credited with an overwhelming posterior probability. Let us please not make the mistake that this might prove the null-hypothesis! Rather, it shows that this model outperforms some other model (which was lousy to begin with, in this case, but lousy models abound in science). Starting from bad assumptions may turn out worse than starting without any assumptions at all.

A second advantage of Bayesian statistics was subsequently forwarded: one can update prior beliefs about the existence of a phenomenon. For instance, positive evidence might make the unlikeliness of foresight slightly smaller, but it would remain highly unlikely still. Again let me express a word of caution here. Suppose that this would have happened for another seemingly unlikely phenomenon that did truly exist. Starting from strong odds against that existence, one could arrive at the wrong conclusion even in the face of positive evidence. Worse still, the next researcher, who copied the same priors in an attempt to be consistent, might again come to the wrong conclusion in the presence of even more accumulated evidence. After a number of such studies one could come to the false impression that the existence of the phenomenon has been repeatedly and consistently refuted, so little doubt remains. Whereas in fact all evidence pointed to the opposite conclusion. I think we should be careful with the incorporation of prior beliefs into our analyses: scientific conclusions should reflect observations, not preconceptions!

So, sure, frequentist statistics will occasionally lead to false positive findings. Unfortunately for us, those tend to be the ones that end up in the newspapers. I hope that we all realize that that will happen now and then; in 5% of the null cases, actually (ignoring selection and publication biases that seem to have played a role in the Bem paper). Bayes won't prevent something like that either. Fortunately, when it comes to incredible findings, one swallow doesn't make a summer. In that light, the upheaval is hardly understandable. The scientific method should be able to sift out those occurrences. Meta-analyses are a great tool for that. Bayesian statistics can be another great tool, by the way, but they are prone to the introduction of hidden dependencies across studies if priors are incorporated too liberally. If we are not careful, that may lead to a fuzzy state of affairs.

In conclusion, although it never hurts to take another statistics class, there is no need to throw our good old null-hypothesis overboard. I guess that, in the end, no matter how advanced your statistical methods, they can never make up for poor data...

■ DAVE LANGERS

› PROMOTIONS

Aesthetics by numbers

PROMOVENDUS
R.H.A.H. Jacobs
PROEFSCHRIFT
Aesthetics by numbers
PROMOTORES
Prof.dr. J.M.M. Hooymans
Prof.dr. A. Aleman

Schoonheid is objectief vast te stellen
Schoonheid is tot op zekere hoogte objectief vast te stellen. Gekleurde, rustige, diagonale patronen worden over het algemeen als mooi ervaren. Bij het bepalen van schoonheid spelen twee hersengebieden een belangrijke rol: de amygdala en de frontomediane cortex. Dat blijkt uit onderzoek van promovendus Richard Jacobs.

In veel onderzoek naar schoonheid wordt proefpersonen gevraagd om kunstwerken te beoordelen. Dit levert niet altijd even duidelijke inzichten op. Jacobs liet proefpersonen verschillende 'visuele texturen' beoordelen en registreerde de hersenactiviteit die daarbij optrad. Wanneer proefpersonen de schoonheid van een textuur beoordeelden, blijken hun amygdala en de frontomediane cortex sterker te reageren dan wanneer ze de textuur op meer beschrijvende aspecten, zoals ruwheid en natuurlijkheid, beoordeelden. Dit wijst erop dat deze hersengebieden een belangrijke rol spelen in het bepalen van schoonheid. Ook blijkt dat proefpersonen bij het beoordelen van visuele texturen hun ogen anders bewegen en hun aandacht op andere elementen richten dan bij het vormen van meer beschrijvende beoordelingen.

Uit eerder onderzoek was al bekend dat de amygdala een rol speelt bij het sturen van de ogen en het richten van de aandacht. Jacobs suggereert nu dat de amygdala de aandacht richt op kenmerken die bepalend zijn voor schoonheid, en wellicht op kenmerken in het algemeen. Andere hersengebieden zijn waarschijnlijk slechts indirect betrokken bij het bepalen van schoonheid.

Richard Jacobs (Eindhoven, 1972) studeerde psychologie te Tilburg en Cognitieve Kunstmatige Intelligentie te Utrecht. Hij verrichtte zijn onderzoek aan de afdeling Oogheelkunde en het NeuroImaging Center van het Universitair Medisch Centrum Groningen (UMCG), en binnen onderzoeksschool BCN. Het onderzoek werd mede gefinancierd door de Europese Commissie. Jacobs werkt inmiddels als onderzoeker aan de universiteit van Giessen (Duitsland). Hij promoveerde op 7 september 2011.

Plasticity and function of cerebral lateralization

PROMOVENDUS
J.M. Lust
PROEFSCHRIFT
Plasticity and function of cerebral lateralization
PROMOTORES
Prof.dr. J.M. Bouma
Prof.dr. A.G.G. Groothuis

De invloed van prenatale testosteronwaarden op de taakverdeling in de hersenen
Lateralisatie in het brein (cerebrale lateralisatie) vindt plaats rond het zesde levensjaar. Het heeft te maken met de taakverdeling binnen de hersenen. Het promotieonderzoek van Jessica Lust richt zich op twee aspecten van het ontstaan van lateralisatie in het brein: de ontwikkeling binnen het individu en de functie voor de overleving van het individu. Ze gebruikt hiervoor een unieke dataset van prenatale testosteronwaarden en bepaalde de individuele lateralisatiepatronen met fTCD.

Lust concludeert dat een hogere mate van prenatale blootstelling aan testosteron gerelateerd is aan een sterkere lateralisatie van taalfuncties naar de linker hersenhelft. Bij jongens lijkt de sterkere lateralisatie van taalfuncties als gevolg van een hogere mate van prenatale blootstelling aan testosteron te worden veroorzaakt door een slechtere verbinding tussen de hersenhelften. Bij meisjes lijkt de sterkere lateralisatie van taalfuncties als gevolg van een hogere mate van prenatale blootstelling aan testosteron te worden veroorzaakt door een hogere functionaliteit van de taalgebieden in de linker hersenhelft.

Uit onderzoek bij dieren is gebleken dat lateralisatie een wijd verspreid fenomeen is dat de evolutie heeft doorstaan. Omdat een afwijkende lateralisatie bij mensen gerelateerd

›› CONTINUATION PROMOTIONS

is aan bepaalde stoornissen (bijv. dyslexie), is de hypothese ontstaan dat lateralisatie van het brein een voordeel moet hebben voor het individu. Lust kon dit echter niet aantonen.

Jessica Lust (Zaandam, 1980) studeerde psychologie aan de Rijksuniversiteit Groningen en deed haar promotieonderzoek bij de afdeling Klinische en ontwikkelings-neuropsychologie. Het werd grotendeels gefinancierd door NWO. Zij promoveerde op 15 september 2011.

Understanding emotion processing in schizophrenia. Evidence from behavior, neuroimaging and imaging genetics

PROMOVENDUS
M. Swart
PROEFSCHRIFT
Understanding emotion processing in schizophrenia. Evidence from behavior, neuroimaging and imaging genetics
PROMOTORES
Prof.dr. A. Aleman
Prof.dr. D. Wiersma

Nader inzicht in emotieregulering bij schizofrenie
Mensen met schizofrenie hebben moeite met het verwerken van emoties. Dit heeft grote invloed op hun functioneren. Marte Swart bracht emotionele processen bij mensen met schizofrenie en de onderliggende neurale processen nader in kaart.

Bij het relativeren van negatieve gebeurtenissen

zijn hersenstructuren die belangrijk zijn voor emotieregulatie verminderd actief bij mensen met schizofrenie, zo blijkt uit het onderzoek. Ook zijn hun beide hersengebieden tijdens het leren van associaties tussen emotionele plaatjes en woorden minder sterk met elkaar verbonden. Dit verklaart mogelijk de problemen die de patiënten ervaren bij het omgaan met hun emoties. Familieleden van schizofreniepatiënten hebben minder moeite met het omgaan met emoties dan patiënten, maar meer moeite dan controleproefpersonen. Swart concludeert dat bij de schizofreniezorg aandacht moet worden besteed aan emotieregulatie.

Ook onderzocht Swart of een bepaalde variant van het COMT-gen (COMTVal158Met) invloed heeft op emotieverwerking en de onderliggende neurale mechanismen. Het blijkt dat mensen met het zogeheten Met-allel meer moeite hebben met het verwoorden van hun gevoel. Ook treedt bij hen minder hersenactiviteit op in gebieden die belangrijk zijn voor emotioneel bewustzijn.

Marte Swart (Groningen, 1980) studeerde psychologie aan de Rijksuniversiteit Groningen. Ze verrichtte haar onderzoek bij de afdeling Neurowetenschappen van het Universitair Medisch Centrum Groningen (UMCG) en binnen onderzoeksschool BCN. Swart gaat als senior onderzoeker bij Lentis Research werken. Zij promoveerde op 21 september 2011.

Neurodevelopmental outcome of children born following assisted reproductive technology

PROMOVENDUS
K.J. Middelburg
PROEFSCHRIFT
Neurodevelopmental outcome of children born following assisted reproductive technology
PROMOTORES
Prof.dr. M. Hadders-Algra
Prof.dr. M.J. Henneman
Prof.dr. A.F. Bos

IVF-baby even gezond als 'gewone' baby
Het aantal kinderen dat wordt geboren na hulp bij voortplanting, zoals in vitro fertilisatie (IVF; in de volksmond 'reageerbuisbevruchting'), is het laatste decennium aanzienlijk gestegen. Momenteel wordt zo'n 2-3% van Nederlandse kinderen geboren na hulp bij voortplanting. Promovenda Karin Middelburg onderzocht de neurologische, motorische en cognitieve ontwikkeling van kinderen geboren na IVF tot een leeftijd van 2 jaar. Ze vond geen nadelige effecten van ovariële hyperstimulatie (het toedienen van follikelstimulerend hormoon aan de moeder, zodat de kans op zwangerschap toeneemt) of de IVF-procedure op de neurologische ontwikkeling.

In sommige gevallen wordt voorafgaand aan IVF onderzoek verricht naar genetische afwijkingen in eicellen of embryo's. Dit wordt preïmplantatie genetische screening (PGS) genoemd. Middelburg vond geen relatie tussen PGS en stoornissen in de mentale, psychomotorische en gedragsmatige uitkomst. Wel is de neurologische conditie van de kinderen geboren na IVF met PGS iets minder gunstig. Voordat de techniek op grote schaal wordt toegepast, moet de veiligheid nog wel grondig geëvalueerd worden, waarschuwt Middelburg.

Karin Middelburg (Assen, 1979) studeerde geneeskunde aan de Rijksuniversiteit Groningen. Ze verrichtte haar onderzoek aan het Instituut voor Ontwikkelingsneurologie van de afdeling Kindergeneeskunde van het Universitair Medisch Centrum Groningen (UMCG) en binnen onderzoeksschool BCN. Het onderzoek werd mede gefinancierd door ZonMW en de Cornelia Stichting. Middelburg is thans in opleiding tot gynaecoloog in het AMC. Zij promoveerde op 28 september 2011.

›› CONTINUATION PROMOTIONS

The ethiology of functional somatic symptoms in adolescents. A new perspective on lumping and splitting

PROMOVENDUS
K.A.M. Janssens
PROEFSCHRIFT
The ethiology of functional somatic symptoms in adolescents. A new perspective on lumping and splitting
PROMOTORES
Prof.dr. J.G.M. Rosmalen
Prof.dr. A.J. Oldehinkel

Onverklaarde lichamelijke klachten onder jongeren zijn het resultaat van zowel biologische processen (lichamelijke stressreactie, puberteitsontwikkeling), psychologische risicofactoren (angst, depressie en stressbeleving tijdens een stresstest) en sociale risicofactoren (overlijden of scheiding ouders, overbeschermende ouders, schoolverzuim). Dit concludeert onderzoekster Karin Janssens van het Universitair Medisch Centrum Groningen.

Ongeveer 10-15% van de jongeren heeft last van onverklaarde lichamelijke klachten die van grote invloed kunnen zijn op hun leven. Janssens bracht in kaart waar deze klachten mee samenhangen. Zij maakte hiervoor gebruik van gegevens van 2230 jongeren uit het langdurige TRAILS-onderzoek.

Biologische processen hangen af van het type klacht
Aangezien onbegrepen lichamelijke klachten vaak samenhangen met stress, onderzocht Janssens ook de invloed van het stresshormoon cortisol. Jongeren met een laag cortisolgehalte tijdens het wakker worden hadden meer last van vermoeidheid, duizeligheid en spierpijn. Jongeren met een laag cortisolgehalte tijdens stress hadden meer last van hoofdpijn en buikklachten. Ook de activiteit van het autonome zenuwstelsel hing verschillend met de klachten samen. Jongeren die in rust een hoge variabiliteit in hartslag hadden, rapporteerden meer vermoeidheid, duizeligheid en spierpijn, terwijl jongeren met in rust een hoge hartslag juist meer hoofdpijn en buikpijn meldden. Verder bleken vermoeidheid, duizeligheid en spierpijn toe te nemen tijdens de puberteitsontwikkeling, terwijl dit voor hoofdpijn en buikpijn niet het geval was. Voor het onderzoek naar biologische processen die een rol spelen bij onbegrepen lichamelijke klachten is het dus zinvol onderscheid te maken tussen verschillende soorten klachten.

Oorzaak en gevolg
In haar onderzoek naar psychologische factoren heeft Janssens gekeken of angst en depressie voorafgaan aan onverklaarde lichamelijke klachten, of dat ze vooral een gevolg ervan zijn. Zij toonde aan dat angstige en depressieve jongeren een verhoogde kans hebben om onverklaarde lichamelijke klachten te ontwikkelen, maar dat de klachten op hun beurt de jongeren ook weer angstiger en depressiever kunnen maken. De rol van ouders werd duidelijk in een studie naar overbeschermende ouders. Jongeren die bij de eerste meting aangaven dat ze hun ouders overbeschermend vonden, bleken bij de volgende meting meer klachten te hebben.

Schoolverzuim en pesten
Leerlingen die veel van school wegbleven hadden bij een vervolgmeting meer last van onverklaarde lichamelijke klachten dan leerlingen die niet veel van school wegbleven. Dit effect werd niet gevonden voor jongeren die werden gepest. Het wegblijven van school heeft vermoedelijk over het algemeen een ongunstig effect op het beloop van de klachten doordat jongeren thuis meer op hun klachten gericht raken. Jongeren die gepest worden, ervaren thuis waarschijnlijk minder stress dan op school. Voor hen heeft thuis blijven van school dus vermoedelijk zowel een gunstig als een ongunstig effect op de klachten.

Langdurig onderzoek TRAILS
TRAILS is een onderzoek naar de lichamelijke en geestelijke ontwikkeling van kinderen op weg naar volwassenheid. Sinds 2000 worden in de drie provincies in Noord-Nederland 2230 kinderen vanaf hun 10e tot hun 25e levensjaar gevolgd. Janssens heeft gegevens uit de eerste drie metingen gebruikt, toen de jongeren gemiddeld 11 jaar, 13,5 en 16 jaar oud waren.

Karin Janssens (Nijmegen, 1984) studeerde Geneeskunde aan de Rijksuniversiteit Groningen. Zij deed haar onderzoek als onderdeel van de langdurige TRAILS-studie van het UMCG. Zij promoveerde op 5 oktober 2011.

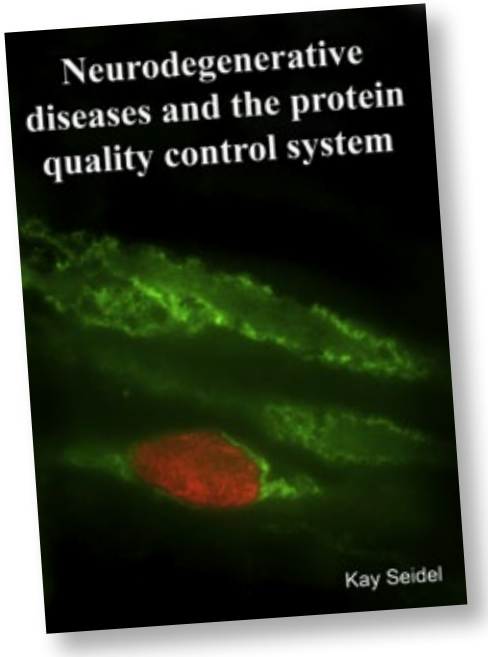
Neurodegenerative diseases and the protein quality control

PROMOVENDUS
K. Seidel
PROEFSCHRIFT
Neurodegenerative diseases and the protein quality control
PROMOTOR
Prof.dr. H.H. Kampinga

Nader inzicht in oorzaak neurodegeneratie
Door de toenemende vergrijzing kampen steeds meer mensen met neurodegeneratieve aandoeningen als dementie en de ziekte van Parkinson. Deze ziektes ontstaan wanneer eiwitten in hersencellen verkeerd opgevouwen raken en zogeheten plaques vormen, waarna hersencellen afsterven. Hoe dit exact gebeurt is nog niet bekend.

›› CONTINUATION PROMOTIONS

Kay Seidel verrichtte onderzoek op dit vlak. Hij bestudeerde de rol van het Protein Quality Control (PQC), een celsysteem dat plaquevorming van eiwitten tegengaat. Hij laat zien dat plaques bij neurodegeneratieve processen aan de aandacht van het normale stressgerelateerde PQC kunnen 'ontsnappen'. Verder laat Seidel zien dat in gebieden waar neurodegeneratie plaatsvindt een stressrespons optreedt in astrocyten, specifieke cellen in het zenuwstelsel. Dit suggereert dat neurodegeneratieve aandoeningen wellicht bestreden kunnen worden door beïnvloeding van PQC-systemen in astrocyten. Verder beschrijft Seidel onder meer overeenkomsten tussen een genetische vorm en een vooralsnog onverklaarde vorm van de ziekte van Parkinson en een vorm van doofheid die wordt veroorzaakt door het ontstaan van eiwitplaques.



Kay Seidel (Duitsland, 1978) studeerde biologie aan de Philips Universität in Marburg, Duitsland. Hij verrichtte zijn onderzoek aan de afdeling Anatomie van het universitair ziekenhuis van Frankfurt am Main, aan de afdeling Celbiologie en Pathologie & Medische Biologie van het Universitair Medisch Centrum Groningen (UMCG) en binnen onderzoeksschool BCN. Het onderzoek werd mede gefinancierd door de J.K. de Cock stichting, de Deutsche Forschungsgemeinschaft (DFG), de Deutsche Heredo-Ataxie-Gesellschaft (DHAG), de ADCA-vereniging Nederland, The Bernd Fink-Stiftung en het Prinses Beatrix fonds. Seidel blijft werkzaam als onderzoeker in het universitair ziekenhuis van Frankfurt am Main. Hij promoveerde op 10 oktober 2011.

Attention please! Alertness in individuals with profound intellectual and multiple disabilities

PROMOVENDUS
V.S. Munde
PROEFSCHRIFT
Attention please! Alertness in individuals with profound intellectual and multiple disabilities
PROMOTOR
Prof.dr. C. Vlaskamp

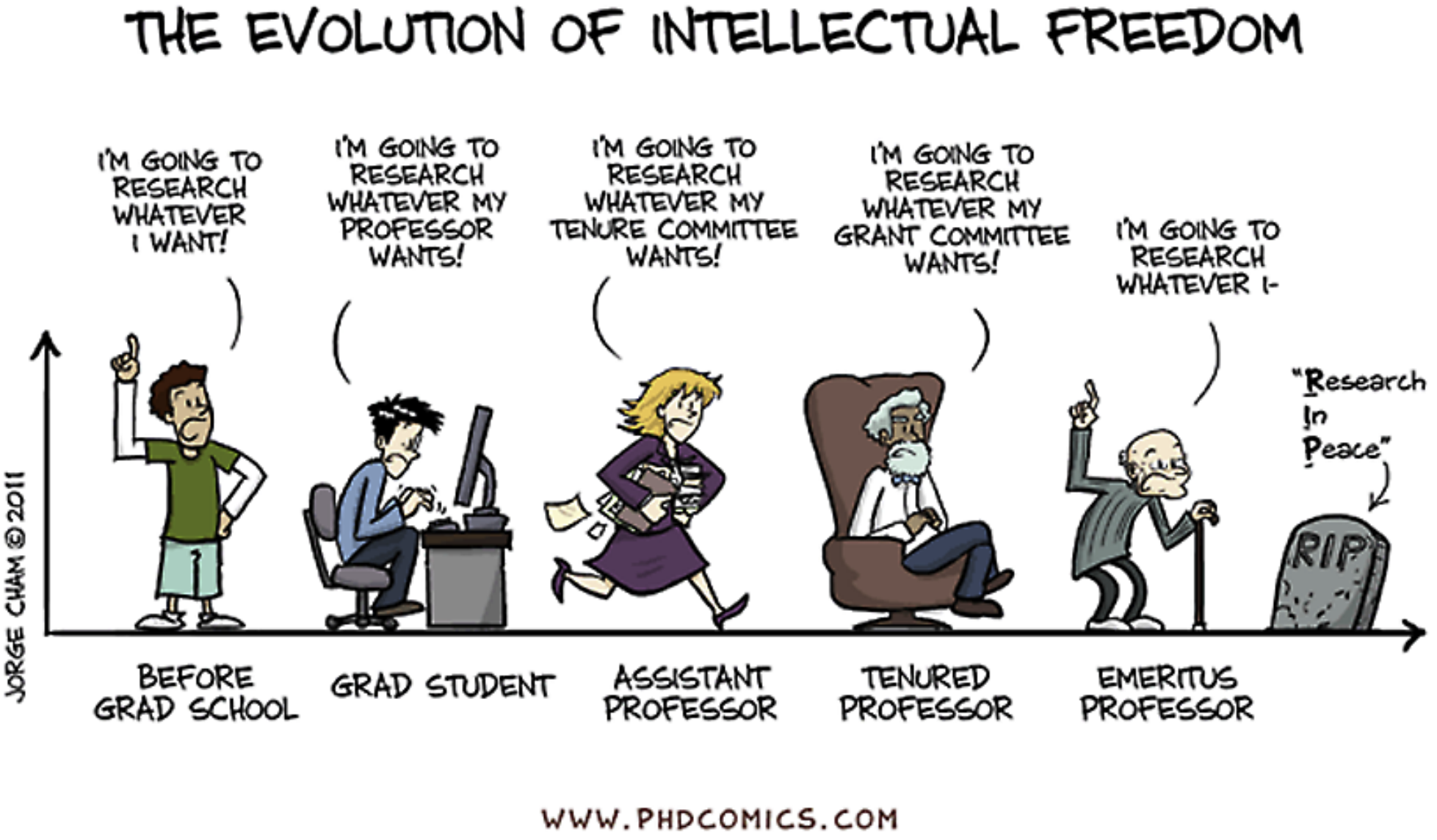
Belangrijke rol voor begeleiders bij het bevorderen van alertheid van zeer ernstig meervoudig gehandicapten
Het bieden van ondersteuning en begeleiding aan mensen met zeer ernstige verstandelijke en meervoudige beperkingen (ZEVMB) is een complexe taak voor begeleiders. De keuze van het juiste tijdstip voor een activiteit is daarbij een terugkerend thema. Begeleiders en onderzoekers zijn het erover eens dat momenten waarop een persoon alert is een belangrijk beginpunt vormen voor leren en ontwikkeling.

Maar alertheidsuitingen zijn vaak niet goed zichtbaar, omdat mensen met ZEVMB veel en onregelmatige wisselingen in alertheid laten zien. Zowel in de ondersteuning en begeleiding van mensen met ZEVMB alsook in het onderzoek, ervaren begeleiders en onderzoekers dan ook problemen op drie met elkaar samenhangende domeinen: alertheid beschrijven, alertheid meten en alertheid beïnvloeden. Het promotieonderzoek van Vera Munde is erop gericht om de kennis rondom deze drie problemen te verbreden.

De ontwikkeling en het eerste gebruik van de Lijst Alertheid laten zien dat alertheid betrouwbaar geobserveerd kan worden op basis van een klein aantal observatiecategorieën. Daarnaast kunnen fysiologische metingen (zoals hartslag en ademhaling) ter validering ingezet worden. Op basis van meerdere observatiestudies concludeert Munde dat begeleiders een bijzonder belangrijke rol spelen bij het bevorderen van alertheid. Zij kunnen de alertheid van hun cliënten verhogen door zich van het belang van alertheid bewust te zijn, alertheidsuitingen te observeren en vervolgens de stimuleringssituaties aan de individuele mogelijkheden en behoeften van hun cliënt aan te passen.

Vera Munde (Duitsland, 1983) studeerde pedagogische wetenschappen aan de Rijksuniversiteit Groningen en deed haar promotieonderzoek bij de afdeling Orthopedagogiek, waar zij inmiddels postdoc-onderzoeker is. Het proefschrift verschijnt bij de Stichting Kinderstudies.
Zij promoveerde op 20 oktober 2011.

■ EVELYN KUIPER-DRENTH, OP BASIS VAN PERSBERICHTEN VAN DE RIJKSUNIVERSITEIT GRONINGEN


THE EVOLUTION OF INTELLECTUAL FREEDOM
I'M GOING TO RESEARCH WHATEVER I WANT!
I'M GOING TO RESEARCH WHATEVER MY PROFESSOR WANTS!
I'M GOING TO RESEARCH WHATEVER MY TENURE COMMITTEE WANTS!
I'M GOING TO RESEARCH WHATEVER MY GRANT COMMITTEE WANTS!
I'M GOING TO RESEARCH WHATEVER I-
"Research In Peace"
RIP
JORGE CHAM © 2011
BEFORE GRAD SCHOOL
GRAD STUDENT
ASSISTANT PROFESSOR
TENURED PROFESSOR
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› PHD AND OTHER NEWS

If you would like to participate

The BCN Poster Presentation will take place on February 2, 2012 in the Bernoulliborg. If you would like to participate, please send an email to janine.wieringa@umcg.nl containing the title of the poster and an abstract. You are also very welcome to join us without a poster!

BCN Retreat 2012

The BCN Retreat will take place on March 15 & 16, 2012. It is now possible to apply for this event. 2nd and 4th year PhD students will get an invitation to give a presentation. 1st and 3rd year PhD students are welcome as audience. If you would like to participate, please send an email to janine.wieringa@umcg.nl

GSMS Study Guide

You all received a pdf file of the GSMS PhD Study Guide. Now the guide has also been printed. You can collect a copy of this booklet at the BCN Office. The online version can be found at the GSMS website: http://www.rug.nl/gradschoolMedicalSciences/PhDProgramme/PhD_Education_program

Publishing in English

We are still working on the new edition of the BCN Training Programme. New in the programme is that the courses "Publishing in English" and "Presentation Skills" have become part of the BCN Standard Courses and Activities. And BCN will not pay anymore for these courses organized by the Talencentrum it is still possible to do so: janine.wieringa@umcg.nl

PhD student card

BCN can help you get your PhD card. This card can be used as proof that you are a PhD student, and may give you discounts, such as at conferences. In order to apply for this card, we need your P-number and a passport photograph. Please bring this to our office.

Training-program registration form

50% of BCN PhD students sent in the BCN training-program registration form. We are still busy getting through all the forms, so if you didn't receive an update of the new amount of credits, please take into account that we received over 90 forms. If you forgot to send it, it is still possible to do so: janine.wieringa@umcg.nl

Social Networks

Join the BCN on these social networks:
Facebook: http://www.facebook.com/#!/profile.php?id=100001212368275
Facebook group BCN PhD students:
http://www.facebook.com/groups/128936167140065/

Agenda BCN Activities

February 2, 2012: BCN Poster Presentation
March 15 & 16, 2012: BCN Retreat
Check the website for detailed information.

DIANA KOOPMANS

› COLOPHON

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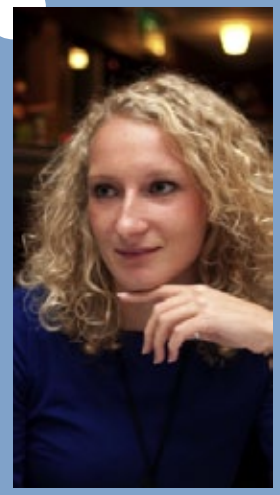
Deadline for the next edition: 1 February 2012

› COLUMN

Welcome to real life



Like many students, I always wanted to spend at least half of my life studying. I loved being a student: eating whatever and whenever I wanted, enjoying the sun on a terrace, playing sports whenever I wanted, going out whenever I wanted etc. And best of all: no parents to judge me. I spent a lot of time doing things that had nothing to do with school.

Based on this short introduction, it may look like I did not take my studies seriously. But it's not like that! I was an ambitious and enthusiastic student. I never came late for class, had good grades and never had to take an exam twice. I really loved being a student. When I look at my life as a student I can only be astonished at how different life is now! Days from 9 till 5 (or later!), and no more long nights in the bar and mornings filled with sleeping. Suddenly I am working all day. The contrast with studying is immense, but still, strange enough, I like it!

Before I tell you about my PhD project I will introduce myself and tell you about the special way I rolled into this new period in my life. My name is Antina de Boer and until last year I was studying Biology and Medical Laboratory Research (HBO) at the HanzeHogeschool, Groningen. I graduated in July 2010 and after that I became a Biomedical Sciences student at the University of Groningen. To start this master's program, I had to do a pre-master for half a year. During that period I was introduced to the world of neurobiology. During the four year study at the HanzeHogeschool we never had a course about the human brain so I was really a freshman when I first learned about neurobiology in November 2010. From the beginning of the course, it was clear to me that I had finally found the side of biology that I was truly interested in! During this pre-master program, I had to write a bachelor thesis about a topic of interest. Because I was so excited about everything I learned about our brain, I choose to write about the relationship between cannabis use and schizophrenia (there is a clear relationship between these two!) under the supervision of Prof. dr. Gert ter Horst.

After finishing this thesis and the rest of the pre-master program, I started with the actual Biomedical Sciences master. One of the first things we had to do was a research project for about 20 weeks. Prof. Gert ter Horst told me about the possibility of doing my research project on the effects of a broken heart on the brain. Although I had never been that down from a relationship break-up (thank God!), the possible link between depression and a broken heart interested me and therefore I decided to perform my research project at the NIC.

During those 20 weeks I performed my first fMRI scan (many more came after that), heard the worse break-up stories (poor girls...), performed interviews with journalists and learned to talk on radio stations about a scientific study. As you can see, my life changed from being just a student to being a scientist who gives interviews and works long days behind a desk. If you are curious about the first results of this study, you can buy the newest Quest (November 2011). There is an extensive interview with Prof. Gert ter Horst, a colleague who also assisted on the project, and me. Although probably many of you would like to know the exact link between broken hearts and depression, I have to disappoint you: the project is still ongoing. Hopefully the first definitive results will be published around Valentine's Day (could we choose a better day?), 2012.

I finished the broken-heart research last July. Just when I was wondering which courses to follow in the next academic year, an invitation to study the changes in desires and likes of food in the elderly appeared, also at the NIC, this time in the food and nutrition group. But since I did not have my master degree yet, I wasn't paying serious attention to PhD jobs. However, it appeared there was a possibility to apply for this job based on my finished HBO study. Of course this was a big surprise for me. At first I hesitated because taking the job would mean that I would have to quit my master's program. However, after talking with different people and getting the same responses like "Wow that's great" and "You should definitely take this chance", I decided to go with the flow and just take this great opportunity. So I did my first job interview (I was so nervous!) and surprisingly enough, I got the job!

So that's where I am now: determining the effects of ageing on food intake in elderly. At the moment I am mostly reading and writing behind my desk but hopefully I will start my first EEG experiment soon. Besides EEG, I will also perform an fMRI experiment to determine specific brain activity related to eating behaviour in the elderly. But this is something that will be done in the second or third year of my project so for now I am sitting behind my computer, reading, reading more, reading even more and writing. Just 4 more hours until 5 o'clock...

■ ANTINA DE BOER