



› AN INTERVIEW WITH LECTURER OF THE YEAR 2010 ROB DEN OTTER

'A little bit of apple sauce to go with the boring statistics'

Rob den Otter has started his education in arts, continued in psychology and discovered his interest in human movements resulting in a PhD thesis on walking ability after stroke. His affinity with teaching has always been there, because he has provided study material about methods and has been a student assistant and supervisor. He is an excellent teacher, but also a great researcher, which enables him to teach about up-to-date research. He is a much-appreciated teacher at the Centre for Human Movement Sciences since 2004. He teaches statistics and research methods. Now, his work is awarded by becoming Best Lecturer of the Year 2010.

1) *Congratulations with your Lecturer of the Year Award and the Audience Award! I would like to start with a few questions about your teaching. Why do you think you have won these awards?*

Thanks. Wow, I am not really sure. One thing is that when I am enthusiastic about something I find it very difficult to hide it. When I get excited I start to move all over the place and I think people notice that. They see that you are fired up and it is sort of contagious, it spreads out over the audience. The other thing, to be perfectly honest, is that I prepared the lecture very well. I gave it a really good thought about how you should construct such a presentation of only seven minutes. Eventually it was eight minutes, but anyway. It had to be a presentation with a clear beginning, a clear theme, something which had to do with the actuality, a good theoretical foundation, and a good closing. Just a good rounded up story is what I wanted to bring and apparently I succeeded.

2) *What are you going to do with the money?*

I actually do not know yet. I never really gave it a thought, because I never thought that I was going to win. I just wanted to give a good lecture and that was it. So I am still not sure, but one of the things I have wanted for years is to get more multimedia involved in my teaching. For instance, to make short documentaries to accompany my lectures and put them on the Internet for students to download or watch. I think teachers still do not make an awful lot of use of all the possibilities of new media. I did already buy a laptop a few weeks ago, but that is still only 500 Euros. I still have 7000 to go! I very much

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enjoy fantasizing about what you can do with all that money.

3) What is your secret, how do you make movement science students enthusiastic about statistics? Statistics is usually not a popular topic.

Yes, that is true. You have to acknowledge that human movement science students do not start this study because they are interested in statistics or research methods. At the end of the day, they acknowledge that it is important, but it is not the most exciting topic you can think of. This is usually the first thing I say in a first class. 'This is going to be boring'. Then usually the students react with 'Yes, we already know that'. I try to make it a bit more exciting by, first of all, showing that statistics and research methods are important if you work in science in general and in movement science in particular. The second thing is that I want to bring it as close as possible to research practice. I show examples of real-life research where you have to design experiments and need to use statistics, including the problems you run into. I show a few examples from my own research and sometimes I even show a little bit of history. Things like randomization are pretty boring, unless you show where it comes from. It was sort of invented in the 1930's in an agricultural institute. People find that interesting, because it takes them away from the boring aspect of the subject and they think 'Wow, this is a bit like the Discovery channel'. I think that this is a way to excite students. It is a bit like this weird association. I did not like endive stew when I was a kid. Then my mom took apple sauce, combined it with the endive stew and all of a sudden I started to eat endive stew. I sort of do the same trick, when I teach statistics or research methods. A little bit of apple sauce to go with the boring statistics.

4) Why do you think experimental research and statistics are important?

I think these are just basic skills that students or researchers need to have. There is just no way around it. If you want to be a researcher or experimental scientist, you need to know what you are doing. You need to know how to design an experiment, but that does not make you a good researcher. It is just part of your basic scientific toolset.

I also have some questions about your research.

5) What caused you to enter the field of psychology and movement sciences after starting with arts?

That is a bit of a weird story, isn't it? Here it comes. I did art school and I finished that in '89, which is a long time ago. We had subjects like philosophy, and even theology, in art school. And I remember having very vivid discussions with colleague students about all kinds of issues in philosophy, but also psychology. There was one specific friend with whom I had a lot of discussions about people like Freud and Jung and psychoanalysis. I was really excited about that, and I started to read Freud and I started to read Jung. At that time, it was still possible to finish art school and then add three years of a university study, financed. These were the good old days. So I thought, well, I have another three years to spend, why not start a study in psychology? I was really interested in this Freud and Jung, which I thought was equivalent to psychology. During my study, I found out that psychology is not psychoanalysis, but it is much and much more than that. I got really interested in experimental psychology and forgot completely about Freud and Jung. I graduated on a research project about lip coupling in stuttering, so this is how I entered motor behaviour. The next step was even before I graduated; they were looking for volunteers to do statistical analysis at the research department of the Sint Maartenskliniek, a

rehabilitation centre in Nijmegen. I agreed to volunteer, because I thought that at least I would stay close to research. After that, I was offered a PhD position at the same research department and I did that from 1999 to 2005. Actually I got my PhD here in Groningen because in the mean time my boss Theo Mulder moved from Nijmegen to Groningen and I also moved after him to Groningen. Some years ago, Theo left Groningen to become one of the directors of KNAW (Royal Dutch Academy of Sciences), so that is probably my next move, ha ha. No, probably not. After my PhD, I did a post-doc in Groningen. I went to Canada for half a year and when I got back, I was offered a job as assistant professor here. That is what I do now, so it is a long story.

6) To me, art and statistics are very different and separated disciplines. Do you believe there is a link between your different passions, for instance between art and statistics?

I am not sure if there is a clear link between statistics and art, necessarily, but I do think there is a full-blown connection between art and science. I think both have to do with good imagination. I think it is central to both to think of things that are not there. This is clear for arts; you make a painting that is not yet there. But I think the same holds for science as well. Especially in the area of experimental psychology and in a lot of human movement science work too, it is about things that we cannot see. For instance, neuroscience is about things that we cannot really see; we cannot readily see the organization of the brain. We have to look at behaviour or make scans of the brain to sort of infer what is going on. But it takes a lot of creativity to make a model, a theory or a working hypothesis about what is going on in the brain. I am absolutely convinced that this is a very underestimated aspect of doing research, having good imagination. I am sure that if Albert Einstein would have chosen to become a painter or sculpturer, he would

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have been just as famous as Picasso because he was just a very imaginative person. I think imagination is the connection between arts and science. In addition, a fascination with life and the world and being easily excited or amazed is central to both.

7) What kind of research are you currently doing?

There are a couple of things that I do, but I think the common theme of all the research is adaptive gait and adaptive standing and the role of visual information. When people walk, they always have to adapt their gait pattern. They have to circumvent obstacles, step over things and they have to react quickly when they stumble. Like all movements, gait and standing continuously adapt to circumstances. I am interested in how people manage to do that. How is it possible that they are capable of showing this immense capacity to adapt to all kinds of circumstances? I am particularly interested in what kind of information they use, most notably visual information. What is the visual information that people need, for instance, to select a route or to avoid an obstacle? I am doing a lot of gaze research. I am interested in where people look and what kind of information in the environment they use controlling their body. Since a couple of months ago I have also been doing research on standing. We have a wonderful platform here, a so-called Stewart platform, that you can rotate in all kinds of directions and that enables us to study balance perturbations. How do people react when you mess with balance? Basically, how do they manage not to fall? What information do they use to react to these perturbations?

8) Do people use other information than visual information? I think that is what I would use at first.

Absolutely. When people adapt their gait pattern or navigate, vision is probably the primary source of

information. For the very simple reason that vision, in contrast to other modalities, enables us to sample information from a distance. It allows us for instance to assess what is going on 200 meters in front of us. That is impossible by hearing or olfactory information. I think that is why vision is important. However, it is not the only important thing; we also use vestibular information to navigate. For instance, if you turn around a corner, you first turn your head, mostly in concert with your eyes. Research shows that proprioception from your neck is very important in controlling these turning movements. You should try it when you are at the beach, an empty beach. I do not take responsibilities for accidents. Close your eyes, and then try to walk with a turned head for 100 meters. When you look back you see that you have bent your path in the opposite direction. Turning your head gives you the information that you are going in that direction and you know you have to walk straight, so you start to compensate. In conclusion, vision is important, but there is other important information too.

9) Since you are an expert in the role of visual information in the control of balance, I wondered what would you advise students who have had too much alcohol, to look or not to look?

Haha, always look, please! I think, probably because I am getting old, they just should not drink too much. But then again, that is just a waste of words, because that is not going to happen. You should definitely look, yes. Not that I have ever been drunk before, not even as a student.

Never?

No! No, of course. Research showed when people have consumed alcohol it is difficult for them to control their eyes. That probably has something to do with the cerebellum. Nevertheless, it is always good to look. It gets much worse when you close your eyes. Always use your eyes and do not drink too much!



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10) What are your plans for the future as a teacher and a scientist? Would you ever choose one job above the other?

I think life is just too short, it is not fair. As an assistant professor you try to get the best of both worlds. Depending on my mood, my heart is in the research area, but the next day it is in the teaching area. I find it very difficult. I would not mind being busy with teaching full-time. On the other hand, I would definitely miss doing research. And I would not mind being full-time researcher, which is not going to happen for sure, but I would not mind that at all. At the same time I would definitely miss teaching and the contact with students. That is a very attractive aspect of teaching to be able to talk to students about what you are doing. That is great fun!

11) Do you have any particular hypothesis you want to prove?

Well, no, although there are a lot of things that I want to figure out. One of the things that I got interested in, recently, is when we sample visual information by looking at things, we do not just generate visual information, but also generate eye movements. These eye movements generate information as well. There is increasing evidence that the brain uses the information from eye movements to control navigation or standing. I find it really fascinating that looking is more than just sampling visual information. I believe one of the holy grails of visuomotor research is that we have to find out how sensory information, vision, proprioception etcetera, is integrated into motor action. The visual system is a very fascinating subject of study in that respect. Another thing that I find very fascinating is that we actually seem to be instrumental in how we code the spatial location of things. Here is an old finding that I did not really know about until about two years ago: If you are asked to point a finger at a certain spot and you are also instructed to look at a point to the left of that spot,

then when you try to place your finger at the spot you overcompensate to the right! We, Karel Smid – a student that I supervise -and I, recently found that the same holds for stepping. This means that looking is not just sampling visual information, it is also coding of spatial information. I find it fascinating that visual information is much more complex. There is still a lot more work to do in that field, so I have lots of plans.

12) I would like to finish with a maybe irrelevant personal question. You have started your education with painting. Are you still painting, next to your research and teaching?

No, not anymore really, yet I am very much involved in music. I am still playing in a band and I am composing music for a theatre group in Zwolle, called 'De jonge honden'. I think the focus has slowly shifted from painting to music. Although, a couple of years back I did the photo academy for a year. I even won a prize there. So with regard to the arts, I am still involved in that through music and photography.

Do you want to share the name of your band with us?

Oh oh, there is a lot of really confronting footage on the internet I think, but the boys probably would not forgive me if I would not tell it. It is called 'De geweldigheid'.

Is it Dutch music?

Yes, I am afraid it is. I have played in an alternative pop band called Parkside for a couple of years which we were quite serious about, but after a few years we got fed up with it and we sort of merged with a punk band. We recently played in Groningen and Amsterdam, but we play all over the country, which is really nice and just a lot of fun to do. It is not very artistic; it is just making a lot of noise. This can be nice at times.

What do you play?

I used to play guitar for years and then I switched to electronics and now I am playing keys in the band,

and I do synthesizer stuff. I am really not good at it, so I practice the four notes that I have to play in a song over and over and over again. It is fun to do though and we have already two guitar players so there was no use in getting a third one in. I actually was afraid people were going to look me up on the internet before the teacher of the year competition. I would not have minded it really, but I was afraid I was going to get questions about it. Luckily, this did not happen.

■ DAFNE PIERSMA

› Depending on my mood, my heart is in the research area, but the next day it is in the teaching area.

› **INTERVIEW WITH FRANS ZWARTS**

Return of a founder of BCN

After 9 years, Prof. Frans Zwarts, one of the founders of BCN, has returned to the research school. His job is to create and strengthen collaborations with national and international neuroscience schools in order to raise the quality of scientific research, attract top students and researchers, and attract international funds. Three cooperations are of special importance: Universities from the east axis of the Netherlands, containing the universities of Nijmegen, Wageningen, Enschede, and Groningen are intensifying their cooperations, to increase their political power and create counterweight to universities from the Randstad (west of the Netherlands). Furthermore, the universities of Gottingen (Germany), Uppsala (Sweden), Ghent (Belgium) and Groningen (together abbreviated as U4) are joining forces to stimulate initiatives in research and education and for the organization and promotion of staff and student exchange. The aging brain will become one of their main focus areas. Another interesting and far fetching cooperation is with Newcastle University, a British university with many similarities to our university. Within this framework, Prof. Zwarts believes, BCN can position itself and attract major national and international grants. As rector magnificus of the University of Groningen, he has learned a lot about where these funds are located and is dedicated to get them for us.

During the BCN New Year's ceremony you said that you are against the graduate school concept and think that BCN should go back to the research school concept that it used to be. What exactly did you mean by this?

BCN was founded as a doctoral programme or a multidisciplinary research school in the eighties. Back then, many people were sceptical, because we tried to integrate several disciplines. There were scientists from life sciences, psychology, linguistics, philosophy and artificial intelligence. People were afraid that there was no unity. However, the answer to this criticism is that we had to pick the themes carefully and thereby create a coherent structure. Nowadays, BCN has become part of the Graduate School of Medical Sciences. Besides BCN, this graduate school contains GUIDE, SHARE and the Kolff Institute. This graduate school has become too big and has no coherence. It is mainly an administrative structure. This is the problem with the modern graduate schools in general. They are not integrated on the base of theoretical motives, but on practical matters. Therefore, I do not see a future in them and I think BCN should move away from this concept.

In the opening ceremony you said that governmental policies with regards to funds distribution have changed. Half of the budget from the NWO will now go to ministry of economic affairs. How do you think this will impact BCN research?

The government has decided for an industrial policy. I have no believe in this system whatsoever. What it



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means is that 10 priority areas like food and water are designated, and half of the research budget from the government will be dispersed by the ministry of economic affairs for research in these key areas. Something similar has never existed before. This means that researchers should investigate these regulations in order to get access to these funds.

How do you see the future of BCN?

We are right now going through a transition. Many of the people who started the BCN have disappeared, and a number of people will leave in the near future. What we need is that the younger generation takes over. Not necessarily in the same way. There may be entirely different themes. What I hope and expect that something like BCN will stay alive. Because it is important that there is an organization that combines different approaches. The BCN research school is unique in that sense that it is more than a pure neuroscience school, because it combines molecular, behavioural and cognitive research. For a while the idea was to narrow it to a classical neuroscience school. While that was possible, it would inevitably destroy ties with psychologists and cognitive researchers. However, I believe that the interaction between these different fields is very important. If you look at neuroscience in general, we haven't even started with really important questions yet. I do not think that I'll still be around the day that it happens, but I do believe that the BCN enterprise can play a serious role in this respect.

How do you see the future of research in the Netherlands in general?

Right now, I think we're doing a great job, given the restrictions and funds available. It may change for the worse, but not forever. You see these cycles. When I became rector in 2002, there was a similar situation. There were budget cuts of 5%, and then 9 years later the same thing happens. It's just temporary. Furthermore, universities have ways to accommodate this. From a certain point of view, it even has some positive side effects. In the seventies there were many people who didn't really do that much. Nowadays, there is a lot more quality awareness. People who don't do anything are gone now. Every time there are budget cuts it forces us to think about weak spots in the organization. With regards to the future, I am confident that research in the Netherlands will be flourishing.

■ INGE HOLTMAN

» NEW RESEARCH COORDINATOR FOR THE RESEARCH SCHOOL BCN

Michiel H.W. Hooiveld, PhD



As successor of Nynke Penninga we would like to introduce you Michiel Hooiveld as our new research coordinator for the Research School BCN. As our new research coordinator he will be involved in setting up and supporting the various activities within BCN. One of the first projects he has completed was writing an application for the Graduate Programme of NWO.

Michiel Hooiveld comes to us from the Institute for Medical Education (OWI)/Junior Scientific Masterclass (JSM), where he has worked for 8,5 years as policy advisor. In this position, he was involved in setting up and coordinating the JSM Bachelor 'Honours' and MD/PhD programme, the Mandema-stipendium and University of Groningen Honours College.

Michiel Hooiveld studied medical microscopic techniques at the Hogeschool van Arnhem en Nijmegen (HAN) and medical biology (molecular biology) at the Radboud Universiteit Nijmegen. In 1994 he started his PhD training at the Hubrecht Institute, Utrecht, and in 1999 he obtained a PhD in biology from the Utrecht University. Before he came to Groningen in 2002, he worked 3 years as policy advisor for the council for Medical Sciences, Royal Netherlands Academy of Arts and Sciences (KNAW), Amsterdam.

› **INTERVIEW WITH DR CHERYL FRENCK-MESTRE,
INVITED SPEAKER AT THE BCN NEW YEAR'S MEETING 2011**

Do native and second language speakers process language in a similar way?



› *I want to know what a human being is doing with language and not just how you can describe it.*

“Is there anyone here who does not speak more than one language?” When asked in a country such as the Netherlands, and especially in a community of PhD students, researchers, and professors, only a few people (if any at all) will raise their hands in response to this question. Some people actually become quite fluent in their second language, especially when they acquire it at a very early stage in life. But do native and second language speakers process language in a similar way? Cheryl Frenc-Mestre is a senior research scientist at the Centre National de Recherche Scientifique (CNRS) and a member of the Laboratoire Parole et Langage at the Université de Provence (Aix-Marseille). She is one of the leading researchers in the field of (bilingual) language processing. On February 17th, Cheryl talked about her findings concerning this intriguing question during the BCN New Year's Lecture and we met up with her afterwards to talk a bit more about her research, findings, and the research methods she uses.

“For most of us, there is a link between ourselves and the research we do. Deep down, we tie research back to something that is important to us. And it might not even be conscious.” The link between language and Cheryl Frenc-Mestre is easily made when we look at her personal history. From her teenage years onwards, Cheryl, a native Californian, travelled from the United States to Colombia, then to France, Egypt, and Scotland, before finally settling in France. “I became fascinated with psycholinguistics during the second year of university when I took a course on this topic and I immediately knew that this was what I wanted to do. Of course, because of having learned several different languages myself, I wanted to study how it works.”

Cheryl's work concerns the perception and production of phonemes, lexical ambiguity and syntactic processing. While some researchers claim that no second language learner can become as proficient as natives, Cheryl Frenc-Mestre believes everybody can learn a new language to a fairly high degree. Her data strongly point towards the idea that second language processing is not fundamentally different from native language processing. As a multilingual speaking French, English, and Spanish, Cheryl admits to making mistakes with gender. Researchers agree that if a specific feature, such as gender, is not present in your own mother tongue it is hard (and according to some even impossible) to fully acquire this in a second language. Cheryl, however, does believe that everybody can acquire these features: “I believe some areas that are absent in native language grammar are the most difficult to acquire, but I believe it is not at all impossible to do so. It just simply takes longer if you do not have a similar system in your native language, but that does not mean that you will never acquire it.”

While some studies suggest that nobody can fully master certain features in a new language, Cheryl points out that “you need to use different methods and different ways in approaching the question to see how true it really is.” During her talk at the BCN New Year's Meeting, Cheryl rightly pointed out that many linguistic ERP studies tend to over-generalize their results, based on the entire group of subjects, while

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they may not be homogeneous. When Cheryl split her data into high proficiency and low proficiency second language speakers, she showed that the former group shows a positive deflection in the ERP signal (a "P600" effect) when they read a linguistic violation while the latter group shows the adverse effect, i.e. a negative deflection in the ERP signal (an "N400" effect). "Sometimes more is less: if you put 28 people together, you can completely destroy your pattern." One particular disadvantage of ERPs, as Cheryl explains, is that they are often contaminated because participants can become aware of what you are testing. This holds true especially for language studies, in which subjects read or hear sentences containing semantic and/or syntactic violations or ambiguities. Therefore, Cheryl prefers to combine several research methods such as recording eye movements while people are reading, functional magnetic resonance imaging (fMRI), but also speeded behavioural tasks. "I choose my technology on the basis of the question I ask. It is a waste of effort to scan people's brains in an fMRI machine if you can get the answer from a simple button press." As ERP studies sometimes reveal the purpose of the test, Cheryl hopes to eventually be able to tie the ERP data back with eye movements. "With eye tracking studies, subjects are less aware of what you are after and they will not be able to use strategies as such. Moreover, both techniques can answer specific questions about language processing: eye movements reveal the focus of people when reading a text, while ERPs can reveal how and when people process a linguistic violation or ambiguity." Although Cheryl Frenc-Mestre has already gained a lot more insight into the (bilingual) brain from the various experiments she has conducted, she will never be satisfied. "I don't think there will ever be a point when I'm done because there will always be another theory to test. I'll be done when all my graduate students are done."

Cheryl Frenc-Mestre was very enthusiastic about the setup of the BCN New Year's Meeting. "It is a beautiful exercise for PhD students to come and present their work at a meeting like this. Since there are many people from different fields represented at the meetings of BCN, everybody is really being pushed to create an informative poster that is concise, but also understandable for researchers from other areas. I also thought that the recognition of good work is excellent: It encourages you to know why it is what you are doing. I was impressed by that."

In September 2011, Cheryl Frenc-Mestre will host the "Aix-en-Provence Bilingual Workshop," the 7th annual meeting of confirmed and aspiring research scientists interested in the workings of the bilingual brain. Please visit the workshop website for more information: <http://aune.lpl.univ-aix.fr/~bilingualworkshop/>

■ HANNEKE LOERTS



Cheryl Frenc-Mestre, senior researcher at the CNRS and member of the Laboratoire Parole & Langage, conducts fundamental research and trains graduate students in the field of (bilingual) language processing. At the age of 16, after years of accelerating in high school and eventually dropping out, she left California to spend a year in Colombia. This experience allowed her to go to university at a relatively young age. This is where her fascination for psycholinguistics began to grow and she knew she wanted to understand how people process languages as well as how the bilingual brain works. After spending another two years in California, she moved to France where she received her MA and PhD degree in Psychology. After obtaining her PhD she held positions at Texas A&M University (USA), the American University in Cairo (Egypt), and the University of Dundee (Scotland) before accepting her position at the Centre National de Recherche Scientifique (CNRS) in France. For the past 20 years, she has been one of the leading researchers in the field of bilingual processing and demonstrated that second language learners, if proficient enough, can become (nearly) native-like in a second language.

› BCN NEWSLETTER MASTER COLUMN

The first colloquia

First year BCN master students are very busy with their minor research projects at the moment. Next to that, a colloquium has to be prepared and presented. The first four presentations have taken place on the 15th of April. We will give a short summary of this small symposium with four very different interesting topics.

Adriana Solis was the very first to present her literature research about workaholism; a disease or an attitude? Workaholism can be defined by working hours per week, or the (negative) attitude towards work. Four types can be distinguished; competitive, defensive, hostile and happy. There is a discussion whether a happy workaholic is a real workaholic, since such a person does not meet the requirement of a negative attitude towards work. Altogether, workaholics show similarities with obsessive-compulsive personality disorder patients. This disorder can be treated with psychotherapy and anti-anxiety or anti-depressant drugs. Adriana states that workaholism can be (part of) a personality disorder when the attitude towards work is negative, but not when the person enjoys working a lot.

Thaira Openneer continued with individual differences in anorexia nervosa. Anorexia has three characteristics; refusing to maintain a healthy body weight, fear of gaining weight and a distorted body image. There are two types of anorexia, the restricting type and the binge-eating type. The first difference between these two is the body mass index (BMI), which is lower in the restricted type (BMI=14-15) than in the binge-eaters (BMI=15-16). The second difference is in personality. Restricted types are often avoidant and obsessive, whereas binge-eaters are black-and-white thinkers. The current treatment for anorexia is cognitive behavioural therapy, but there is a new treatment called the Mandometer method. This method teaches patients to eat by giving feedback on food intake and satiety. Furthermore, it limits the person's activity and provides warmth and a social program. The Mandometer method has been tested successfully in Sweden. However, in the Netherlands this research could not be replicated successfully. Based on BMI and personality tests, Thaira showed that the Swedish subjects were mainly of the restricting type and the Dutch of the binge-eating type. Apparently, the Mandometer works only for restricted type anorexia.

Anuka Minassian was the third presenter, discussing the relation between olfactory dysfunction and depressive-like behaviour. Michael, a musician of the band INXS, has

had a bike accident after which he lost his sense of smell. Then, he became depressed and committed suicide. This leads to the hypothesis that olfactory dysfunction represents a crucial factor in the onset of depression. Smell is a very important sense, because, while recalling images or sounds is possible, you cannot recall smells. Olfactory bulbectomized rodents cannot smell anymore and these animals present a model of depression. Moreover, it is discovered that depressed patients cannot smell that well. By showing brain scans, Anuka made it clear that the same brain areas are involved in smell and depression. In conclusion, there seems to be a consistent and clear link between smell and depression, however it is still unknown how this link is established.

The last presenter of the day was Zachary Yapple, who talked about the default mode network (DMN). The DMN was first discovered when researchers compared the brain activity during cognitive tasks to the activity during baseline conditions. It was noticed that a number of areas are consistently deactivated during baseline conditions. The function of this network of brain regions is not yet fully understood, though. Zach presented two hypotheses that have been proposed in the literature: DMN activation is related to thoughts about oneself or DMN activation is related to arousal levels. The idea behind the first hypothesis is that when people are instructed to relax and 'do nothing', they actually start daydreaming and thinking about things related to themselves (e.g. reflecting on previous events or imagining future events). Research shows that core regions of the DMN are activated when subjects think about themselves, whereas activation in sub-regions is contingent on self-representations of present and future events. Investigating the idea that DMN activation is related to arousal levels, evidence was gathered by monitoring DMN activation during different stages of the sleep cycle. It was found that activation in the core regions remained constant across all sleep stages. In conclusion, DMN activity varies with tasks and it is not yet clear what the function of the DMN is.

These first colloquia were very fascinating and it was a lot of fun to meet each other again. We are looking forward to the two coming colloquia.

- FLORIAN SENSE
- DAFNE PIERSMA

› SYMPOSIUM IN HONOUR OF THE 60TH BIRTHDAY OF KEES DE BOT

Twenty years of modelling bilingualism: 'From Structure to Chaos'

On Friday morning, March 11th, Kees de Bot was picked up from work to 'meet a visiting friend and researcher somewhere in Groningen'. Little did he know that his family, friends, and colleagues from all over the world were waiting for him in the 'Grote Vergaderzaal' to start singing 'Happy Birthday'. Monika S. Schmid, Wander Lowie and Bregtje J. Seton, the main organizers of the symposium, had spent months lying to Kees and did everything they needed to do to keep him in Groningen on March 11th. In the meantime, they set up everything for a symposium celebrating two decades of modelling bilingualism in honour of the 60th birthday of Kees de Bot.

When Kees was more or less recovered from the shock, Wander Lowie and Monika S. Schmid started the symposium with an introduction to Kees de Bot and his work. Kees de Bot, also known as our previous director of BCN, has been the Chair of Applied Linguistics at the University of Groningen since 2002 and is now also the Vice Dean of the Faculty of Arts. The symposium was organized to celebrate his twenty years of modelling bilingualism, 'from Structure to Chaos'. From Structure to Chaos? Yes, the order of the words in the subtitle is indeed correct. About twenty years ago, when linguists started to become increasingly interested in modelling the bilingual mind, the models consisted of nicely placed boxes connected by a couple of simple lines to describe bilingual speaking and comprehension. Kees de Bot's bilingual speech model, as well his application of

Dynamic Systems Theory, capture a more realistic view of the bilingual brain in that the reality is not as neat and linear as it is in the models people used to refer to: the bilingual mind is a multidimensional dynamic system. In that sense, from structure to chaos is indeed a very well-suited title!

The symposium in honour of Kees de Bot was devoted to these changes of scientific paradigm over the past two decades and presented an overview of the development of models of the bilingual mind. During the symposium, various speakers from all over the world covered those fields in which Kees de Bot's work has been influential: Multilingualism, Language Attrition ('loosing' a language after migration), Language and Ageing and, of course, Dynamic Systems Theory. The event was accompanied by the launch of the volume 'Twenty years of modelling bilingualism: from structure to chaos'. The book, edited by Monika S. Schmid and Wander Lowie, was published by John Benjamins in honour of Kees.

It will probably take Kees de Bot a while to recover from the fact that everyone he knows – including his wife and his students – lied to him for quite some time. Nevertheless, the symposium, in combination with John Benjamin's book, is an appropriate celebration of Kees's significant contributions to the study of bilingualism during the past two decades. So, on behalf of the BCN Newsletter: 'Happy Birthday, Kees!'

■ HANNEKE LOERTS



Monika S. Schmid and Wander Lowie, the two main organizers of the symposium and editors of the volume 'Twenty years of modelling bilingualism: from structure to chaos'.



The symposium was accompanied by the launch of the volume 'Twenty years of modelling bilingualism: from structure to chaos', which was published by John Benjamins in honour of Kees.

› ALUMNUS COLUMN

Landing in chocolate heaven

Prior to defending my Ph.D., I had accepted a post-doc position in Ghent, Belgium. Ghent seemed like the logical place to look for a position, since my partner, Roeljan, was already there. So, on the last day of work I dropped my final draft of the thesis in the mail at 10 p.m. and went home to pack my suitcase. A new life in Ghent was starting on Monday morning.

I was hired by Gilles Pourtois after he was awarded an ERC starting grant to study cognition-emotion interactions in the brain. As a post-doc researcher I work within the Psychopathology and Affective Neuroscience lab that is part of the department of Experimental Clinical and Health Psychology. The department is steadily expanding with around 120 employees working on a range of topics from family psychology to cognitive neuroscience. It is also becoming more and more international, attracting young researchers from all over Europe.

During my Ph.D. in Groningen I studied information processing in dyslexia and ADHD with event-related potentials (ERPs). The research I do here is more fundamental than I was used to, making it both exciting and unpredictable. My most recent study was on error awareness. When we make mistakes, we need to become aware of them to learn, making awareness an important part of self-regulatory behaviour. By source-localising ERP components, we were able to reveal the sequence of activations within an error-processing network. The insula was activated specifically when participants were aware of their errors. Recently the faculty, together with the university hospital, received a large grant to develop a cognitive neuroscience unit,

so fMRI and ERP research will be given a major boost.

There are many differences between Dutch and Belgian universities. For one, hierarchy is something that plays a big part here at the university. As a consequence, sometimes it is not clear how certain decisions are made. Departmental decisions are always unanimous and the dean is always right. Anybody coming here from The Netherlands will notice that the Flemish have a tradition of education that emphasises learning by rote and this is something you still see in universities. Also, the combination of strong family ties and short distances within the country causes most students to go home during the weekend leaving the city almost deserted.

Ghent is a very beautiful medieval town with cobblestone streets (leave your high heels and bike behind), cathedrals, a river, and even a castle in the city centre. During an evening stroll is when the city really shows off its beauty. The lighting is simply exquisite. On the downside, the city can be dull and grey. The thing most lacking is greenery, as you won't see many trees unless you visit a park or nature reserve.

A friend once asked me whether I feel as though I moved to another Dutch city or to another country. At times it feels like another planet to me. Who could have guessed that life across the border could be quite so different? Even though in Flanders Dutch is spoken, I for one was daunted by the complexities of getting to grips with the Flemish pronunciation. Besides phonetics, the Flemish are a soft-spoken people who tend to think twice before they speak. Whereas in The Netherlands, you can never be too open or direct and extraversion is



the norm, the Belgian style of communication is quite the opposite. I found myself sounding rather blunt in comparison. The diplomatic style of communication is something I am confronted with daily at work, but the same applies to politics (... still waiting for that government formation). For a Dutchie in Belgium, the communication style and introverted nature of the people can be a great hurdle and you can easily be left feeling isolated. This being said, if you make the effort to get to know people they can become true friends.

Now, after 2 and a half years my post-doc is coming to an end and I don't yet know what lies ahead but I am ready to take a plunge and discover a new world possibly even outside the university.

■ MONICA DHAR

> PHD SURVIVAL RATES

Tales Of Making It To The Finish Line

In 2009 the PhD council asked the BCN PhD-students to fill out a questionnaire about their experiences during their projects. In total, 75 PhD students were so kind to return the questionnaire. Now finally the time has come for the council to communicate some preliminary results back to you.

Unfortunately, no students from the Faculty of Philosophy responded. The majority of respondents came from the Medical Faculty (UMCG: n=42), runner up was the Faculty of Mathematics and Natural Sciences (FWN: n=15) and finally the Faculties of Social and Behavioral Sciences (GMW: n=9) and Arts (ARTS: n=9) equally contributed to the total number of respondents. The respondents represented PhD students in all phases of their projects. On average, the students had been employed for two years. The contract duration of the average PhD position was 3.9 years. The faculties were quite comparable in this respect.

One particular topic of interest in PhD-land is time management. Therefore, we were curious to find out whether BCN PhD-students would expect to finish their dissertations in time (answer: YES / NO). Even more interesting, we also gathered some figures on the true survival rates of BCN PhD projects. For this purpose we collected data from the 221 PhD-students enrolled in

the BCN training program between 2002 and 2007. There were 20 PhD dropouts (8.3 %), 113 PhDs in progress and 107 PhD success stories. Data are included from the heroes who managed to conquer all the pitfalls on the way.

Overall, the majority of BCN PhD students do expect to finish in time (white and shiny bars; Figure 1). Unfortunately, in reality the great majority of BCN PhD students could not live up to the expectations (black and depressing bars; Figure 2). A striking 69,2 % of PhD students did not manage to defend their thesis within six months after the planned date. In general the PhD students appear to make pretty bad estimates of the success rates. Kings and queens of optimism are the students from the faculty of Arts. The price for most delayed faculty goes to GMW (n=7; 100 % failure; on average 22 months late), although the only successful PhD candidate from Philosophy was also 15 months late.

In the BCN questionnaire we also asked the more pessimistic (or realistic?) PhD students to indicate the reasons for being late. The most important drawback was technical difficulties (n=7). Some students might have done some erroneous planning (n=5). The happy news is that in two cases the delay was caused by a pregnancy. In the future, more delays can be expected as a consequence of the Biology department moving from Haren to Zernike. Most potential for preventing delays in the future lies in developing better project management skills and providing closer supervision. So, this newsletter piece is also directed at promoters to emphasize that

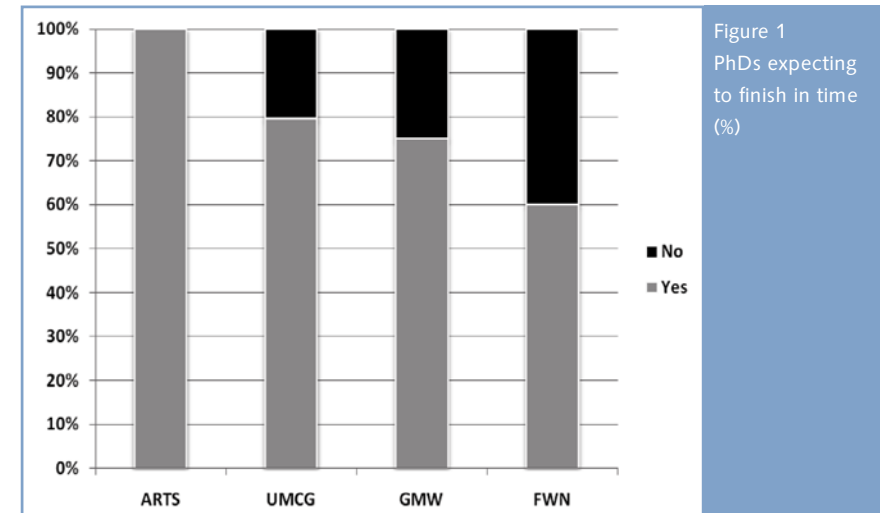


Figure 1
PhDs expecting to finish in time (%)

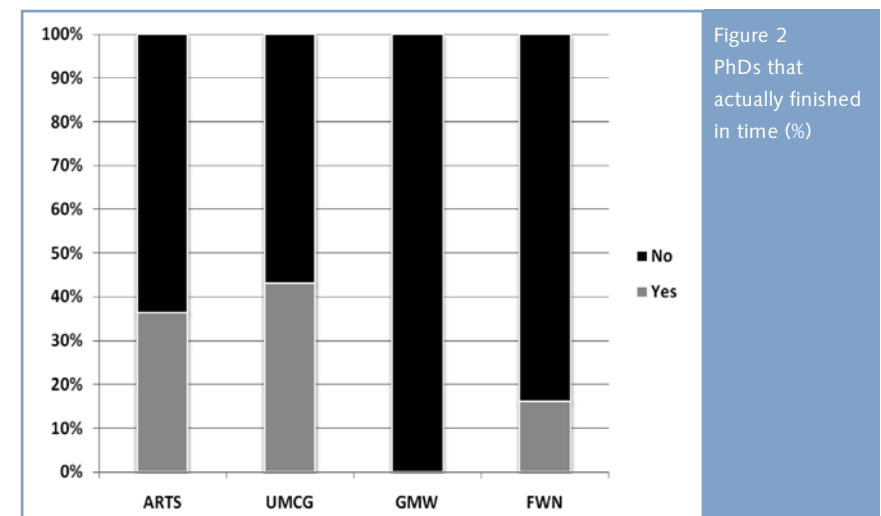


Figure 2
PhDs that actually finished in time (%)

» CONTINUATION PHD SURVIVAL RATES

they need to take their responsibilities in guiding the PhD-students on their way.

In conclusion, it is great to see that PhD students in general are optimistic about the duration of their projects. We surely do not mean to discourage you! On the contrary, we would like to challenge the next generation to improve these rates in the future. However, it might be helpful to acknowledge that a large group of PhD students do not finish in time. The topic deserves more attention, especially in the light of the new policy to decrease the project length to three years and embed part of the PhD-trajectory in the research masters. The results point out that this might be a challenging goal to attain. For now, let's take the figures as a warning. From the perspective of the students, we would like to suggest that realistic targets are set so that students in the future will be able to meet the expectations.

■ PHD COUNCIL

Do we all need to take statistics classes again?

Recently, Darly Bem, emeritus professor at Cornell University, published an article in the high-impact Journal of Personality and Social Psychology. The article caused quite some controversy because Bem makes an extraordinary claim: People can sense the future. Bem argues that he has found evidence for so-called extrasensory perception.

In one of the experiments Bem has reported, people had to guess on which side of a computer screen a picture would appear. When the subjects made their choice, the computer randomly presented a picture on either the left or the right side of the screen. That is, the position of the picture was only determined after the subjects had made their choice. Bem claims that people can sense the future because they are performing above chance level. More specifically, he has reported a significant p-value for the case in which pictures had an erotic content: Instead of 50% (chance level) people have guessed correctly in 53% of the cases. This difference does not seem large, but it is statistically significant.

Bem argues that these results show that "unselected subjects" can sense the future but his guess is that more talented people would do a lot better and could also

detect non-erotic pictures. The controversy, however, does not surround his speculations but the evidence he presents: the significant p-value. Even though some methodological issues have been pointed out, the main criticism has been targeted at the statistical methods used to support the claim that people can sense future events. This makes sense since Bem's evidence is purely statistical.

Therefore, it is not surprising that Bem's article was published along with two critical responses: One written by Wagenmakers and colleagues (University of Amsterdam) and the other by Rouder and Morey (University of Missouri and University of Groningen). In their responses, both groups showed how the evidence presented by Bem is substantially weaker if more appropriate statistical analyses were used. The difference between the two responses is that Wagenmakers and colleagues re-analyzed each of the nine experiments reported by Bem in isolation while Rouder and Morey employed a meta-analytical approach that allowed them to judge the evidence across all experiments. Both responses, however, advocated the use of Bayesian statistics and showed that such techniques are more appropriate. Also, they discussed how the use of more appropriate Bayesian analyses changed the conclusions that can be drawn from the data presented by Bem. Even though the two responses used slightly different approaches, their overall conclusion was the same: the evidence is far less convincing than Bem suggests.

» CONTINUATION DO WE ALL NEED TO TAKE STATISTICS CLASSES AGAIN?

So, what is Bayesian statistics and why is it more appropriate than the standard null-hypothesis significance test (NHST)? In the NHST approach, a null-hypothesis is formulated (in this case: people cannot sense the future and will perform at chance level). Next, it is calculated how probable it is to obtain data as inconsistent or more inconsistent as the data are collected, assuming the null-hypothesis is true. This probability is quantified as the p-value. If the p-value is low (usually: lower than 5%), the null-hypothesis is rejected. Bem found a p-value lower than 5% and therefore rejected the null-hypothesis that people cannot sense the future, concluding that they can sense the future.

One problem with the NHST approach is that we can only reject, but never support the null-hypothesis. That is, even if we find a p-value greater than the golden standard of 5%, we cannot conclude that the null-hypothesis is true. There is no way of collecting evidence in favor of the null-hypothesis. This is problematic because the null-hypothesis might in fact be true but no matter how much data we collect, we can never reach that conclusion.

In Bayesian hypothesis testing, on the other hand, the alternative hypothesis needs to be specified precisely as well. The Bayes factor quantifies the evidence that the data provide for and against both hypotheses under consideration. In Bayesian statistics, this is called model comparison instead of hypothesis testing because hypotheses (in the classical NHST sense) are thought of as statistical models that describe the data. The model that best describes the collected data is favored over other models. The Bayes factor quantifies the ratio of marginal likelihoods, which are directly interpretable. A Bayes factor of 6, for example, means that the observed data are about six times more likely to have occurred under the alternative than under the null-hypothesis.

Another advantage of Bayesian statistics is that you can use the Bayes factor to update prior beliefs about a phenomenon because it can actually quantify evidence for as well as against your belief. Rouder and Morey explain this idea by proposing that skeptics initially think that it is very unlikely that people can sense the future. Say, they consider the odds to be one to a million that people can sense the future. After analyzing Bem's data, Rouder and Morey found a Bayes factor of 40 for emotionally-valenced non-erotic stimuli. This means that the skeptic's prior odds of one to a million should be updated to one to 25,000. Thus, even though Bem's data in isolation favors the model that assumes sensing the future is possible, it is not an all-or-none conclusion. Instead, additional information can be combined with prior beliefs and result in a gradual shift influenced by the additional information. That is, instead of accepting one hypothesis or the other, we can update our "degree of belief". This is the main difference between the classical NHST paradigm and the Bayesian paradigm. In the former, one has no way of figuring out how to adjust one's prior beliefs in light of the newly obtained data whereas the latter defines probability based on the concept of uncertainty which changes based on the available data.

These properties of the Bayesian paradigm generally make it a better tool-set for what psychologists actually want to do: quantify to which degree collected data support opposing ideas. It has often been argued that Bayesian techniques are more suitable than the classical NHST paradigm and it has often been suggested that psychologists (or academia in general) should step over to Bayesian techniques. So, why are we still using NHST?

One reason certainly is that many Bayesian tests are rather difficult to carry out since the available software is too difficult to use. We can expect this situation to change in the future, though. Another factor is that

Bayesian statistics are not taught in standard statistics classes and that not enough attention is paid to the problems regarding interference from p-values. This situation, of course, could be improved by introducing Bayesian statistics to the standard curriculum.

After all, we have to wonder whether NHST is suitable for studying extrasensory perception. Since the null-hypothesis (i.e. people cannot sense the future) seems more likely to begin with, but because we have no way of accumulating evidence for that position or ever reach it, we have to ask ourselves whether NHST is the right method to study this question. And more importantly, we have to ask ourselves whether Bem's research is special in any way. Why should we consider studying extrasensory perception different from anything else in psychology? It is not. Therefore, if psi phenomena cannot be studied properly using NHST, doesn't that mean it is an inappropriate method for everything else we study as well?

(I would like to thank Eric-Jan Wagenmakers and Richard Morey for answering my questions and providing helpful feedback.)

■ FLORIAN SENSE

BCN retreat from the perspective of a new PhD student

The BCN retreat is an annual trip to Odoorn during which students are presenting their work to each other and have science-related debates. Since BCN PhD students are coming from many different fields, the overlap is sometimes hard to find. My research group for example focuses on the molecular aspects of cell biology (e.g. epigenetic regulation of microglia), a topic not easily understood by many others. Therefore, it is important to keep the presentations as clear as possible, but that proves to be difficult for some (but hey, we're there to learn, right?). Contrarily, it was nice to see how some people were really good at explaining a complicated and highly specialized research project in understandable terms. It was my first time at the retreat, and next year I am expected to give a presentation, but for now I could just relax and listen to the talks of others.

Next to these presentations, there was some time spent with scientific problem solving, and scientific speed dating. The idea behind scientific problem solving was to explain a problem you encounter and come up with solutions as a group within five minutes. Although nicely thought, it didn't really work out the way it was supposed to. My group took a lot more time for each problem and only those people who really had problems were given attention. In my opinion, five minutes for a real problem is just enough to scratch the surface. Not to solve it.

The scientific speed dating session was really nice! Many people were tired after a full day, and had just started to drink a wine or beer (we didn't have dinner yet and it was already 7:30 PM). So we wound up in a situation with an easy talking crowd and a lot of laughter (and some red noses and occasional hick-ups). This was a great way to get to know new people. Then it was time for dinner, and I was positively surprised. The food was actually pretty good!

Later that evening, we could go bowling, play foosball (table football), go jammin', or just drink, talk and enjoy each other's company. To me, it looked like people had a lot of fun! Although, I heard some complaints that such a trip shouldn't be obligatory twice. The jam session continued into the early hours. If I recollect correctly, it was nearly 2:30 in the morning when the last people (including me) went to bed.

The following morning, we had again quite a tight schedule with many different talks, and a long walk in the 'amazing' Drentish forests under the guidance of a funny forester. Shamefully, he explained everything in Dutch. So the Dutch-speaking crowd learned that the forest is filled with many different types of edible berries (and those who didn't, learned that the Drentish dialect sounds quite funny).

Taken together, we had a great time (it felt as if we went on a school trip), but I also think it was a learning experience. The take home message I would like to give to all who are coming next year; keep your presentations simple, and bring an instrument!

■ INGE HOLTMAN



› ORATIONS

In somno securitas

ORATIE

A.R. Absalom

TITEL

In somno securitas

LEEROPDRACHT

Anesthesiologie, met aandachtsgebied anesthesiologische farmacologie, peri-operatieve geneeskunde en zorg, en neurowetenschappen

DATUM

15 maart 2011

De eerste succesvolle demonstratie van narcose vond plaats in 1846. Sindsdien werden vele verbeteringen ingevoerd om narcose veiliger te maken. Medische kennis groeit exponentieel en creëert een toenemend aantal behandelingen, voor een snel verouderende populatie. Om veiligheid te kunnen waarborgen is standaardisatie van apparatuur, medicijnen en ingrepen nodig. Hiervoor kunnen vastgelegde protocollen handig zijn. Die moeten rekening houden met biologische variabiliteit onder mensen, en moeten regelmatig herzien worden om nieuwe kennis in acht te nemen. Om de kwaliteit van onze zorg te waarborgen moeten wij alle aannames in twijfel trekken en onze resultaten meten.

Tot heden hebben we beperkt begrip van onze narcosemiddelen, en van de toestand van narcose zelf. Deels is dit het gevolg van een algemeen gebrek aan begrip van het bewustzijn zelf. Grote studies toonden dat 'awareness' onder narcose, waarbij patiënten

onverwacht weer bij bewustzijn komen tijdens een ingreep, nog steeds redelijk vaak voorkomt. Andere onderzoeken tonen aan dat anesthesie en chirurgie misschien nadelige langetermijneffecten kunnen hebben, vooral op de hersenen van baby's en oude mensen.

De afdeling anesthesiologie van het Universitair Medisch Centrum Groningen heeft een lange en trotse geschiedenis van farmacologisch onderzoek, en blijft een expertisecentrum van wereldklasse op dit gebied. Met onze ervaring, en onze bestaande samenwerkingsverbanden, bevinden we ons in een goede positie voor onderzoek gericht op belangrijke onderwerpen, zoals het verminderen van de incidentie van awareness, het optimaliseren van de uitvoering van narcose, en de langetermijneffecten van chirurgie en narcose.

Menen en meten, weten en wensen

ORATIE

H.P.H. Kremer

TITEL

Menen en meten, weten en wensen

LEEROPDRACHT

Neurologie

DATUM

5 april 2011

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

› PROMOTIONS

Focus on fixations. Neuroimaging of human visual perception

PROMOVENDUS

J.B.C. Marsman

PROEFSCHRIFT

Focus on fixations. Neuroimaging of human visual perception

PROMOTOR

Prof. dr. J.M.M. Hooymans

Wat gebeurt er in ons brein als we rondkijken?

Om de wereld om ons heen waar te nemen, bewegen we continu onze ogen. Toch zien we alleen scherp als onze ogen stilstaan. Deze toestand heet een fixatie. Tijdens een fixatie nemen we informatie op om te kunnen zien. Jan-Bernard Marsman bestudeerde de fixaties bij proefpersonen in relatie tot hun hersenactiviteit om zodoende meer te weten te komen over de visuele waarneming van mensen. Hij maakte hierbij gebruik van functionele MRI.

Tot voor kort leek het niet mogelijk om met functionele MRI hersenactiviteit te meten tijdens natuurlijk kijkgedrag bij visuele waarnemingsproeven. Marsman slaagde er in om met fMRI hersenactiviteit te meten tijdens fixaties. Omdat de mens meerdere oogbewegingen per seconde maakt en de functionele MRI gebruik maakt van een veel trager veranderend signaal, werd deze koppeling tot voorkort niet mogelijk geacht.



De studie van Marsman toont aan dat hersenactiviteit die gemeten wordt tijdens een fixatie gebruikt kan worden om te achterhalen waar iemand naar gekeken heeft. Verder blijkt dat het soort oogbeweging dat iemand maakt (kleine of grote sprongen, kort of lang stilhouden), bepaalt in welk hersengebied de visuele informatie verwerkt wordt. Ook blijkt dat de hersengebieden die betrokken zijn bij ruimtelijke waarneming en het zien van beweging, tevens betrokken zijn bij het sturen van onze aandacht.

» CONTINUATION PROMOTIONS

Het gebruiken van oogfixaties in combinatie met fMRI-scans biedt wetenschappers een nieuwe methode om hersenactiviteit tijdens natuurlijk kijkgedrag te bepalen.

Jan Bernard Marsman (Groningen, 1982) studeerde Kunstmatige Intelligentie aan de RUG. Hij deed zijn promotieonderzoek bij het Laboratorium voor Experimentele Oogheelkunde en het NeuroImaging Centrum van het UMCG. Het promotieonderzoek werd mede gefinancierd met subsidies van de Europese Unie, namelijk PERCEPT (<http://nest-percept.eu>) en GazeCom (www.gazecom.eu). Marsman is momenteel werkzaam als postdoc onderzoeker bij het NeuroImaging Centrum van het UMCG. Hij promoveerde op 16 februari 2011.

Behavioral and neuroimaging studies on language processing in Dutch speakers with Parkinson's disease

PROMOVENDUS

K.S.F. Colman

PROEFSCHRIFT

Behavioral and neuroimaging studies on language processing in Dutch speakers with Parkinson's disease

PROMOTORES

Prof. dr. Y.R.M. Bastiaanse

Prof. dr. K.L. Leenders

Dat de ziekte van Parkinson niet alleen invloed heeft op de motoriek van de patiënt, wordt steeds algemener bekend. Zo hebben patiënten vaak ook last van bijvoorbeeld depressie, angst en incontinentie. Maar de ziekte ondermijnt ook het taalvermogen. RUG-onderzoekster Katrien

Colman vond hiervoor duidelijke aanwijzingen bij Nederlandstalige patiënten.

Hoe meer de westerse samenleving vergrijsst, hoe meer gevallen van de ziekte van Parkinson er zullen optreden. Het algemeen publiek kent deze verouderingsziekte vooral van de motorische symptomen. Patiënten hebben trillende handen of armen, stijve ledematen en lopen gebogen, met schuifelende pasjes. Bekende patiënten waren onder meer prins Claus en paus Johannes Paulus II.

De ziekte van Parkinson wordt veroorzaakt door een tekort aan dopamine in de hersenen. Door gebrek aan deze neurotransmitter treden niet alleen de bekende motorische symptomen op, maar raken ook de executieve hersenfuncties van de patiënt aangetast, oftewel: het vermogen om het eigen gedrag in nieuwe, niet-routinematige situaties aan te sturen. Voorbeelden hiervan zijn: systematisch handelen, consequenties voorzien en flexibel problemen oplossen.

Katrien Colman toont aan dat een aantasting van de executieve functies ook gevolgen heeft voor het taalvermogen. Zo kan aantasting van de executieve geheugenfunctie ervoor zorgen dat de patiënt een ingewikkelde zinsconstructie niet meer doorziet: voor hij het einde van de zin heeft bereikt, is hij het begin ervan vergeten. Aantasting van de flexibiliteit zorgt ervoor dat de patiënt moeite heeft van onderwerp te veranderen, ook als daar wel een duidelijke aanleiding voor is. Door aantasting van het vermogen gestructureerd te werken, wordt het moeilijk zinnen grammaticaal correct samen te stellen.

De taalproblemen van Parkinsonpatiënten worden wel vergeleken met die van afasiepatiënten. Veelal ten onrechte, zo laat het onderzoek van Colman zien. Afasie, bijvoorbeeld ten gevolge van een infarct, kan het grammaticaal vermogen zélf aantasten, waardoor de patiënt een werkwoord niet meer kan vervoegen. De patiënt kan dan bijvoorbeeld het voltooid deelwoord 'gelopen' niet meer vormen uit de infinitief 'lopen.' Bij Parkinsonpatiënten is niet dit specifieke grammaticale vermogen aangetast, maar een onderliggende executieve functie. De patiënt is dan in principe wel in staat een voltooid deelwoord te vormen, maar komt daar in sommige situaties toch niet uit – bijvoorbeeld omdat hij de zin niet meer kan overzien.

Het onderzoek toont aan dat de taalproblemen van Parkinsonpatiënten serieuze aandacht verdienen. Colman: 'Als de communicatie moeilijk verloopt, hoeft dat absoluut niet te betekenen dat de patiënt moe of depressief is, of dat hem iets aan zijn verstand zou schelen.' De patiënt is er dan wel mee geholpen als men in eenvoudige zinnen met hem communiceert, maar een kinderlijke behandeling is misplaatst. Colman: 'We kunnen patiënten veel leed besparen, als we hun taalproblemen beter leren begrijpen en op een passende manier met ze leren communiceren.'

Katrien Colman (Gent, 1976) studeerde Logopedie en Audiologie in Gent en werkte vijf jaar als logopedist. Hierna studeerde ze de European Master in Clinical Linguistics (EMCL) in Groningen en Potsdam. Ze verrichtte haar promotieonderzoek binnen de onderzoeksscholen CLCG en BCN van de RUG.

Het onderzoek werd mede gefinancierd door het Internationaal Parkinson Fonds. Colman werkt sinds 2009 als docent en coördinator van de masters EMCL en LCT aan de Faculteit der Letteren van de RUG. Zij promoveerde op 17 februari 2011.

Microglia phenotypes, in CNS plasticity and regeneration

PROMOVENDUS

M. Olah

PROEFSCHRIFT

Microglia phenotypes, in CNS plasticity and regeneration

PROMOTOR

Prof. dr. H.W.G.M. Boddeke

Verschillende fenotypes en functies van microglia bij weefselherstel in hersenen

Microglia spelen een belangrijke rol bij het onderhoud en de verzorging van de hersenen, waarbij verschillende fenotypes voorkomen in gezond, ziek of beschadigd hersenweefsel. In een experimenteel model voor multiple sclerose heeft onderzoeker Marta Olah van het UMCG het fenotype van microglia bepaald om inzicht te krijgen in hun rol bij de neuroimmunologie en regeneratieve geneeskunde.

Microglia zijn de lokale immuuncellen van het centrale zenuwstelsel die hun omgeving nauwgezet op infectie en mogelijke schade controleren. Microglia hebben in gezond, ziek of beschadigd hersenweefsel een verschillend fenotype. Door neuronale infectie of schade worden microglia geactiveerd, waardoor hun fenotype verandert. Olah onderzocht de

» CONTINUATION PROMOTIONS



betekenis van diverse microglia fenotypes bij plasticiteit en regeneratie van hersenweefsel. Ook ontwikkelde ze een protocol om microglia uit humaan post-mortem hersenweefsel te isoleren voor verder onderzoek.

Marta Olah (Hongarije, 1979) studeerde neurobiologie aan de Eotvos Lorand University in Budapest, Hongarije. Zij verrichtte haar promotieonderzoek bij de Afdeling Neurowetenschappen, Sectie Medische Fysiologie, van het Universitair Medisch Centrum Groningen. Het onderzoek werd gefinancierd door de Stichting MS Research. Na haar promotie gaat Olah werken als PostDoc Research Fellow in het Brigham and Women's Hospital in Boston, VS. Zij promoveerde op 23 februari 2011.

Differentiation of neural stem cells into oligodendrocytes. Epigenetic mechanisms & potential applications in multiple sclerosis

PROMOVENDUS

F. Sher

PROEFSCHRIFT

Differentiation of neural stem cells into oligodendrocytes. Epigenetic mechanisms & potential applications in multiple sclerosis

PROMOTOR

Prof. dr. H.W.G.M. Boddeke

Epigenetische mechanismen bij differentiatie van neurale stamcellen

De uitgroei van neurale stamcellen tot nieuwe oligodendrocyten, de myelinevormende

hersencellen, biedt mogelijk perspectief voor de behandeling van multiple sclerose. Eigen neurale stamcellen zouden een bron van implantaten kunnen vormen met als doel herstel van myeline in zenuwcellen. Sher Falak heeft in zijn promotieonderzoek bestudeerd hoe de regulatie van neurale stamcellen tot oligodendrocyten in zijn werk gaat, en of deze stamcellen geïmplantéerd kunnen worden.

Multiple sclerose is een neurologische aandoening die gekarakteriseerd wordt door korte periodes van lokale ontstekingen in hersenen of ruggenmerg waardoor de zenuwcellen hun myeline verliezen. De zenuwcellen raken daardoor beschadigd waardoor neurologische klachten ontstaan. Herstel van myeline zou bewerkstelligd kunnen worden door het implanteren van nieuwe oligodendrocyten, de hersencellen die myeline produceren.

Falak verkreeg met zijn onderzoek inzicht in de cruciale rol van een epigenetische regulator en de betrokken genen bij de regulatie van de differentiatie van neurale stamcellen tot

oligodendrocyten. Implantatie-experimenten met de uit stamcellen verkregen oligodendrocytische voorlopercellen toonden aan dat zenuwcellen opnieuw voorzien werden van myeline. In het diermodel van multiple sclerose werden hierdoor de symptomen van acute en chronische oplettingen sterk gereduceerd.

Sher Falak (Pakistan, 1977) studeerde moleculaire biologie aan de GC University Lahore in Pakistan. Zijn promotieonderzoek voerde hij uit bij de Afdeling Neurowetenschappen van het Universitair Medisch Centrum Groningen. Het onderzoek werd gefinancierd door de Nederlandse Stichting MS Research. Na zijn promotie zal Falak werkzaam zijn in het Children's Hospital in Boston, VS. Hij promoveerde op 23 februari 2011.

Coping styles and the pathophysiology of energy metabolism

PROMOVENDUS

G.J. Boersma

PROEFSCHRIFT

Coping styles and the pathophysiology of energy metabolism

PROMOTORES

Prof. dr. A.J.W. Scheurink

Prof. dr. G. van Dijk

Mensen met een passieve persoonlijkheid hebben een hoger risico op overgewicht en daaraan gerelateerde ziektes als type 2 diabetes, ontdekte Gretha Boersma. Maar er is ook goed nieuws, aldus Boersma: 'Ze zijn vaak veel beter te behandelen dan proactieve



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persoonlijkheden, die weliswaar minder snel overgewichtontwikkelen, maar minder ontvankelijk zijn voor "life style" interventies.'

Sommige mensen ontwikkelen snel overgewicht en type 2 diabetes. Anderen niet, ook al bevinden ze zich in een vergelijkbare situatie. Door deze individuele verschillen wordt de behandeling van aan overgewicht gerelateerde ziektes sterk bemoeilijkt.

Boersma deed onderzoek naar de oorzaak van de verschillen aan de hand van een diermodel met twee verschillende persoonlijkheidstypes: ratten met een passieve coping style tegenover ratten met een proactieve manier van omgaan met stress. Boersma: 'Een passieve persoonlijkheid gaat stress uit de weg, is doorgaans een binnenvetter, is laag agressief en niet impulsief. Proactieve persoonlijkheden zijn extravert, impulsief, wat agressiever en hebben een sterke drang om routines te volgen. Deze types zie je zowel bij mensen als bij dieren.'

In een situatie met standaard voer en een standaard kooi bleek al snel dat de passieve dieren sneller insulineresistentie (een eerste stap in de richting van type 2 diabetes) ontwikkelden. Echter, wanneer de dieren een loopwiel tot hun beschikking krijgen, blijken de passieve dieren plotseling een toegenomen fysieke activiteit te vertonen. Dit gebeurde met name als hun dieet een hoger vetgehalte kreeg. Boersma: 'De passieve dieren gingen hun dieet compenseren door meer rondjes te lopen in het loopwiel. Maar de proactieve dieren bleven bij hun oude ritme. Ze liepen net zoveel rondjes als bij het normale dieet.'



Deze laatste situatie is volgens Boersma vergelijkbaar met die van mensen. 'Veel mensen hebben weinig beweging tijdens hun (zittende) werk. Daarbij hebben we de hele dag toegang tot voedsel. Passieve persoonlijkheden ontwikkelen in dergelijke omstandigheden relatief snel gewichtsproblemen en daaraan gerelateerde ziektes.

Dat interventies beter aanslaan bij passieve persoonlijkheden, bleek ook uit een pilotstudie waarbij mensen met overgewicht een trainingsprogramma volgden. Boersma: 'Hoewel de training voor beide persoonlijkheden een

positief effect had, lieten mensen met een passieve persoonlijkheid tijdens de trainingen meer activiteit zien. Helaas compenseerden ze een deel met verminderde activiteit op de 'rustdagen'. Dit gebeurde niet bij de proactieve persoonlijkheden. Gehecht aan routine bleven zij de overige dagen even actief als ze waren voor hun deelname aan het trainingsprogramma.

'Maar wanneer de 'passieve' mensen bewust werden gemaakt van hun compensatiegedrag, bleken ze in staat hun activiteit te verhogen en boekten hierdoor betere resultaten,' zegt Boersma. Passieve persoonlijkheden blijken, net als bij de rattenstudie, gevoeliger te zijn voor invloeden uit hun omgeving in vergelijking met de proactieve persoonlijkheden. Dit heeft belangrijke gevolgen voor de behandelingsmethoden van type 2 diabetes, denkt Boersma. 'Houd rekening met de interactie tussen de leefomgeving van de patiënt en zijn persoonlijkheidstype en kies een behandelingsmethode die daarbij past.'

In de praktijk is deze stap volgens Boersma eenvoudig te nemen. 'Het type persoonlijkheid is makkelijk te achterhalen en zo krijg je een objectiever beeld van de benodigde behandeling. Je zou bijvoorbeeld kunnen zeggen dat je bij de behandeling van een meer passief persoon een dagelijks trainingschema op moet stellen. Dan kunnen ze niet meer compenseren. Meer proactieve types zouden meer gebaat zijn bij sporten waarbij ze de competitie met anderen kunnen aangaan.'

Gretha Boersma (Drachten, 1982) studeerde Biologie aan de Rijksuniversiteit Groningen. Boersma ontving in december een Rubicon

beurs van NWO en begint daarmee op 1 april als post-doc bij de Department of Behavioral Neurosciences aan de Johns Hopkins University in Baltimore, VS. Zij promoveerde op 7 maart 2011.

Brains in interaction

PROMOVENDUS

M.B. Schippers

PROEFSCHRIFT

Brains in interaction

PROMOTOR

Prof. dr. C. Keyzers

'Hints' geeft inzicht in hersennetwerken betrokken bij sociale interactie

Wanneer twee mensen met elkaar communiceren, ontstaat er een tijdelijke verbinding tussen hen. Met behulp van een experiment waarbij proefpersonen in de MRI scanner het spel Hints speelden, bestudeerde onderzoekster Marleen Schippers van het UMCG welke hersennetwerken bij menselijke interactie betrokken zijn. Daarnaast onderzocht ze welke relatie er bestaat tussen de activiteit in beide breinen. Zij toont aan dat zowel het spiegelsysteem als het 'redeneernetwerk' meedoen.

Tijdens het interpreteren van gebaren, zoals in het spel Hints gebeurt, is het spiegelsysteem sterk betrokken, terwijl een deel van het redeneernetwerk geen rol lijkt te spelen. Door echter te kijken naar verbindingen tussen breinen, in plaats van activiteit binnen een brein, blijkt dat dit deel van de hersenen wel degelijk betrokken is bij het raden van gebaren.

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De activiteit in het redeneernetwerk volgt nauwgezet de activiteit in de hersenen van degene die de gebaren uitbeeldt. Dit volgen wordt ook wel resonantie tussen twee breinen genoemd. Schippers concludeert dat bij onderzoek naar het brein in sociale relaties, ook wel 'het sociale brein' genoemd, beide breinen bestudeerd moeten worden, in plaats van een. Op deze manier komen inzichten aan bod die anders niet aan het licht komen.

Marleen Schippers (Nijmegen, 1979) studeerde kunstmatige intelligentie en filosofie aan de Rijksuniversiteit Groningen. Zij voerde haar promotieonderzoek uit bij het Social Brain Lab van het Neuroimaging Center binnen de Afdeling Neurowetenschappen van het UMCG. Het onderzoek werd gefinancierd door een Marie Curie Excellent Grant van de Europese Commissie aan prof.dr. Cristian Keysers. Inmiddels is Schippers werkzaam als productmanager

bij het softwarebedrijf Gino in Groningen. Zij promoveerde op 9 maart 2011.

Getting a grip on grasping

PROMOVENDUS

C. van de Kamp

PROEFSCHRIFT

Getting a grip on grasping

PROMOTOR

Prof. dr. E. Otten

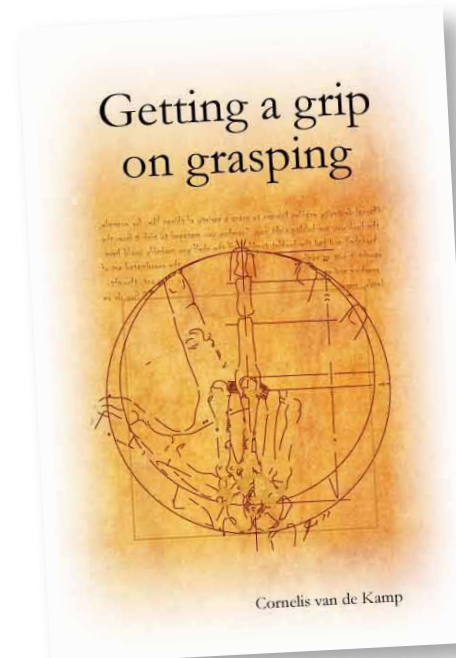
Grip krijgen op hoe wij grijpen

Je staat er niet vaak bij stil hoeveel keer per dag je iets oppakt en met welk gemak dit gaat. Pas wanneer deze handigheid niet meer vanzelfsprekend is, of wanneer men probeert een robot te laten grijpen of vangen, ga je inzien hoe complex deze alledaagse bewegingen zijn. Bewegingswetenschapper Cornelis van de Kamp heeft onderzoek gedaan naar de bewegingssturing bij het oppakken en vangen van objecten. Hij toont aan dat de timing van beide bewegingen op dezelfde manier beschreven kan worden.

Van der Kamp voerde experimenten uit waarbij proefpersonen objecten grijpen die plotseling in grootte of locatie kunnen veranderen. Daarbij keek hij naar welke bewegingsvariabelen de mens controleert bij het oppakken van voorwerpen, welke visuele informatie geschikt is om dit soort taken uit te voeren en hoe deze informatie wordt gebruikt voor het controleren van een grijpbeweging. Een interessante bevinding is dat de timing van de grijpbeweging tijdens het vangen, maar ook tijdens het oppakken van voorwerpen, met hetzelfde model

kan worden beschreven. Het idee van een generiek controlemodel voor vangen en grijpen is vernieuwend in de bewegingswetenschappen en levert handvatten om grip te krijgen op hoe wij grijpen.

Cornelis van de Kamp (Bennekom, 1978) studeerde bewegingswetenschappen aan de Rijksuniversiteit Groningen. Hij voerde zijn promotieonderzoek uit bij het Interfacultair Centrum Bewegingswetenschappen van het UMCG, gefinancierd door NWO. Van de Kamp is inmiddels werkzaam als postdoc research associate aan het Institute for Biomedical Research into Human Movement and Health aan de Manchester Metropolitan University in Engeland. Hij promoveerde op 16 maart 2011.



Great tits growing old. Patterns and processes of ageing in a wild bird population

PROMOVENDUS

A.H.J. Bouwhuis

PROEFSCHRIFT

Great tits growing old. Patterns and processes of ageing in a wild bird population

PROMOTORES

Prof. dr. S. Verhulst

Prof. dr. B.C. Sheldon

Prof. dr. M.E. Visser

De nakomelingen van oudere koolmeesvrouwtjes zijn veel minder succesvol dan die van jongere moeders. Vooral in latere fasen van het opvoeden gaat het mis, concludeert evolutionair bioloog Sandra Bouwhuis. Voor de koolmeesvrouw blijkt het zaak om direct in de eerste levensjaren te investeren in het nageslacht.

Bouwhuis onderzocht veroudering bij vrouwelijke koolmezen (*Parus major*) in Wytham Woods (Oxfordshire, UK) en op Vlieland. Ze deed dit aan de hand van onder meer het aantal eieren en nakomelingen en het reproductieve succes van deze nakomelingen.

Hoewel koolmezen zo'n negen jaar oud kunnen worden, blijkt het broedsucces vanaf het tweede levensjaar al flink af te nemen. Toch beproeven de oude mezen jaarlijks weer hun broedkansen, zegt Bouwhuis: 'Ze gaan door tot het bittere eind.'

Opvallend is dat aan het begin van de broedperiode nog weinig verschil is tussen de nesten van oude en jonge vrouwtjes. Vooral vlak na het uitvliegen van de jongen vindt er

» CONTINUATION PROMOTIONS



massale sterfte plaats, ontdekte Bouwhuis. 'Juist in de eerste weken na het uitvliegen moeten de ouders hun jongen nog begeleiden. Die begeleiding laat bij de oude moeders wellicht te wensen over; de jongen vallen bijvoorbeeld ten prooi aan sperwers. Of misschien hebben de oudjes minder gunstige plekken in het bos weten te bemachtigen.'

Bouwhuis toonde verder aan dat het voor de mezen gunstig is om al in de eerste twee levensjaren zo veel mogelijk te investeren in nageslacht. Zulke hardwerkende mezen verouderen wel veel sneller dan mezen die wat trager op gang komen, maar ondanks dat vroege veroudering zijn prijs heeft, krijgen de vroege broedsters in hun leven uiteindelijk de meeste nakomelingen. 'De kosten wegen

duis op tegen de baten', zegt Bouwhuis. 'Het is de theorie van het "wegwerplichaam": investeren in nakomelingen in plaats van in lichaamsonderhoud. Maar waarom niet alle koolmezen deze tactiek volgen is niet duidelijk.'

Hoewel de aftakeling van de mezen meetbaar is in hun broedsucces, zijn de oudjes er op het oog moeilijk uit te pikken zegt Bouwhuis: 'Ze hebben in ieder geval geen overduidelijke ouderdomskenmerken zoals rimpels of grijze veren. Er wordt momenteel wel onderzocht of de gele borstveren veranderen naarmate de mezen ouder worden. Het zou namelijk kunnen zijn dat de bejaarde mezen verouderingstekenen vertonen die voor ons helemaal niet opvallen, terwijl ze voor de koolmezen zelf overduidelijk zijn.'

Hoe het precies zit met oude koolmeesmannen weet Bouwhuis nog niet. 'We hebben ons in dit onderzoek gericht op de vrouwtjes: mannetjes zijn moeilijker te vangen tijdens het broedseizoen.' Bovendien gaan de heren koolmezen nog wel eens vreemd vertelt Bouwhuis: 'Mannetjes kunnen jongen hebben bij hun vaste partner, maar ook bij buitenechtelijke partners. Dat maakt het erg lastig om het aantal nakomelingen te bepalen.'

Sandra Bouwhuis (Kampen, 1980) studeerde evolutionaire biologie aan de Rijksuniversiteit Groningen (RUG). Ze voerde haar promotieonderzoek uit bij de onderzoeksgroep Behavioural Biology van de RUG en The Edward Grey Institute van de universiteit van Oxford (UK). Het onderzoek werd medegefinancierd door beurzen van de NWO en het Schure-Beijerinck-Popping fonds. Zij promoveerde op 18 maart 2011.

Eclampsia & preeclampsia. Causes and long-term consequences of maternal brain involvement

PROMOVENDUS

A.M. Aukes

PROEFSCHRIFT

Eclampsia & preeclampsia. Causes and long-term consequences of maternal brain involvement

PROMOTORES

Prof. dr. J.G. Aarnoudse

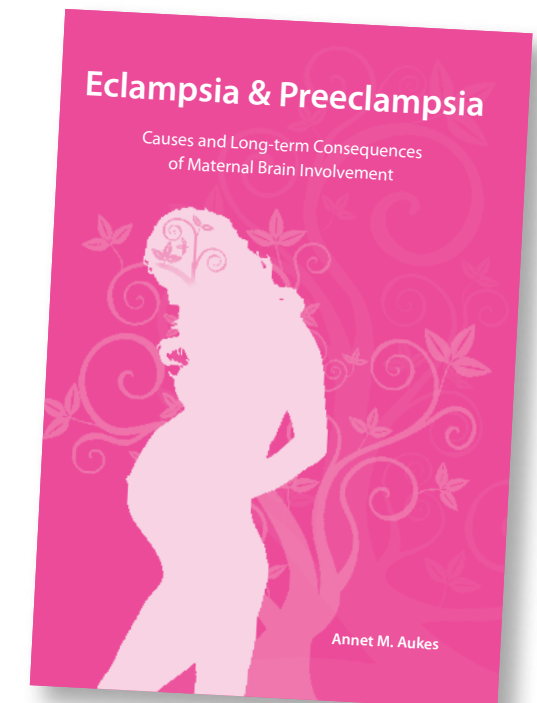
Prof. dr. M.J. Cipolla

Bij vrouwen die herstellen van zwangerschapsvergiftiging waarbij de hersenen betrokken zijn geweest kunnen blijvende hersenveranderingen aangetoond worden. Enkele jaren later merkt een deel van de vrouwen in het dagelijks leven veranderingen in hun geheugen en concentratievermogen, concludeert onderzoekster Annet Aukes uit het Universitair Medisch Centrum Groningen. Bij deze vrouwen heeft zij kleine veranderingen in de hersenen gevonden die hier mogelijk het gevolg van zijn. Ook wijzen deze veranderingen mogelijk op aanleg voor hart- en vaatziekten.

Een zeldzame complicatie van hoge bloeddruk tijdens de zwangerschap (zwangerschapsvergiftiging of pre-eclampsie) is vocht in de hersenen van de moeder waardoor kortdurende epileptische aanvallen kunnen optreden (eclampsie). Aukes heeft gekeken naar de aanwezigheid van hersenveranderingen bij vrouwen die pre-eclampsie of eclampsie hebben gehad. In beide groepen werden kleine hersenveranderingen gevonden die behoren tot het normale verouderingsproces, maar bij

hen vaker voorkomen dan bij leeftijdgenoten die een gezonde, probleemloze zwangerschap hebben gehad. Als oorzaak hiervoor denkt de onderzoekster aan vocht in de hersenen. Ook lijken de veranderingen in beide groepen verband te houden met een verhoogd risico op hart- en vaatziekten. Aukes concludeert dat pre-eclampsie is op te vatten als een soort sein van het lichaam dat het aanleg heeft voor hart- en vaatziekten.

Ongeveer 5-10% van de zwangere vrouwen in Nederland krijgt te maken met een verhoogde bloeddruk. Waarom de hoge bloeddruk tijdens de zwangerschap eclampsie kan veroorzaken is nog vrijwel onbekend, evenals de invloed



» CONTINUATION PROMOTIONS

van zwangerschap op de hersenen. In dit onderzoek is met behulp van proefdiermodellen gevonden dat de bloedvaten in de hersenen tijdens zwangerschap minder adequaat de bloeddorstrooming kunnen reguleren. Ook treedt de beschermende verandering in de opbouw van de bloedvaten in reactie op te hoge bloeddruk niet op tijdens de zwangerschap. Dit maakt de hersenen tijdens zwangerschap vatbaarder voor het ontstaan van vocht en daardoor eclampsie.

Vrouwen die hersteld zijn van eclampsie kunnen toch blijvende hersenveranderingen hebben ontwikkeld, die zichtbaar zijn op MRI scans. In de spreekkamer van de huisarts en gynaecoloog blijkt regelmatig dat deze vrouwen geheugenproblemen rapporteren of concentratiestoornissen. Tot voor kort werd dit over het algemeen gewijd aan het nieuwe moederschap. Aukes heeft met vragenlijsten vastgesteld dat vrouwen met eclampsie in hun voorgeschiedenis slechter scoorden op het cognitief functioneren in het dagelijks leven, dan vrouwen met een gezonde zwangerschap.

Annet Aukes (1984) studeerde geneeskunde aan de Rijksuniversiteit Groningen. Zij voerde haar promotieonderzoek uit in het UMCG bij de afdeling Obstetrie & Gynaecologie en de Graduate School for Behavioral and Cognitive Neuroscience (BCN). Aukes werkte samen met de afdelingen Neurologie, Obstetrie en Gynaecologie, en Farmacologie van de University of Vermont in Burlington, VT, USA. Aukes werkt inmiddels als arts-niet-in-opleiding bij de afdeling Obstetrie & Gynaecologie in het Spaarne Ziekenhuis in Hoofddorp. Zij promoveerde op 23 maart 2011.

Vision and structural colouration of butterflies

PROMOVENDUS

P. Pirih

PROEFSCHRIFT

Vision and structural colouration of butterflies

PROMOTOR

Prof. dr. D.G. Stavenga

Onderzoek naar het vlinderoog en de kleur van vliedervleugels

Het zien, de kleur en de omgeving van een dier zijn waarschijnlijk op elkaar afgestemd. Het proefschrift van Primož Pirih verbindt de drie aspecten door het bestuderen van het zien van insecten, de fysiologische optica van vlinderogen en de optica van de kleur van vliedervleugels. Het zien is een afbeeldend zintuig, dat gebruikt wordt bij het vinden van voedsel, het vermijden van predatoren en het zien van partners en rivalen. De lichaamskleuren dienen voor het (on)zichtbaar maken of voor het uitzenden van territoriale signalen en te kennen geven van de genetische kwaliteit. De patronen van de vliedervleugels worden gevormd door schubben, die gekleurd worden door pigmenten en regelmatige structuren van de chitinebouwstof.

Pirih bestudeerde eerst de fysiologie van de lichtwaarneming van het fruitvliegje (*Drosophila melanogaster*). Hij laat zien dat de concentratieverhouding van het visuele pigment rhodopsine en het controle-eiwit arrestine het dynamisch bereik van de fototransductie sterk beïnvloedt.

Vervolgens bestudeerde Pirih de fysiologische optica van het oog van de luzernevlinder *Colias erate*. Hij karakteriseerde negen klassen van visuele zintuigcellen, met maximale gevoeligheid variërend van het ultraviolet tot in het ver-rood. Deze uitgebreide groep van fotoreceptoren kunnen worden gebruikt voor het kleurenzien, bij herkenning binnen de soort, voedselzoeken of identificatie van gastheerplanten.

Pirih onderzocht tevens de optica van de vleugels van purperkleurige, iridescente mannetjes van de Colianidae en de Colotis-groepen (Pieridae). De reflectiespectra kunnen begrepen worden uit de multilaagstructuren. Hij mat de strooiingspatronen van enkele schubjes en vleugelstukjes met behulp van een afbeeldende strooiingsmeter. De schubkromming bepaalt de ruimtelijke uitgebreidheid van de iridescentiepatronen, die van invloed zijn op de zichtbaarheid van het kleursignaal.

Primož Pirih (Slovenië, 1975) studeerde biologie aan de universiteit van Ljubljana en verrichtte zijn promotieonderzoek bij de afdeling Neurobiofysiologie van de RUG. Het werd gefinancierd door de European Office of Airforce Research and Development en de Japan Society for the Promotion of Science. Na zijn promotie wordt hij docent fysiologie aan de universiteit van Maribor, Slovenië. Hij promoveerde op 28 maart 2011.

Visual hallucinations in Parkinson's disease; clinical and fMRI studies

PROMOVENDUS

A.M. Meppelink

PROEFSCHRIFT

Visual hallucinations in Parkinson's disease; clinical and fMRI studies

PROMOTOR

Prof. dr. K.L. Leenders

Oorzaak visuele hallucinaties bij ziekte van Parkinson nader in kaart

De ziekte van Parkinson is een ernstige hersenaandoening, waarbij motorische symptomen zoals tremor, traagheid en stijfheid optreden. Daarnaast kunnen patiënten last hebben van niet-motorische symptomen, waaronder visuele hallucinaties. Over de oorzaak van deze hallucinaties is weinig bekend. In het verleden werden ze beschouwd als bijwerking van medicatie, maar er zijn steeds meer aanwijzingen dat de hallucinaties met de ziekte zelf samenhangen.

Anne Marthe Meppelink onderzocht de hersenactiviteit van patiënten met de ziekte van Parkinson bij het herkennen van afbeeldingen op een computerscherm. Hierbij maakte ze gebruik van een fMRI-scanner. Uit haar onderzoek blijkt dat de visuele associatiegebieden in de hersenen van Parkinsonpatiënten met visuele hallucinaties minder actief zijn dan bij patiënten zonder visuele hallucinaties en bij gezonde vrijwilligers.

Deze verschillen komen niet door afname van het volume van grijze stof in de hersenen, zo laat Meppelink zien. Mogelijk lopen de gevonden functionele defecten vooruit op dit volumeverlies, suggereert ze. Een andere

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mogelijke oorzaak van de beschreven functionele verschillen is vermindering van de neurotransmitter acetylcholine. Nader onderzoek moet uitwijzen of verhoging van de hoeveelheid acetylcholine de hallucinaties kan verminderen of zelfs wegnemen.

Anne Marthe Meppelink (Drachten, 1981) studeerde geneeskunde aan de Rijksuniversiteit Groningen. Ze verrichtte haar onderzoek aan de afdeling Neurologie van het Universitair Medisch Centrum Groningen (UMCG), het Neuro Imaging Center van de RUG en binnen onderzoeksschool BCN. Meppelink is in opleiding tot neuroloog in het UMCG. Zij promoveerde op 13 april 2011.

Hemodynamic physiology during perioperative intracranial hypertension. Monitoring and therapeutic implications

PROMOVENDUS

A.F. Kalmar

PROEFSCHRIFT

Hemodynamic physiology during perioperative intracranial hypertension. Monitoring and therapeutic implications

PROMOTORES

Prof. dr. M.M.R.F. Struys

Prof. dr. E.P. Mortier

Prof. dr. A.R. Absalom

Monitoring hersendruk tijdens operaties

Nieuwe chirurgische behandelingen, zoals kijkoperaties in de hersenen, vereisen een goede bewaking van de hersendruk, zuurstofaanvoer en het fysiologische evenwicht. Anesthesioloog Alain Kalmar van het UMCG heeft een nieuwe

methodologie ontwikkeld om de monitoring van deze parameters tijdens operaties aanzienlijk te verbeteren.

Tijdens kijkoperaties in de hersenen kan een verhoogde hersendruk optreden wat resulteert in acute bloeddrukeffecten. Dit zogenaamde Cushing reflex tijdens verhoogde hersendruk blijkt in de acute fase te bestaan uit een gecombineerde verhoging van de bloeddruk en een versneld hartritme (tachycardie). Deze klinische bevindingen zijn vervolgens uitgebreid bestudeerd aan de hand van een diermodel. Hiermee zijn verschillende nieuwe methodes onderzocht waarmee het Cushing reflex kan worden gemeten en behandeld. De nieuwe methode om de hersen- en bloeddruk te meten tijdens hersenoperaties, die Kalmar voorstelt, is aanzienlijk nauwkeuriger dan de klassieke aanpak.

Alain Kalmar (Gent, België, 1975) studeerde geneeskunde aan de Universiteit van Gent. Hij voerde zijn promotieonderzoek uit in het Universitair Ziekenhuis Gent, het O.L. Vrouwziekenhuis Aalst en bij de afdeling Anesthesiologie en het Onderzoeksinstituut BCN van het UMCG. Hij promoveerde op 27 april 2011.

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

› PHD AND OTHER NEWS

GSMS Training Programme

The new edition of the BCN Training Programme is accessible on the BCN website. The GSMS training programme with an overview of all courses within the GSMS is still under construction. All courses given within the GSMS (courses of GUIDE, SHARE and Kolff Institute) are free.

BCN Retreat 2011

The BCN retreat took place on March 17 & 18, 2011. In this edition of the Newsletter, you can read an article about this year's retreat.

Training-program-registration-form

In June you will receive the training-program-registration-form. On this form you will find the information that

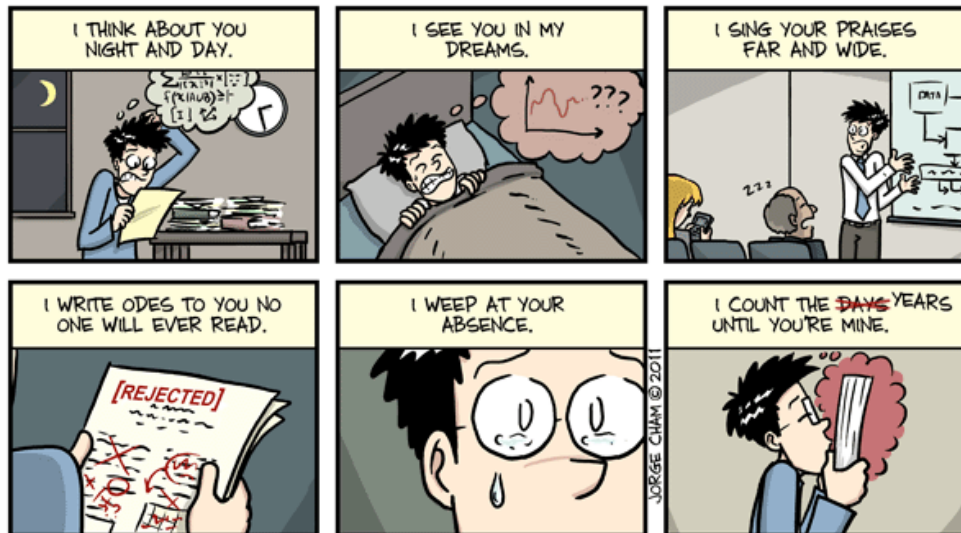
we have registered for you in our system. Please have a good look at the contents and complete the list with your training activities until now. Send the corrections and additions to Janine: janine.wieringa@med.umcg.nl

Description of your Ph.D. project on the web site

We would like to have the descriptions of the Ph.D. projects of all our Ph.D. students on our website, but there are still a few missing. You can help us complete the overview. If your description is missing, please send it to Evelyn: e.t.kuiper-drenth@med.umcg.nl

■ **DIANA KOOPMANS** (D.H.KOOPMANS@MED.UMCG.NL)

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› COLOPHON

This newsletter is published by the School for Behavioural and Cognitive Neurosciences

Frequency

6x a year

Publishing Office

BCN Office (FA30), A. Deusinglaan 2
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Deadline for the next edition: 1 August 2011

› COLUMN

Existential questions

I am Edith Liemburg and I am in the third year of my PhD. I work in the Cognitive Neuropsychiatry group of André Aleman and study brain abnormalities measured by MRI in patients with schizophrenia.

So now it's my turn to write something about my PhD, my life, or other existential questions. Well, I would like to try to answer a question combining all three: how can it be that a biology student that was working in the laboratory and in the woods finds herself some years later interviewing psychiatric patients and meeting psychiatrists during her PhD, and how does she feel about it?

How it all started At the high school I was really interested in animals and nature, and I wished I could do a job that involved both of them. So, the choice was easy: biology. When I first entered the Biological Center in Haren, I immediately loved the atmosphere of the building: everything so green around and all people so relaxed. That opinion did never change during my study. I liked to sit outside underneath the trees during breaks, or go to the botanical garden next door. Also the fact that everybody could just wear and do whatever he or she wanted, I liked it! How nice, just to be able to go to lectures in your pajamas if you had wished.

Being a biologist The first year of my study was heavy. Most courses were boring, long and difficult. I have spent hours and hours in Haren, but you get used to that. What I liked was that after this first year I learned a lot of basic skills. Now during my PhD I am still happy about the things I have learned, like computer knowledge, mathematics, presentation skills, or how to make posters or reports. During my study I followed many different courses, from human diseases in medical biology to isolating a protein at the chemistry department. I was a teacher's assistant in microbiology (handling bacteria) for 9 times! After all this fun in my bachelor's program (which continued during my master's), I thought it would be a good idea to think about what kind of job I

wanted, and if I could do my master internships in this field. Help, existential crisis! What did I like? One thing for sure: no animal studies! But I could do something with bacteria, or study the Homo Sapiens, at the other end of the biological spectrum. I felt like a real biologist of the lab, so studying humans sounded weird, but being in the lab forever was also not one of my dreams.

A biologist searching a new habitat Eventually, I decided to write e-mails to persons who did "something" with humans in their research, and I quite literally stated this in the e-mail... After a week I had talked with persons from a few departments, I was interested in one, and as I received no other reply, I decided to do this one. Just when I had my e-mail ready and wanted to press "Send", I checked my e-mail and saw that I just received an e-mail from André Aleman who also had an internship for me.

A biologist in a new habitat I made an appointment and got some broad and vague descriptions about the internship. Two weeks later I found myself in a train with my current supervisor to learn some psychiatric interview, without even having expectations about how it would be. And then, I had to interview, call participants if they wanted to undergo an MRI experiment, explain them the psychological tasks, walk around in a psychiatric ward, etc etc. All this experience was totally new for me, in an environment I knew nothing about and where I knew nobody, far away from the safe biological haven. I felt flooded, alone, doubted whether I liked it, made stupid errors, got a lot of comments, saw concrete instead of trees in the breaks, but eventually I liked it!

To PhD or not to PhD And then the next existential question came: would you like to do a PhD on patients with schizophrenia? You will also have to interview them, and work closely together with the psychiatric department and people working there. Yaiks! I felt so honored to be asked, but also doubted about doing a PhD, in a field I still did not know well, without reaction tubes and

microscopes. I decided to give it a try, since I liked the research and the people working there.

My PhD Then I started and was flooded by new impressions and work and had to learn a lot, about practical things, about working in this environment, cooperating and interacting with colleagues and patients, with stigma of medical personnel. One important thing I really had to learn was to interact in an appropriate way with the psychiatric patients I met and to interview them and explain them psychological tests. Not that it was too bad, but I did everything on good feeling, and now I think I do lots better than at that time. Another thing was to walk around in a hospital setting and to cooperate with nurses and psychiatrists. They often thought research was unimportant, and that I as a biologist would not be able to interact with patients. And I had to communicate in a fruitful and effective way with them, which is different from talking to biologist in the lab. I can tell that for sure!

And now I like my job, I really really like it! I have a lot of dull days, have to work hard, miss the practical work and using my hands sometimes, miss the atmosphere of biology, but I really love my job. I learned a lot about life, learned so many new skills, met so many interesting and nice people, and I really have the feeling that the things I do indeed do matter. This feeling is even strengthened since I cooperate with the psychiatry department more intensely, and also do more diverse research. What I really like is that I use research to solve practical issues from the community, which I often missed during my study. I also learned that though I had to learn so many skills, I also possess skills I acquired during my study, which I can teach to other people in this field. In that sense I am almost proud to be a biologist :-). I hope there will be a future for me in this field, something I never expected to happen.

■ EDITH LIEMBURG