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BCN - SCHOOL FOR BEHAVIOURAL AND COGNITIVE NEUROSCIENCES



## BCN's 25th Anniversary Symposium and Party

**On November 2nd, BCN will celebrate the 25th Anniversary of the Research School.**

The program will start at 9:00 hrs and there will be many interesting guests:

- > Craig Heller, Stanford University, USA (guest speaker FWN)
- > Thomas Metzinger, Johannes Gutenberg Universität, Mainz (guest speaker FP)
- > Anne Bertolotti, MRC Laboratory of Molecular Biology, Cambridge (guest speaker FMW).

Are you curious who the guest speakers from the FL and GMW are??? On the website you will find their names and also more information about the Symposium.

In the evening, the celebrations will continue. BCN will organize a big party in De Puddingfabriek. Reasons enough to reserve the entire day in your agenda!



## International Doctorate for Experimental Approaches to Language and Brain (IDEALAB)

*"It's a real BCN thing- it's neuroimaging, it's language and cognition."*

The Erasmus Mundus PhD Programme "International Doctorate for Experimental Approaches to Language and Brain (IDEALAB)" is a quite recent programme with the purpose of studying the structure, processing and the foundations of human language. The joint programme is provided by four European universities (University of Potsdam, University of Groningen, University of Newcastle and the University of Trento/Rovereto) and one non-European university (Macquarie University, Sydney). We talked with one of the founders of the programme, prof. dr. Roelien Bastiaanse from the University of Groningen, Department of Linguistics, to learn some more information about the aims of the programme, the requirements for doctoral candidates and the way to set up a joint PhD programme.

***Hello Roelien! Could you give us some information about yourself and the research you are doing?***

After my graduation as a neurolinguist at the University of Amsterdam, I first went to a rehabilitation centre in Twente, where I worked as a clinical linguist, so I worked with aphasic patients every day. I did the diagnosis and I worked on the development of treatment and assessment materials. And then, after

about 6 years, I had an intern, who came from Groningen. When she told me what she had learned about aphasia, I wondered who her teacher was and it turned out to be Frans Zwarts. I invited Frans over, not knowing him at the time. He came to Enschede to see our aphasic patients and how we tested them. And then he invited me for a lecture here, and after the lecture he offered me a job. So that was 23 years ago now. Back then I started as an assistant professor. I was hired to do research in neurolinguistics and to set up a training programme, which was, at the time, the programme in general linguistics.

***That is a nice coincidence!***

Yes, and what we did was actually quite unique in the Netherlands and still is. We made a programme that is not only accessible for our students but also for students who, at the time, finished their degree in speech therapy. In the Netherlands only speech therapists from the HBO are entitled to provide speech therapy. Since 2002, the two programmes have been integrated. Our students can get their license to work as a speech therapist and the students of the HBO can follow courses and end up with a master's degree in Linguistics. That is what I did from the beginning. And also, in the meantime, I started in 1997 to work on the European Master in Clinical Linguistics (EMCL).

***Alright- and is that connected to the international doctorate programme?***

We started with the European master's programme and that was awarded the Erasmus Mundus status in the very first year, I think that was 2004. And

>> CONTINUATION INTERVIEW WITH ROELIEN BASTIAANSE

we were rewarded in 2009. When the EU launched a programme for Erasmus Mundus international doctoral programmes we applied. Last year, the third time we applied, we were awarded. It was very, very hard, since it is very competitive. The programme is already running; it started last September. And the Erasmus Mundus grantees will start this September.

***The programme does sound really interesting.***

It is very interesting programme. And it is wonderful to get so much funding: 6.5 millions euros for 5 universities for 5 years. We can hire around ten students per year.

***Ten students in total for the whole programme or ten students for Groningen?***

Ten students for the whole programme per year and that is for five years. We have five partners and ten students per year, so in the end Groningen will have had at least ten students in total.

***So what is your role in this programme?***

I wrote the proposal together with my colleague from Potsdam, so together we chose our partners. Because we were already partners in the master's programme, we decided to continue with the doctoral programme. During the three years we were working on the application, we travelled a lot together because we have partners in Moscow, Hong Kong, Beijing. We went to these places to see whether those people would be willing to cooperate. Regarding my role at the moment, I am in the board of directors and in the selection board, because we like to select our own students, and I am the local director in Groningen.

***For the candidates who are interested in this programme, what are you looking for in the students who apply?***

Well, let me first say, the reason that we applied for this programme is that we are running the EMCL, the master's programme, and we delivered I think 18 to 20, and later on

almost 30 students per year. A lot of them were excellent students. And we lost them, because we did not have our own PhD programme. Here we could hire only one every two years I guess. That is why we started this. We asked the best students of last year's cohort of EMCL students to apply. We would like to keep these students for ourselves.

***What would you say is the goal of the whole programme?***

The goal is, I think, to train excellent young researchers. The ones who are already in the programme and the candidates we selected are so good, we would like for them the best training possible and we think that that is, for our purpose, the training programme of IDEALAB. I hope that those students will be our successors. We are all in our 50s/60s, so we will be retired soon and we need young researchers, who can take over. We hope to educate and train them ourselves. There are already a few but we want to have a whole generation of good researchers in the field of language and the brain and that goes for language acquisition disorders, dyslexia, aphasia, neuroimaging etc.

***You already mentioned it but what is the benefit for our University for participating in such an international programme?***

They receive free promovendi. All the students in the programme have a home University where they stay, usually, 1,5 or 2 years and they have to travel for another year in which they go to another University in the programme and they have to do an internship in either a rehabilitation centre or industry. The candidates will be employed in Potsdam. So they are not employed here, they come here to do their PhD and it is free for the university. Actually, they pay tuition fee. Apart from the candidates who have Groningen as their home-university, Groningen will be host-university for many candidates. So we will see a lot of PhDs which means a lot of publications. And this is good for the university. Also, it is a prestigious grant for a prestigious network.

***So no drawbacks at all?***

No, and another good thing is that we have the permission to award joint degrees. So all the PhDs enrolled in the programme will receive a degree from Groningen and from the other four universities.

***What is the beneficial part of having a joint degree?***

Well, imagine if you apply for a post-doc position in the United States and you have a joint degree from 5 top universities. This is really an advantage above having a degree from Groningen alone.

***That makes sense. I am a master student myself and I do not know a lot about what comes after the master yet.***

Well, then there is a PhD and then there is a post-doc. From master to PhD is difficult. From PhD to Postdoc is very, very difficult. You need to have done your PhD in time, you need to have publications, you need to have been to international conferences, you need to have an international career- and that is all offered in our programme. So the students really benefit from it. And it is good for the name of our university as well.

***How much effort went into the whole preparation of the programme?***

Very, very much. We received a 32 000 euros grant from the board of the university as a reward for our first Erasmus Mundus round. We used that money to make the second application for the master programme and for the first application for the doctorate programme. And I think I completely used it, since I needed to hire people to take over my classes. During the writing period, I went to Berlin every other week two months in a row to write the proposal. And as I said I went to China, to Italy, to Moscow twice, because we needed signatures. And you only get signatures when they know you in person.

> *We lost excellent students from the ECML master's programme, because we did not have our own PhD programme. We would like to keep these students for ourselves.*

» CONTINUATION INTERVIEW WITH ROELIEN BASTIAANSE



Roelien Bastiaanse and Ria de Bleser (University Potsdam), the initiators of EMCL and IDEALAB

***Did all of the people /universities you asked agree to participate?***

Yes, if you are invited to participate and the only thing you have to do is to put your signature down to be in a very prestigious programme, that is a privilege. And for us it is very good to work with these people. So next month, I am going to China again to set up a joint research project.

***Do you all decide together which students to accept?***

Yes, let me see. The candidates have to apply before 15th November and we all read all the applications. There are the five partners and there are two external peers. Then we meet and we do skype interviews with the most interesting candidates that we want to choose from. And then we have another skype meeting for the selection. By the end of January we have decided who we want in the programme and who we want on the reserve list.

One of the few students who made it into the programme was so kind to answer a few questions regarding the programme.

■ RICCARDA PETERS

## Interview with Rimke Groenewold

### ***Could you tell us a little bit about yourself?***

I have lived in several places, but originally come from Drachten (Friesland). When I was 4, we moved to Hasselt, which is close to Zwolle. After secondary school, I spent 1 year in Esperanza (Santa Fe, Argentina) with three host families. Until that time, I always expected to start studying Medicine. Unfortunately, the 'Numerus Fixus' which applies for Medicine in the Netherlands did not admit me. My backup plan was to choose something completely different (this was a suggestion made by the student counsellor at my secondary school) and I chose... Communication and Information Studies. It went well, but I was not very passionate about it. Since I collected the credits quite easily I just went on, aiming for my diploma. After graduating with a Master's in Communication and Information Studies, I started working at a marketing and communication company. This went fine, but again, was not very challenging. Therefore, I decided to change things. I threw myself into a field that had already attracted my attention during a minor course that I had taken: neurolinguistics. Writing a second Master's thesis was a pleasure! I decided to apply for PhD positions while working as a temporary teacher at the Communication and Information Studies department. I found a project that connects perfectly with my background: it combines neurolinguistics with communication.

### ***How did you hear about the IDEALAB programme?***

I had already started with my PhD project when Roelien Bastiaanse told me about it. It sounded like a great opportunity to participate in the joint program.

### ***Since when are you participating in the programme, and how do you like it so far?***

I have been a member of IDEALAB since the very beginning of the doctorate program. We started in the

beginning 2011, and we had the first summer school in September 2011. So far, I am very satisfied with the program. It has a lot to offer: interesting summer and winter schools, collaboration with other PhD candidates, co-supervision of professors from other universities, and of course the mobility period. I am leaving for 6 months in Australia in February 2013. Over there, I will collect new data for my project, and work on the analysis of data that I have already collected. I am really looking forward to my mobility period.

### ***What do you think makes this programme special?***

An important advantage of this program is the organization of the education: all courses are clustered in summer and winter schools. We can work continuously on our projects during the academic year, without being bothered by frequent educational obligations. During the summer and winter schools, we have all the time we need to learn about new experimental techniques. This allows us to not only become an expert in our own specialization, but also to receive extensive expert information outside our chosen topics. In addition, we have an entire day to present our projects. After the presentations, we discuss our projects with a panel of professors. Thanks to this design, all professors from the network are involved in all PhD projects. For the PhD candidates, the summer and winter schools are perfect occasions to talk frankly to the professors in a natural setting.

Another special characteristic of IDEALAB is that the mobility plan for each PhD candidate is tailored according to their project topic requirements. If you want, you can spend half of your mobility period in one guest university, and another at a different university.

### ***What are your research interests?***

I am working on the effects of direct speech constructions (e.g. 'she was like, 'get lost, buddy!' versus than the indirect version: 'she told the man off') on conversational discourse in aphasia. In a study we carried out last year, we found that, in semi-spontaneous speech, individuals with aphasia use (many) more direct speech constructions than non-brain-damaged speakers. In addition, they use them in different forms and for different purposes than the control group. Apparently, the production of direct speech constructions has certain benefits for individuals with aphasia. The differences we found between the subgroups of speakers can be retraced to the differences in underlying disorders: some aphasic speakers particularly have problems with grammar, whereas others predominantly suffer from lexical impairments. During the remaining time of the project, we will investigate the effects of direct speech constructions in aphasia at several levels of communication, using several approaches, and applying different research methods. I think the combination of qualitative and quantitative research is very useful and interesting. Starting with a qualitative approach allows a researcher to get a grip on the phenomenon under study and underpin hypotheses, whereas applying quantitative methods enables you to seek evidence for your expectations.

### ***What do you expect for yourself from the programme? Do you have any future plans?***

I expect to have obtained enough knowledge and skills to start a successful career in (neuro)science research.

■ RICCARDA PETERS



## > HEAD OFFICE MATTERS

# Some critical notes on publishing

During the BCN PhD project management course, both the need to publish and strategic considerations on where to publish are important issues that garner serious attention. For many research disciplines within BCN, scientific journals are used as a means to disseminate research results. Given the increased emphasis on scientific output and its implications for career development and funding, some critical notes may be of import.

Whereas generally one would consider the highest impact the best impact, complex rules are applied to calculate scientific output. Central to the policy of many university institutions is the CWTS ranking system (Centre for Science and Technology Studies). Although, their ranking system may be useful for large institutions, the individual researcher may be a bit at loss, particularly when reconciling national and international systems.

Another interesting issue concerns the possibility to publish in open access journals. The U.K. government has recently announced plans to make publicly funded scientific research immediately available for free by 2014. This measure supports the academic public who has continuously protested against the inappropriate large profits made by journal publishers. (In a recent campaign called “academic spring” more than 12,000 academics boycotted the Dutch publisher Elsevier). An interesting detail concerns the considerable costs that are currently required for open access publishing that have to be paid for by the publishing authors. A challenging alternative, favored by many academics, the “green” open access, would allow researchers to make their papers freely available online after they have been accepted by journals. In the near future open access publishing will be a very serious option.

Another interesting issue concerns the papers we cite in our own manuscripts. Many authors have the tendency to use reviews or high impact publications to support their data and conclusions. Often these publications do not contain the original data of seminal findings and thus do not do justice to the original authors and journals. Many publishers and also scientific societies now advocate a more scholarly attitude and advise using original sources.

Clearly, the publishing media are in transition, and new policies on publishing are emerging. In view of the non-relenting urge of our faculties to calculate and administer our scientific output, we are well advised to closely follow the developments on publishing and adapt our policies.

■ PROF. ERIK BODDEKE



# Interview Prof. Dr. Jaap Koolhaas

**This summer, one of the most important people of BCN, Prof. Dr. Jaap Koolhaas, retired. I met him to discuss his career and the future of BCN.**

## ***Did you always want to become a Professor?***

(laughs) No. It just happened, there is not much career planning one can do. At a certain moment I was asked to apply for the free position as head of the group. That is of course a comfortable position, rather than aiming for it yourself.

## ***Why did you choose behavioral physiology?***

I was trained in the combination of classical ethology and physiology. I was always moving in between, knowing that my main interest is in behavior. But you can only answer questions about behavior if you also look at its underlying physiology and the other way around. For a long time, the underlying physiology has been neglected or even avoided by classical ethology. Nowadays, that has changed considerably. But in the old days, there was this barrier between people purely interested in behavior and those interested in physiology. There was hardly any cross-connection between the two. To answer causal questions one has to consider physiology.

## ***What was your favorite project during your whole career?***

Well...my work is not that much sub-divided into different projects. I started with the neurobiology of aggression. That was the topic of my PhD. At a certain moment, I remember that I was presenting my work at a meeting and there was this already old Professor Groen who was interested in psychiatry. At that moment he was interested in the relation between stress and hypertension. He

presented his work right after mine, and he said: "We should sit together! There should be a connection between aggression and blood pressure." At that time I had not even thought about the biomedical implications of aggression. This discussion finally ended with a grant application at the Dutch Heart Foundation, which was awarded. This was the introduction of social stress in the research group. Throughout the years we maintained these two aspects, the actor and the one who suffers from the social interaction. This stayed as my main interest. So it is not subdivided into projects, and we always worked as a team.

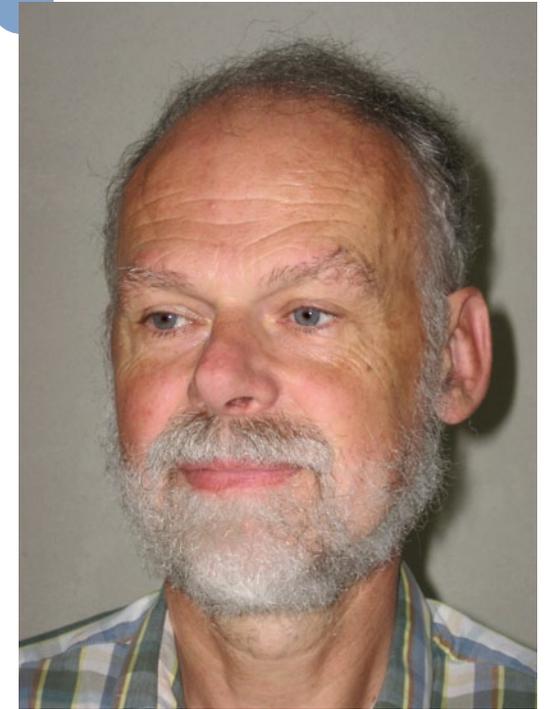
The other major change in our thinking was individual differentiation, realizing that not all individuals are the same. In particular, when you study social behavior that is obvious. Some animals are very aggressive; others not at all. That has been a major change as well, the focus on variation rather than on averages. So we have always taken some deviant pathway out of the mainstream of laboratory animal experimentation. Realizing that it is the variation that matters, not the average, we decided to change from laboratory animals to wild animals. That has been a major decision and you might say this has been a project that changed our research, getting rid of these strange laboratory animals.

I was in Germany a few days back and there, they have also changed to wild animals. The domestic guinea pig is a highly domesticated animal, just like the laboratory rat. Even today I got a paper to review. It is on the Zebra fish. A lot of behavioral genetic work has been done on the Zebra fish. This research group has decided to make a comparison between the wild and the laboratory Zebra fish. It turned out to make a huge difference. So gradually, the approach changes and I am happy to be able to say

that I was right in saying that in selecting your laboratory animal, one introduces a very strong selection bias in the results and the generality of these results. A few months ago, there was a symposium and a researcher presented his work on *C. Elegans*. He had exactly the same problem. All the work on *C. Elegans* in the world is based on one or two laboratory strains. If you compare these strains with wild population they are again very different. The results you obtain with these highly domesticated animals are of limited value in the sense that they only hold for that particular strain and cannot be generalized. So these are important moments in my scientific career, rather than certain projects.

## ***Do you have advice for current BCN Master and PhD students?***

Follow your heart. Do what you really think is right, what really interests you, what makes you happy and enthusiastic. At the same time realize that the world is getting pretty hard due to financial matters. So, if you really want to go for it, do it and do as much as you can. I see it here as well. The proactive students, who are willing to just come in my office and ask things and try to get things done and go for it, they manage. I guess the selection of students who will make it in science will be more severe. It is not just waiting for a job but actively going for it.



>> CONTINUATION INTERVIEW PROF. DR. JAAP KOOLHAAS

> *If you really want to go for it, do it and do as much as you can.*

***Do you think the atmosphere in the academic world right now is advantageous or disadvantageous for young researchers?***

I personally think that the atmosphere in the academic world is not what I would like it to be. I am, for example, not happy with a strict use of the tenure track system. The reason is that it is aimed to select potential leaders. Within five years you have to have your own group. I have always, and this is also based on my research, believed that the best teams consist of a mixture of personalities; a mixture of potential leaders who are competitive, and what you may call followers, who do a good job in science but do not necessarily want to become the head of a group. If you only chose potential alpha males, this is not going to work. We have plenty of examples from biology that picking only leaders will not work in the long run. You have to have this kind of mixture to achieve optimal performance of a team. Modern behavioral neuroscience is a matter of team work. On the other hand, this is how the situation is at the moment and it will take a couple of years until it will change. This is why I tell students to be proactive. Under the current atmosphere, a more modest kind of individual will have a hard time, despite the fact that they can do excellent research.

***You just mentioned “alpha males”. Do you think that there is a difference between males and females in academia?***

Well, first of all, we do not have that many females in staff members, at this moment. I think under the current conditions, females also need these kind of leadership characteristics. I am not certain whether this is a good thing. As I said, you need a mixture, and under the current conditions one tends to choose this dominant kind of females, although Biology and Psychology show that this is not the way to go. Team work is not a matter of gender, it is as matter of the right mixture of personalities.

***Is there a notable change compared to when you started your career in how people are selected?***

Of course. When I started, you more or less had an automatic kind of follow-up. You started with a Ph.D. and because there were not that many students, I could chose from different PhD projects that were offered to me. I had the opportunity to work with tarantulas in Panama, the neurobiology and behavioral physiology of tarantulas. Although it was attractive to work in Panama for a while, I chose for the neurobiology of aggressions in rats. After all, what are you going to do with a specialization in tarantulas in the Netherlands?

Once you were done with a PhD you went for a Postdoc, which I did in Oxford. But then once you had a position, you were automatically promoted to a higher rank. Another difference was that the whole group was position based. So when the old Professor was still there, you could not become a Professor. Now we have a career perspective, and you can become a professor if you are good.

***I read that you published more than 250 papers. Is that a part of your job that you really enjoyed, or did you see it as a necessity?***

I like writing papers. What I like in particular is presenting the more general biological message. During the last few years, I have been trying to write reviews. I think there is a need for conceptualization of results. Personally, I miss that and I like doing that. Data papers are fine, but to put them in a somewhat broader perspective is something I really enjoy doing.

***You worked in Oxford and Rome. Do you think it is important to gain experience abroad?***

Absolutely! I think it is absolutely correct that for current positions in the University you have to have at least 2 years experience at a lab abroad. Knowing how other people approach problems, being able to operate under different kinds of environmental conditions and enlarging

your network is essential, and I think it is absolutely right that it is a pre-requisite for current positions.

***Why should students and researchers join BCN?***

For students we have a very good master and Ph.D. program to offer. I think it is important to get an idea of the sheer breadth of the whole area, what I would call behavioral neuroscience. And that is all included in BCN. Another unique thing about BCN is that it includes the whole range, from research on animals in nature to the biology of the species to in vitro experiments with tissue and cell cultures. It is all here. It includes purely fundamental studies, preclinical approaches and human studies. This whole spectrum in combination with behavioral and cognitive questions is pretty unique in the Netherlands. And it is here in terms of facilities. We have facilities for studies under natural, semi-natural conditions, all lab facilities for behavioral neuroscience research, facilities for in vitro studies and the neuroimaging Center. It is just optimally used for research collaborations.

***What are you going to do with all your free time now?***

Oh, I have many hobbies. I have my own furniture workshop, I am a woodworker. I really like doing traditional wood work. I did a lot of painting, and hope to pick that up again. We have a camper, so we want to travel around Europe and I have a son in Asia who we want to visit regularly. We also have a big garden and a house to maintain so I will be fine. Of course, there is still work to be done; some of my PhD students still have to finish.

■ ANNIKA LUCKMANN

## Interview with Dr. Gretha J. Boersma<sup>1</sup>, winner of the 2012 Dutch Zoology Award<sup>2</sup> for her research on the effects of individual differences in personality on the development of metabolic diseases



The Dutch Zoology Prize is an annually awarded prize recognized by the Royal Dutch Zoology Society (KNDV). The Prize is given to the author of the best research in the field of integrative zoology.

**Integrative Zoology is defined as the integration of zoological research on the molecular, cellular, organismal, and population level.**

This year Gretha Boersma received the award and presented her research at the symposium "Animal personalities and coping style: their roles in health and disease" in Groningen on the 25th of May, 2012. Receiving the award was for Gretha a great honor. However, deciding on the scientific background of the symposium, and being able to invite fellow scientific speakers, was the "real fun" for her.

Gretha Boersma actively contributed to BCN as a member of the Ph.D. Council during her Ph.D. period in Groningen at the Department of Neuroendocrinology. During the interview, a passionate and enthusiastic Gretha Boersma talked about her past and current research.

***Welcome and good morning Gretha Boersma. Thank you for joining the interview and of course congratulations for receiving the Dutch Zoology Prize of 2012.***

***Could you explain what helped you win the Prize.***

Well, Anton Scheurink, my Ph.D. supervisor, knew about the prize and basically sent me an email saying that it might be interesting for me to submit my Ph.D. thesis to the jury. And indeed, all you needed to do was submit a set of publications, so in my case that was my Ph.D. thesis,

a summary of a page or two of what the work was about and how it relates to the research field promoted by the KNDV. And so I did, and received the prize.

***What was your thesis about, that also made you win the prize?***

My thesis research looks at interactions between coping style (or personality) and the metabolic profile of an individual. So what I initially did is, I had rats that were characterized by a pro-active or a passive coping style, and I looked to see whether they differed in their metabolic phenotypes. Depending on their standard laboratory conditions, which entails a diet that is high in carbohydrates and low in fat and sedentary housing with limited access to physical activity, the passive coping individuals were more prone to develop obesity and insulin resistance (which is a precursor for type 2 diabetes)

<sup>1</sup> Johns Hopkins University School of Medicine, Department of Psychiatry and Behavioral Sciences

<sup>2</sup> Sponsors:

KNDV - Royal Dutch Zoological Society

WIAS - Wageningen Institute of Animal Sciences

WUR - Wageningen University and Research Centre

WEB - Wageningen Expertise Centre for Biomechanics

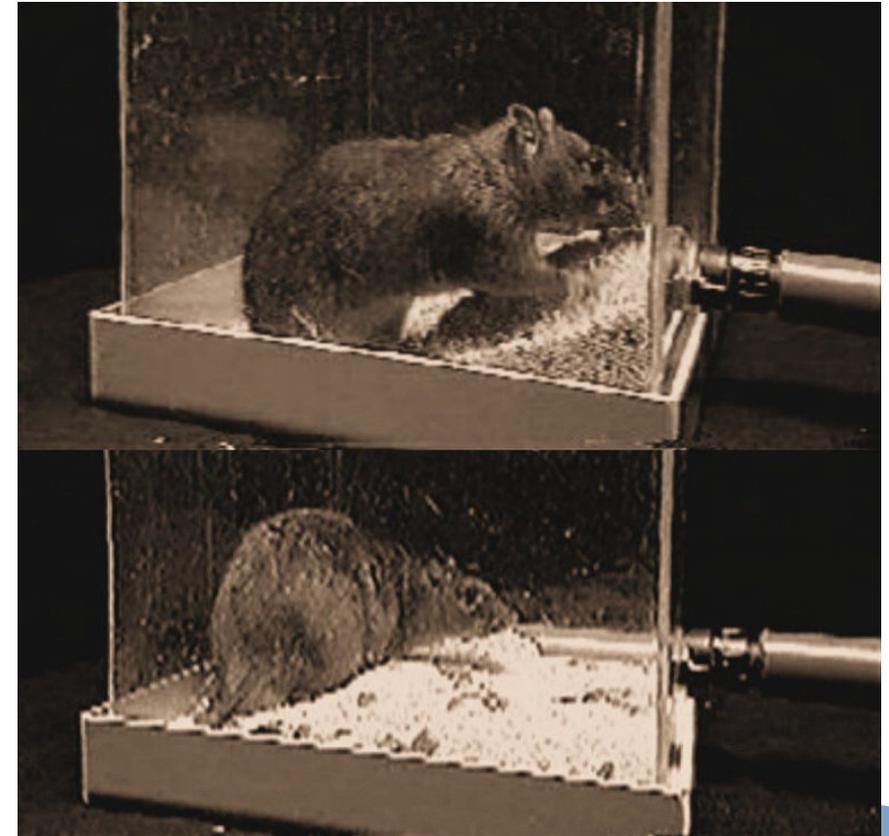
>> CONTINUATION INTERVIEW DR. GRETHA J. BOERSMA

than the pro-active individuals of the same species. Given this observation, we thought, Ok that is interesting, we have an animal that seems to be more prone to develop type 2 diabetes. So at that point we switched them from their standard diet to a high fat diet because we know that in our Western society, one of the main problems is related to what we eat. Our Western diet is very high in fat, especially bad fat, you could say. By switching the rats to a diet that is closer to what we are eating, you can see that the passive individuals develop an insulin resistance and really get out of track whereas the proactive individuals don't even respond to the diet. Thus the proactive individuals were very capable of maintaining normal levels of glucose and insulin. So at that point we realized, Okay these passive individuals in the sedentary condition are the ones that have a problem. Since we are all aware that exercise is supposed to be very healthy, we wanted to know how they respond to more practice and inserted a running wheel into the cages. Anyway, since we knew that rats responded differently to the diet according to their coping style, we suggested that they also may respond differently to running. What we saw is the following: especially on the high fat diet, the passive coping individuals were actually more active in the running wheel condition than the proactive individuals. Somehow they seemed to sort of compensate for the fact that they were more prone to develop obesity, and with the increased exercise, of course, their glucose-insulin level normalized. So what we concluded was that if the passive individuals are put into the right environment, where they have the opportunity to compensate for an increase in food intake and an increased vulnerability for metabolic pathologies, in that situation, passive individuals are well off. So that was the main part of my thesis. I also looked into the possible mechanism that is underlying this. From previous research, we knew that passive coping individuals' stress response is more mediated by the HPA axis when compared to proactive coping individuals whose stress response is more sympathetically mediated. We also knew that these glucocorticoids can induce

visceral obesity and desensitize insulin receptors, leading us to give them glucocorticoid-receptor antagonists, to see if insulin profiles will normalize. Which it actually did. Consequently, this points to the hypothesis that the assumed difference in the HPA axis versus sympathetic activation between proactive and passive individuals actually underlies these differences in susceptibility for insulin resistance.

**How did you define "coping style" in the rats?**

In rats what you can do is, or what I used is, the defensive burying test, and what you do with this test is you insert a prod into the animal's home-cage with electricity on it, so once they touch it, they receive a mild shock, which is obviously an aversive event for the animal. When applying this method you see two responses. You have the passive response, which is "I am going to sit in the furthest corner away of my cage and move as little as possible, hoping that at some point someone will remove the prod from my cage". And then you have the proactive individuals who start putting all the bedding of the cage around the prod and basically bury the prod entirely. Which is also a very effective way because the animal doesn't get shocked by the prod, either. So these are two types of responses that have been shown in fish, and even insects, and also in humans. Even though, of course, in humans it is harder to define the response since cognitive factors sometimes overwrite the underlying behavioral and physiological reaction. Moreover, we know that these passive individuals, apart from their strategy in coping style, also tend to be less aggressive, less impulsive, actually, more flexible in their behavior. Whereas proactive individuals have a very fixed behavioral pattern that in addition, is also very hard to change. This means that a passive individual is very sensitive to small changes in its environment and therefore adapts its behavior towards what is going on in their environment, as long as it is about small changes. We think that that has to do with their evolutionary background because in situations where animals have a territory, you see



more proactive individuals and they do well in that situation, which makes sense, given that they are more aggressive. Aggression that they need in defending their territory. So metabolically speaking that means that if you have a territory, you have food available so you are not switching from high amounts of food to low amounts of food. Hence, you live in an environment with a stable availability of food and you don't have to prepare yourself for times of scarcity. Whereas the passive individual does very well in a sort of migratory setting that constantly changes, and switches their coping style because if you don't know what is coming, you better lay low a little

## &gt;&gt; CONTINUATION INTERVIEW DR. GRETHA J. BOERSMA

than if you burst out without thinking because if there is a predator, you have a problem.

***So you selected the two groups on actual behavioral characteristics of the animal.***

Yes, basically we used the roman high and low avoidance breeds that are very extreme in their coping style, but in addition to that, we also wanted to use a more natural rat population. Because if you make a selection we might be selecting for some other trait accidentally that is not necessarily linked to coping style but may nevertheless explain your metabolic phenotype. Hence, we also used the wild type Groningen rat for our experiments. These rats were originally caught in the wild and brought into a laboratory setting. By this way of selecting, we attempted to keep sort of a normal distribution of the behavioral profile that you would see in a normal population, with some more intermediate animals. What you actually see is that the effects on, for instance, insulin resistance, are already present under standard conditions in the very extreme animals. However, in the more intermediate animals you really have to challenge them with a high fat diet to see the differences. That again is highly interesting if you translate it to a human population, in which you probably won't see those very extreme individuals but the more intermediate individuals. If you combine the observation that you can trigger insulin resistance with a high fat diet in even intermediate animals with characteristics of our society, where a high fat diet is quite common, and there is no need to be very physically active, the relevance of looking at coping styles related to vulnerability of metabolic diseases seems obvious.

***Based on these insights what would you recommend as a cure or solution to the problem of increasing insulin resistance/obesity in our Western society?***

Well, of course it is always hard to directly translate findings from animal research to humans. But, one of the things that you should adapt to treatment plans of people

who present with an insulin resistance or vulnerability to insulin resistance is the individual's coping style. So initially we would say, Okay, more passive coping individuals are generally more prone to developing these kind of metabolic/physical pathologies. So the majority of a patient population would possibly consist of passive coping individuals, and for those individuals, we know that exercise works very well. When we did a pilot-study in humans in cooperation with the Hanze Hogeschool (with students from the institute of sports studies) to prove the principles we found in our research on animals, we saw that passive individuals did more exercise and got higher activity levels in total than the proactive individuals, even though they received the same amount of training as the proactive individuals (twice a week) with a personal trainer. So that was interesting and that sort of fitted with what we saw with our animals in the running wheel, only we didn't see any difference in the human participant's body weight. The weight of all of them improved on basis of the exercise protocol, but there was no difference between the passive and the proactive individuals. So we looked a bit more into the days that were in-between the training sessions. What we saw there was that the passive individuals somehow unconsciously compensated in the days after the training. This means, participants compensated with lower level of activities. It was in how straight they were sitting up or how often they walked the stairs. So at one point we were like, Okay how do we fix this?, since this could confound our results considerably. So we decided to make people aware of it, saying, Okay if you are training you may be compensating in this lower level of activities during the days in-between, and we asked them to pay attention to that. For example, we asked them to be conscious about how often they were taking the stairs, how often the elevator, how often they were walking, for example, to the kitchen, did they take everything at once so that they can sit on the couch for the rest of the day or were they walking more often, etc. Once we instructed them on that, we started to see the actual differences. And that again sort of fitted with

the idea that passive individuals are more sensitive to environmental cues. And also more sensitive to keeping this environmental balance that we suggest lays behind the evolutionary perspective I tried to sketch above. So, to summarize, in the proactive individuals, if you give them a training, they won't compensate because they just stay in their normal daily rhythm, but the passive individuals sort of adapt and compensate for the compensation. However, in my opinion, that is something that can be quite easily fixed. So since we now know that proactive individuals apparently don't benefit from training as passive individuals do, it seems more reasonable to use pharmacological interventions for proactive individual that are insulin resistant and/or diabetic. Because then you sort of circumvent this behavioral output to which they seem less responsive. However, this is only speculative, since we haven't done any real substantial study in humans at this point.

***Nevertheless do you intend to do so? Would you personally like to do a study on this topic?***

I think there will be others. I mean, I am really a basic scientist, so for me, I have never done a real study on humans. I mean this pilot study with the Hanze University was fun and we had students there that helped in doing the training. But to do a study in humans is hard.

***So you prefer the rats?***

(Laughing) Yes, I prefer the rats. But I would love it if somebody else would do it.

***Earlier you told us that you prefer working with animals. How did your career start?***

I studied Biology here in Groningen and started out doing my first research project during the Master with Anton Scheurink and with the postdoc that was working with him. This research was on rats, looking at MCH, a neuropeptide that is involved in food intake. It was a 6-month project. And that was when I realized, Ok this is something I really like. During the second part of my

> *Passive individuals did more exercise and got higher activity levels in total than the proactive individuals.*

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master, I went to Tallahassee, Florida for 6 months to work with Dr. Lisa Eckel who uses animal models to look at anorexia nervosa. I did a research project there that was in essence quite similar to that what I did in Groningen. The type of work didn't differ that much. But of course, it took place in a completely different setting, so that was really nice. After I finished my project in Tallahassee, I came back to Groningen to work with Dr. Inge Zijdwind at the UMCG on a project in humans on contralateral associated contractions. So that was sort of a completely different project to me, and made me really think about whether I want to go on studying human subjects. I had to admit that I liked the application of research in humans, but although I had a great time and I liked the study at the UMCG and its concepts a lot, working with humans is just hard and you spend a lot of time organizing things, getting your test subjects etc. And well, with rats it is a lot easier. Rats are always available and you can do your experiments at the scheduled time. Moreover, with humans, you are always sort of limited in what you are able/allowed to do. For example, when it comes to injecting agents or applying invasive techniques, it made me aware that I don't like having those limitations. So that was really when I decided that I wanted to work with animals in my future career. And then, actually already when I was in Tallahassee, Dr. Scheurink asked whether I would be interested in doing a PhD in his lab. But due to some organizational things in his lab, it took a while until I could actually start. So I worked as a teaching assistant for a while in-between and then started my PhD and did that for 4.5 years. And now I am in Baltimore for my postdoc.

**And do you like it in Baltimore?**

Yes, Baltimore is actually a much nicer city than I thought it would be.

**Did you always dream of going to the U.S?**

Yes, well, I always wanted to go abroad, and I did that when I went to Tallahassee. But it was not that I was like, Oh yes I want to go to the US. It was more like, I want to do this and this in my research. So I was looking for groups that were working in the field I am interested in, and the group I am now with is a really good group. So it was more based on the group than on the location. I knew that I did want to go somewhere where they at least speak English or reasonably good English, because I am not good at learning languages. So that was sort of the only criteria that they had to meet. Otherwise I would have spent two years of learning a new language instead of doing my post doc research.

**So your emphasize was really on the project and not on the country.**

Yes, my emphasize was really on the project and people, I would say. I mean the project I defined myself, more or less, because I have a Rubicon Grant for my post doc now. But, during my PhD, the project was started by the group, and they asked me for that project there. So it wasn't my idea from the start. But for my post doc I wrote a Rubicon Grant application and got that. This really gives me the opportunity to do work on my own ideas instead of doing something that someone else had started. I mean, that is very nice, especially in the beginning, but the more you get into research, the more you want to work on your own projects.

**And what are you working on right now?**

Basically I am continuing with what I did as a PhD student, only now I am looking more into developmental effects. So I am now looking at epigenetic processes that are involved in the development of coping styles and metabolic phenotypes, and of course their interactions. I am currently using a prenatal stress paradigm, and my initial results show that prenatal stress leads to more extreme coping styles. So rather than really changing the "initial coping style" from one extreme (passive) into

the other (proactive), we see that prenatal stress turns out to be associated with making a moderately passive individual more extremely passive, and the other way around. Moreover, we know that prenatal stress in itself, when combined with a high fat diet, leads to insulin resistance and glucose intolerance. And again, from the data so far, it seems that it's the passive individual that will be more severely affected by this, whereas the proactive individuals are affected less by the prenatal stress. So this points in the direction that there is an interaction between early life circumstances and coping style. Furthermore, I am now looking into genes that are involved in HPA axis regulation, and genes that are involved in metabolic regulations in leptin and NPY. Here I am looking at methylation profiles in those genes; in the end, they should tell us something about epigenetic alterations that are going on in times of prenatal stress in the pup. The next step would be to look at the interventions, such as exercise but also environmental enrichment to see if early interventions, in early childhood for instance, sort of rescue the coping style/phenotype, and with that, rescue the vulnerability for metabolic diseases.

**For how long will you be funded by the Rubicon Grant?**

I have now been there for about a year, and the Rubicon is for two years, so I have till the end of this year and I am now looking for what's next, to see if maybe I can stay for another year in Baltimore or so. I would really like to go on with these studies. Since I am now using prenatal stress paradigms but I am looking at the adult phenotypes, it takes 6 to 7 months for one study. So you can imagine that two years is too short to really acknowledge all the questions I would like to answer. So I am looking into getting grants to stay another year and then, after that, I don't really know, yet. You know, I am looking into multiple options. So either staying in the US or coming back to Europe but I will definitely stay in science. At least if I have the opportunities to do so.

> Now I am looking more into developmental effects.

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**Coming back to the prize from the Dutch Zoology Society, how does it feel to receive the prize?**

Obviously it is quite an honor and it is great to get awarded for your work. However, I think the nicest thing for me was not only the actual prize itself, but getting the opportunity to organize the symposium. Which is awesome, you know, you get the opportunity to decide, Oh ok who do I want to listen to, in whose research am I interested? Getting those people to talk and listen to, and finally to interact with them, is pretty awesome.

**And you were the last speaker right? Was this as a special honor for you?**

Yes, definitely.

**And do you think that the award might help you get a new grant?**

Yes, I think so. I mean, everything that increases the public's awareness about the work you are doing might help in receiving grants. Moreover, it looks really nice on your CV. And it suggests that your research is appreciated in the scientific community, which is really important when you are applying for grants. It would probably help me more if I were applying for Dutch grants than it would in the US, but you never know. I mean, just winning an award helps.

**Would it be an option for you to apply for a grant in the Netherlands?**

Yes, of course, my future idea is to get back to at least Europe. It would be nice to be a little closer to my family. And in the Netherlands there are definitely some opportunities I could apply to, for example, I could apply for a trainee grant, which is sort of a logical next step. But I haven't figured it out in too much detail, yet.

**Ok, well you are also a member of BCN. How was your experience with BCN while doing your PhD?**

During my PhD I was an active member of the PhD council group for BCN. So I was relatively strongly involved within BCN. For me it was nice to have a community outside of the lab, and it helped to get some more interactions with other researchers. Especially for us, as basic scientists, it gives you the opportunity to talk to people that are maybe more on a clinical side or people who are working on the translation between human and animal research. You know, for me, talking to people from psychology for instance is and was always very useful. Of course I am looking at my rats, but ultimately you always want to translate that work to humans. Since I have no background in psychology, it was really nicely done through a network like BCN. I guess this was also the most important benefit from BCN. I mean, the courses are useful, too, but I think the network is what really makes the difference.

■ KATHI MÜLLER

## Introduction

### > Christina Cordes



I graduated in 2011 from my Master's in Neuropsychology and just started my PhD at the same department in June. During my studies I became increasingly interested in the human brain, with a special focus on brain pathology and brain-behavior interactions. Within this domain, patient-bounded research has always been my main compassion.

My PhD project aims to identify the factors that determine safe participation in slow motorized traffic within a visually impaired population group, and is conducted in collaboration with Royal Dutch Visio, a rehabilitation clinic for visually impaired and blind people. Apart from visual factors, the project will also examine the influence of cognitive, mobility, personal and environmental determinants.

I joined the BCN graduate school as part of my PhD training program and I am excited about the opportunity to contribute to the BCN newsletter.

# The eyes reflect more information than previously thought

Interview with Stefan Wierda and Sander Martens

*Congratulations on your publication in Proceedings of the National Academy of Sciences (PNAS). Could you briefly explain what your article is about?*

**STEFAN WIERDA:** Together with Dr. Hedderik van Rijn and Prof. Dr. Niels Taatgen, we have developed a method to analyse the dilation of the pupil (the increase in pupil size). With our novel method, we can extract more detailed information on mental or attentional processing from the changes in pupil size.

**SANDER MARTENS:** It is based on the principle that the pupil size increases whenever the brain is actively processing something. In other words, a change in pupil size reveals a change in mental effort. However, a problem is that changes in pupil size are relatively slow. It takes about one second to respond to a certain stimulus, thus there tends to be problematic overlap in pupillary responses when stimuli are presented shortly after one other. Using a computational model that takes the characteristics of the pupillary response to a single event into account, our method extracts the different events underlying the pupil's complex dilation patterns. This results in ten times more precise information about the time course of changes in attention or mental effort. In our paper, we have shown that even very subtle changes in attention can thus be measured. In addition, the amount of attention that is needed to become consciously aware of a target stimulus can thus be determined.

*What kind of paradigm have you used to study your method?*

**SANDER MARTENS:** We tested our pupil dilation deconvolution method using a temporal attention task that is known as the attentional blink paradigm. Once you pay attention to something it typically takes a while to become consciously aware of subsequent information; that delay is measured using this task. During an attentional blink task, we present a stream of stimuli on a screen, for instance digits, at a rate of about ten per second. Embedded in this stream are two targets, for instance two letters, which participants have to identify. When there is more than half a second between the two letters, participants usually have no difficulty in doing this task. However, when there is less than half a second in between the two targets, most participants fail to identify the second target in about half of the trials. This phenomenon is called the attentional blink.

**STEFAN WIERDA:** It is quite fascinating that we can thus study what happens in the brain when people become either aware or remain unaware of a stimulus, given the same perceptual input. Combining this paradigm with our method allowed us to see to what extent such changes in attention and conscious awareness are reflected in the pupillary response and its underlying events.



*> Stefan Wierda: Previously we did not know which part of the pupil dilation belonged to which event, or even to which trial. We provided a solution to this problem in our paper.*

## &gt;&gt; CONTINUATION INTERVIEW WITH STEFAN WIERDA AND SANDER MARTENS



> Sander Martens:  
I think you just  
have to be bold  
and try!

### **How did you come up with the idea to develop this method?**

**STEFAN WIERDA:** Actually, we wanted to know if we could use pupil dilation as a measure of attentional processing in an attentional blink task, and the main challenge was to find a way to analyse the overlapping pupil dilation data. If it would work, it would provide a new way to study changes in attention and mental effort. First, we tried to implement an existing deconvolution method. However, it turned out that we could not use that existing method for our data without substantial changes to the method. Thus, we started to adjust the method in a way that it would work for us. The adjustments finally converged to the current method, and it seems to work surprisingly well.

### **Could any cognitive process be studied by analysing the pupil or only attention?**

**SANDER MARTENS:** We think this method has the potential to be broadly applied. We are currently investigating the effects of distraction and emotional processing using the same method. The preliminary results, for instance in a study with individuals after a romantic relationship breakup, look very promising indeed.

**STEFAN WIERDA:** I think that pupil size reflects mental processing in general and attention is only a part of this. In particular, tasks that involve high level cognitive effort should be suitable for this kind of research.

**SANDER MARTENS:** When people remain unconscious of a presented stimulus you do see a response, but it is a lot smaller than when people are conscious of the stimulus.

### **What are your future research plans with this method?**

**SANDER MARTENS:** It would be interesting to study groups of people that may have changed in how they pay attention and process information, for instance depressed patients. Also, it would be great to study changes in attention as a function of age. In addition, we would like to relate pupil dilation measures to electro-

encephalography (EEG) data and maybe also near-infrared spectroscopy (NIRS).

**STEFAN WIERDA:** Sometimes you do not find a behavioural difference between such groups in behavioural measures, because the human mind tends to compensate. However, this extra effort might well be reflected in the pupils. And although the pupil might be a bit less responsive in the elderly, others have already shown that pupil dilation research in the elderly is certainly possible.

### **What do researchers have to do if they would like to use your method?**

**STEFAN WIERDA:** An implementation of the method can be downloaded from the PNAS website. I think it is relatively easy to use and some researchers are already using it. If anyone wants to use this method and does not quite understand how to get it running, they may always contact me of course.

### **How did you manage to publish your study in this high impact journal?**

**STEFAN WIERDA:** To start with, our results are really clear and the figures look really neat.

**SANDER MARTENS:** People are really surprised about how sensitive this method appears to be. And the opportunity to measure subtle changes in attention and conscious awareness is very nice.

**STEFAN WIERDA:** Previously, the signal overlap of pupil responses to different stimuli was an important problem. All the information is in the pupil size already, but earlier we did not know which part of the dilation belonged to which event, or even to which trial. We provided a solution to this problem in our paper.

**SANDER MARTENS:** The signal-to-noise ratio is also better when using this method than with EEG, which basically means that you need fewer trials per subject.

### **Do you have any advice for the BCN community about how to get published in important journals, besides having clear results?**

**SANDER MARTENS:** I think you just have to be bold and try. And what you write has to be very to the point, of course.

**STEFAN WIERDA:** It certainly takes a lot of effort, but when you are able to write down what your research is essentially about, it appeals more easily to a general audience. For example, when my mother read our abstract she could understand it, even though she is not a scientist. She could explain what we did and what it could be used for. It is useful to check whether your paper is understandable for non-scientists. Some parts of your paper are of course very technical, but it should start really basic and clear. It can sometimes feel a bit awkward, but you have to sell your research! If you think you found something that is really cool, others will (hopefully) also start to feel that vibe.

**SANDER MARTENS:** Exactly, if you are not enthusiastic about your research why would other people be?

Reference: Wierda, S. M., van Rijn, H., Taatgen, N., & Martens, S. (2012). Pupil dilation deconvolution reveals the dynamics of attention at high temporal resolution. Proceedings of the National Academy of Science, USA.

■ DAFNE PIERSMA



## Introducing a new BCN member: Eric-Jan Wagenmakers

**Prof. dr. Eric-Jan Wagenmakers started working as a professor at the Experimental Psychology Department of the University of Groningen in 2012. He is working in Groningen for 1 day a week, while he works at the University of Amsterdam for 4 days a week. As he is an expert in modeling in neuroscience, we are delighted to have him as a new member of BCN.**

### *Could you introduce yourself to the community?*

Sure. I started my studies (psychology) in Groningen. I really enjoyed it here, and got more and more interested in the scientific side of psychology as my studies progressed, especially when conducting the final thesis. After that period I moved to Amsterdam to do my Ph.D. and continued in the US, in Chicago, as a postdoc. After my postdoc I came back to Amsterdam. Meanwhile, my interests had shifted from experimental psychology to mathematical psychology and statistics. That made it very natural for me to work in the methods group of the University of Amsterdam. In 2006/2007 I met my girlfriend, who is a neuroscientist. Consequently my interests also turned to neuroscience. So my main interests are neuroscience, mathematical psychology, and statistics.

### *What was your Ph.D. about?*

My thesis actually covered a lot of topics. You could say that I have relatively broad research interests. Of course, a more negative way of putting this is to say that I'm easily bored. Anyway, my advisor was Jeroen Raaijmakers, who is a mathematical psychologist, interested in memory research. For the most part, I worked on the phenomenon of priming. Priming occurs when memory is influenced by a brief prior event, and you

are basically looking at the biasing effect of that implicit or explicit prime. I also did a lot of response time modeling. This is the line of work I carried on doing as a postdoc.

### *What are your main goals in Groningen?*

Really, I'm just here to collaborate, have fun, and hopefully contribute to the overall level of academic intensity. Also, my goal is to facilitate interdisciplinary discussion. I will try not to get locked up in my office too much and participate in meetings and discussions, work with a lot of different people. Besides that, I have some projects running. I'll be involved in grants and advising people on particular issues, like writing and submitting papers to journals.

### *What kind of projects are you carrying out here?*

Actually, there are several projects with Richard Morey, from the methods group. He is interested in Bayesian statistics and so am I. One of the projects relates to publication bias. How can you estimate it and how can you correct for it in a Bayesian way?

Another project deals with monitoring evidence from medical studies. Ideally, you want to monitor the evidence as your patients come in and you want to stop when the evidence is convincing. This would limit the amount of time and money spent on the study and you could prevent patients from being submitted to an inferior treatment. But most statistical tests do not allow you to do that. With present procedures, you are forced to continue until you have reached the predefined amount of patients. It also works the other way around: If your evidence isn't compelling after the 100 patients you have tested, you'd like to continue until it becomes compelling. But once you have said "I'm only going to test a 100", you can't continue anymore. With Bayesian techniques you can. There are other solutions to this, but the Bayesian solution is to us the most intuitive one.

## &gt;&gt; CONTINUATION INTRODUCING ERIC-JAN WAGENMAKERS

**Can you explain why you cannot continue the experiment in a classical test and why Bayesian statistics is different?**

The classical p-value depends on the intentions of the researcher. For instance, suppose you say: Let's test 20 subjects and we will see if it is enough. You run your experiment and you find a significant result,  $p < 0.05$ . This p-value may be incorrect. What matters for the computation of the p-value is this: What would you have done in the hypothetical case that the initial result would not have been significant? Would you have tested 10 participants more? If you answer yes, then your initial p-value is invalid, as it should have been corrected for the fact that you were planning to look at the data more than once. If you allow a researcher to collect data until they have reached a particular significant level, they will always reach that level if they go on long enough, even when the null hypothesis is exactly true. When you calculate that p-value, it depends on the sample space, which is the scope of possibilities, or realizations of the experiment, that could have happened, but did not. Now in Bayesian statistics, you are only concerned with the data you have actually observed and not with possible realizations that you did not observe. So that removes that complication that the statistical tests depend on the intention with which the data were collected.

**Are you also doing work in modeling, here in Groningen?**

Yes, together with Udo Boehm and Hedderik van Rijn. We are working on models of decision making called drift diffusion models. In the standard modeling framework it is assumed that people integrate noisy evidence over time and respond whenever they reach a particular threshold for evidence and that threshold is constant over time. We are looking at extensions where people have an increased urgency to respond. So instead of assuming the response threshold is constant, one alternative is to assume it is not constant but it is actually sloping down, so that means that if you already

accumulated a lot of information, then you accept smaller criteria of evidence than before.

**That sounds very intuitive. A participant could think: "Shit, I still don't know what to do, let's lower my criteria and allow for a less certain response"...**

Yes. So one thing that we are going to do is look at the circumstances in which this behavior is actually optimal. Because in this line of work, people are not only interested in making models that are intuitively plausible, but ideally you also want these models to be statistically optimal under some set of circumstances.

**Under realistic circumstances, I presume?**

Yes, absolutely. I think it may have been Tversky who showed that you can always find circumstances under which a certain procedure is optimal. But hopefully we can make realistic assumptions about what people are trying to do and with those plausible assumptions we show that you need boundaries that move in over time.

**So as an expert in modeling, what is your stance on the role of modeling in neuroscience?**

That's a very interesting topic, one that I have been involved with quite a bit with Birte Forstmann. We are currently editing a book that is based exactly on this: A model based approach to neurosciences. That is really catching on and I think that is important. It is a way to bridge the gap between behavior and the brain. So on the one hand we have psychologists that are studying behavior. They are studying response times, errors, choices etc. and on the other hand we have neuroscientists that analyze brain measurements. Very often, these fields seem very isolated and it is kind of unclear how to relate them to each other. But what they have in common is that the psychologists, who study behavior or the brain, want to know about unobserved cognitive processes. When a psychologist or cognitive neuroscientist looks at the brain, they want to learn about memory or attention or control processes. They are not

looking at the brain because they are interested in the anatomical structure of a particular part of the cortex. Modeling is what can unite those different disciplines. These models can have various levels of abstraction. They can be relatively statistical or descriptive or more of a process model, explaining what is going on internally. Also, you can incorporate more or less of the anatomy and neural substrates. It is interesting to think about how far you have to go with your model to make it neurologically plausible. In general, this is how modeling can help: building a bridge between the anatomy and behavior. Sometimes it is possible to have a large neural network, neurologically plausible in several ways and then simplify it to show that its core behavior can be captured by a much simpler model. So modeling can help us understand the very complex neural architecture of the brain by capturing it in a more easy to understand, simplified model. You could construct a series of models that are consecutive simplifications.

**One of the problems I have with some models, like ACT-R, is that they assume the mind is symbolic and rational, whereas if you look at the neurological level, you see complexity and chaos, which may sometimes emerge as a pattern that can be described by rules and symbols, but this is nowhere near always the case... Are these assumptions not blocking the possibility of a bridge between the brain and behavior?**

Well, maybe. But you have to assume something, right? The power of such rational models is as follows: we are going to make a principled choice and we are just going to assume the mind is rational, at least under certain assumptions. And then when you find that your model cannot handle the data, you know that something is amiss and you have learned that something else is going on.

**But I have never found anything that ACT-R cannot handle...**

Well, that's another problem! That's the more critical



> I'm here to collaborate, have fun, and hopefully contribute to the overall level of academic intensity

## » CONTINUATION INTRODUCING ERIC-JAN WAGENMAKERS

problem, I think. ACT-R is a pretty flexible architecture. In order to assess whether the model can or cannot handle the data, we need to move to a more predictive framework, where you state in advance what the model predicts and then do the experiment. This is a very simple scientific principle that people often fail to use. Because if your prediction fails, you are in trouble. You open yourself up to falsification, which people don't like. I do think this is much more informative.

The fact that ACT-R is applied and fitted to so many different situations is one of its strengths. It tries not just to fit a single task, a single phenomenon, but it really tries to be an overarching account of human cognition. I think that is what drove the ACT-R development. There is this paper titled "You can't play 20 questions with nature and win", which shows that you need an overarching framework. If you have one tiny model that can account for this specific problem, and a completely different model for a different problem, and another thousand models for other problems, then in the end, what you have learned about human cognition is debatable. So ACT-R tries to be overarching, but it also means it will be more complex. How can we evaluate this trade-off? It's difficult. But essential to the evaluation is a predictive paradigm. That requires a lot of scientific integrity. You have to be completely honest and state your predictions beforehand. I think in modeling, psychology and neuroscience, it just isn't done often enough, probably because it is not in the researcher's own interest. It is essential for the field, not for the researcher. I think it is important that we change the way people are currently working.

***That seems like a good take-home message to end with. Thank you very much and good luck with your work!***

■ ROBIN MILLS



*> Many new Ph.D. students are sub assertive people... It is as though they consider being direct as being blunt, impolite and brazen.*

## New in the BCN program: Communication skills and Time management

### Interview with Jan Pieter Weening

**In the introductory course of the BCN program, Master and Ph.D. students learn what is going on in BCN. In six lecture days, researchers present and discuss their latest research projects. However valuable this is, no attention is given to the practical aspects of being a researcher. This is going to change next year. Jan Pieter Weening will spend two afternoons of the introductory course on teaching students about communication skills and time management. He wants to provide students with the necessary tools to make a good start.**

Communication skills are increasingly important for researchers. Consider a grant application, for example. You might have worked for years on your research project and now you are standing in front of some committee trying to explain your research in 10 minutes. Weening: "You're placed in a Idols-like setting. It is totally unfair, but it's reality." If you cannot sell your research, you'll be out of money and consequently out of business. And the need for communication skills stretches beyond such situations. As a researcher, you'll encounter teams, bosses, students, assistants, politicians and the general public. It is not just

about conducting experiments. There is a whole world of business and politics surrounding you.

The same holds for time and project management. As a Ph. D. student, you are working towards an end result, the epilogue of 4 years hard work: the dissertation. How can you plan your years effectively? How can you avoid being lured into irrelevant side-projects or plain time wasting?

Weening has a good deal of experience in teaching people the necessary tools. After completing his Masters in social and organizational psychology, he set up several intercompany management courses for companies like Rabobank, UMCG, Holland Casino and University of Groningen. Since 1996 he has worked as a project manager and trainer for private and public companies. For the University of Groningen, he set up projects like 'Getting Your Ph.D. Done', which is a three day course wherein he shows new Ph.D. students how to plan and communicate effectively.

So what can we learn in the new course? Weening: "Many new Ph.D. students are not assertive enough. This is very logical. When you are in a promotion trajectory, there is a sort of hierarchy of which you are the bottom. They find it difficult to stand up for themselves. They don't dare to be direct. It is as though they consider being direct as being blunt, impolite and brazen. As a result, their communication is often very implicit. They just hope the other person has understood. So what I tell students is

## » CONTINUATION INTERVIEW WITH JAN PIETER WEENING

to be clear and to know what you want to achieve in a conversation. Often, supervisors do not have a lot of time (a harsh reality) and once you get the opportunity to speak with them, be clear and concrete!”

About time management he says: “Time management is about making conscious choices. It’s a complicated concept. It’s about what you can and can’t do, what’s realistic and what is reverie. So how can you install workable patterns in your daily labor? For some, it’s making sure you take two days a week, wherein you read and summarize papers without external distraction, for others there are different mechanisms. I try to make people aware of their choices and patterns and hope to take out at least one or two points for everyone, which might save time for them.”

As Ph.D. student you are your own project manager. You are the only person that can steer the project into a successful direction. This can be daunting to many. What Weening advises is to make an overview of the coming 4 years on a large sheet of paper, preferably together with your supervisor. This can result in some interesting dynamics. Weening “It can be fun to hang a piece of paper on the wall and look at it together. Very often, interesting conversations about mutual expectancies can arise, which would have lain dormant otherwise”.

Ph.D. trajectories mostly aren’t free of failure and disappointment. Weening says: “I still have to find the first person who didn’t feel like stopping at some point in the project.” But what people often ask him is: “Why didn’t anyone tell me? Why didn’t anyone tell me it is normal that I don’t know what to do or feel like I want to stop sometimes?” Apparently, many students have no idea about the problems that other people come across. This is where the new course can come in handy. Weening likes to conduct supervised discussions wherein students can give each other advise. Weening: “Eventually, they can

learn the most from each other. They are all in the same boat; it’s not a lonely struggle. Knowing this, can be very relieving for many students.”

Also, students mustn’t forget to have fun according to Weening. “I see a lot of grumpy people walking around. For example, some students tenaciously complain about their supervisor not being there for them. Surely you have the right to complain about it, but what point is there to linger on in misery? Eventually you have to complete the project, so try and find some enjoyable angle and carry on. Also, don’t work on your project too much. Working on your project day and night and also in the weekends does not improve your work. Try and think of what makes you relax. Perhaps you enjoy cooking or playing sports?”

Weening enjoys his work. “Basically, what I do is to hold a mirror in front of people. I’m not under the false impression that my work will dramatically change the lives of people. Not at all. In fact, the tragic thing about my work is that the effect is often really small. People fall back into their old pattern, that’s just how it works. You just don’t change people’s personalities in a few afternoons. In fact, personality traits probably don’t change. But I can provide them with some handles to hold on to. Even though people can’t change their personalities, people can change/adjust their behavior. There are two important prerequisites for that to happen: the new behavior must be applauded by the environment and it shouldn’t be too far away from the person’s character that it constantly incites awkward tensions.”

Weening looks forward to giving the course. His maxim? “Playfully pragmatic”.

## ■ ROBIN MILLS



> *Time management is about making conscious choices.*

## Measures against fraud



Before we consider measures against fraud in science, it is good to ask ourselves what the problem is. Ten years ago, commenting on the misconduct of physicist Jan Hendrik Schön, the Dutch astronomer Vincent Icke argued that scientific fraud is not a problem at all: scientists check each other's work, and fabricated results will sooner or later fail the test. In science, a fraud is always caught. I do not think this is true: for one thing, a lot of research is not followed up by others; it is simply not interesting enough to check. Even so, one might say, fraud is not a problem. If the 60% of journal articles that are never cited would all contain bogus results, science would be none the worse. The Stapel case presents a third possibility. His articles, including the many fraudulent ones, were frequently cited, but apparently they can be removed from social psychology without damaging its theoretical structure. The handbooks don't have to be rewritten. Social cognition theory is largely the same without Stapel's work. This raises all sorts of questions about social psychology of course, but at least it seems that fraud, even on a massive scale, does not necessarily hurt science.

But science is more than theories and handbooks. Stapel's fraud has damaged the careers of several young scientists. I know of no concrete examples, but to have been supervised by Stapel must be a heavy burden to carry into the academic job market. One may quibble about their own responsibility in the matter, but the price they now have to pay for being unwitting partners in Stapel's fraud is certainly higher than any naivety on their part would merit. There is also a public image to consider, and

the Stapel affair has definitely hurt public trust in science, social psychology in particular. The chances that social psychologists will appear on television in the foreseeable future seem slim, and those that do will incur the full force of Geen Stijl's infamous powers of derision. How long this association between social psychology and fraud will last is hard to say – no one remembers René Diekstra – and its practical consequences are hard to measure, but it won't help to have Stapel's shadow hanging over any attempt to sell

the importance of social scientific research. From that perspective, one of the quaintest measures suggested against fraud – having PhD's swear an oath at their graduation – actually makes some sense. It won't impress the Geen Stijl crowd and I do not think it will stop a would-be Stapel ("but wait, I've sworn an oath!"), but it may help to raise the public's appreciation of scientists to the level it accords doctors. One could also argue however that to artificially inflate science's public image like this is itself unethical. Science should really raise its game, not aim for sanctimoniousness.

But how? What measures can be taken to curb fraud in science? Tilburg University took an easy and useful measure back in November, when the preliminary report of the Levelt commission was presented. The university immediately decided to divest the Rector of his function as confidential ombudsman and assign it to an independent office within the university. The commission had pointed out that the university's top academic might be too imposing and distant a figure to give whistle blowers the confidence to break the mutual trust among peers. In fact, the VSNU recommended that each university have an independent confidential ombudsman way back in 2003. (Among the universities reluctant to follow this advice was the University of Groningen, which only did so in 2010.) Whatever the mechanism for the detection of fraud (about which more in a moment), without a safe and reliable place to drop an accusation of fraud, it is hard to get beyond suspicions and rumours. Fraud is such a breach of the scientific ethos that

## » CONTINUATION MEASURES AGAINST FRAUD

accusing a scientist of fraud is an equally serious breach of the social order. It is a process that must be facilitated with caution and care.

Most proposals that have been made in reaction to the Stapel case concern the detection of fraud, in response of course to his peers' spectacular failure to detect Stapel's fabrications. Unless they address the cause of this blindness, measures against fraud miss the mark. Data sharing, for instance, may be a good idea, but it isn't made more urgent by what we currently know about this case. Even when his co-authors were able to look at the data, they didn't see the anomalies. Of course, open access multiplies the number of eyeballs, as they say in software development, but it does require a willingness to look critically at each other's data and follow up when one encounters anomalies. This is what most distinguished the three intrepid PhD.'s who outed Stapel: they were alert, and they didn't let go. In contrast, in the few cases that other researchers had tried and failed to replicate Stapel's marvelous results, they would blame their own incompetence and leave it at that. Mostly, however, Stapel's work was not submitted to replication attempts. If this sad affair has a positive side to it, it is that it has fueled a debate about replication in social psychology. One of the most interesting outcomes of this debate is an initiative called the Reproducibility Project, which aims to coordinate exact replication attempts of a sample of studies published in three psychological journals in 2008, in order to determine how many are actually reproducible. The Project's coordinators identify a number of factors that facilitate a bias in the literature towards false positive results, including journals' unwillingness to publish null results and the field's emphasis on novelty at

the cost of replication. As a result, they suspect, the percentage of false positives in the literature may be a lot higher than the 5% that one would expect. Beyond this first sample the Project is looking for ways to build an infrastructure for replication in psychology. The Reproducibility Project, in other words, tries to facilitate the mutual scepticism that appears to be lacking somewhat in social psychology (and elsewhere).

As the people behind the Reproducibility Project are aware, replication is only valuable when one is willing to follow up on failures and find out what caused them. Fraud in the original study is one possibility, but it is not the case that fraudulent results are necessarily non-reproducible (another reason why Vincent Icke was wrong). Replication is not a fraud-detector. However, it does foster a focus on the solidity of experimental work and on the exact boundary conditions of effects. It will tighten the margins in which a fraud like Stapel was able to operate. Creating a scientific culture in which replication is a fundamental process on a par with innovative research and spectacular results (Stapel was good at those) seems to me the most pressing, and ultimately most effective, measure against fraud.

■ MAARTEN DERKSEN, THEORY & HISTORY OF PSYCHOLOGY, UNIVERSITY OF GRONINGEN

# Heineken mini-symposium

September 28, 14.30-17.00

Location: University Medical Center Groningen, Boeringzaal, Antonius Deusinglaan 1, Groningen

BCN is proud to announce that the 2012 Cognitive Science Heineken Prize winner John Duncan (MRC-Cognition and Brain Sciences Unit, Cambridge, UK) has agreed to give a lecture on "A core brain system in assembly of cognitive episodes". Also the 2012 Cognitive Science Heineken Young Scientist Award winner, Floris de Lange (Donders Institute, Nijmegen) is willing to give a lecture on "Seeing is believing – How priors shape perception".

## Programme (free attendance)

14.30-15.45 lecture by John Duncan (including questions/discussion), Boeringzaal, UMCG.

15.45-16.15 coffee break, next to the Keuningzaal, UMCG.

16.15-17.00 lecture by Floris de Lange (including questions/discussion), Boeringzaal, UMCG.



**John Duncan** is a highly respected scientist, as evidenced by the many articles he has published in leading journals such as Science, Nature and Nature Neuroscience. He is also well known for his ability to communicate the complexities of science to a wider audience. In 2010, he published "How Intelligence Happens", in which he explains the implications

for cognitive science of recent research in psychology, artificial intelligence, brain scanning, and neurophysiology. He has been awarded the prestigious Dr. A. H. Heineken Prize for Cognitive Science for his remarkable multidisciplinary, innovative research on the relationships between psychology, behaviour, and intelligence on the one hand, and neural processes on the other.



**Floris de Lange** (34) is receiving the Heineken Young Scientist Award for Cognitive Science for his research on visual perception and motorial imagery. After receiving his PhD cum laude at Radboud University Nijmegen and rounding off postdoctoral research abroad, he quickly built up a successful research group at the Donders Institute. In the words of the jury, "Dr De Lange displays intellectual depth and an understanding of virtually all areas of cognition, making him one of the most talented cognitive scientists currently working."

For more information please contact Sander Martens (s.martens@med.umcg.nl), 050-3638796.

## 'Team Love to Know'

Everyone is probably familiar with the phenomenon of being 'in love' and being 'heart broken'. Writing about such a topic "sells", as every advertiser or magazine publisher will readily acknowledge. But what exactly do we experience when we talk about butterflies in the stomach? And what happens exactly in our body when we are in love? Does a broken heart really exist? Nevertheless, most people don't often contemplate about this type of questions, nor realize that nowadays research can provide answers to these questions.

'Team Love to Know' wants to familiarize the general public with the results of scientific research on love and sexuality. By focusing on such a familiar and appealing topic, we hope to make our research easily accessible to the public and thereby to entice a genuine interest. We intend to clarify that research isn't only about endless tests in a sterile lab, but that it's about real people including you and me, and that it can address questions on, for instance, human emotions that are appealing to everybody rather than only scientists. But how do we gain this knowledge about love and sex? And how exactly is this currently being investigated?

It is these questions that team 'Love to Know' would love to answer in the project for the 'Academische Jaarprijs 2012'. The 'Academische Jaarprijs' offers the yearly opportunity to scientific researchers, students, and promovendi with the best communication plans to perform their own research and publicize their results to a broad audience. With the creation of 'the Love Boat', the team wishes

to visit as many cities and festivals as possible. On the Love Boat, people will go on a journey and learn about the different phases of a relationship, from early puppy love to the end of a relationship. What does this do to a person, on the inside as well as the outside? Behavioural tendencies and the inner workings of the brain will both be explored. Research participation will be encouraged by letting people participate in live experiments with interactive science installations. At the end of a visit people will be able to relax in the Love café, where they can participate in a fun pub quiz and see what exactly they have retained from their participation in the research. Team Love to Know is also in the running for the Labyrint Publieksprijs, a merger between the VPRO and NTR. You can vote for us until the 24th of October, on wetenschapskanaal W24. For more information you can visit our website: [www.lovetoknow.nl](http://www.lovetoknow.nl). Every vote counts!

■ KENNEY ROODAKKER.



# A look into the world of technicians in Molecular Neurobiology

Double Interview with technicians Jan Keijser en Folkert Postema

## What is your educational background?

**JAN KEIJSER:** My education is higher professional education. I have several certificates – in the Netherlands they are comparable to HBO-B. In 1977/1978, you had to choose between HBO-A and HBO-B in this country. After my duty I applied for a job at the University of Groningen in Haren at the Biological Centre. It was a joint job in the groups of Dr. Anton Steffens and Dr. Anne de Ruiter. I started on the 1st of February 1980. The work in Anton Steffens' group was mainly clinical chemistry with ELISAs and RIAs while the work with Anne de Ruiter's group involved histological and anatomical measurements. Later, I switched to the group of Professor Paul Luiten, and Professor Eddy van der Zee became my manager.

**FOLKERT POSTEMA:** I started as an animal caretaker. I worked with dogs during my first three years of training. Later on, I also followed a biotechnical education. There I learned how to perform operations and experiments. This was not completely what I wanted, so I did technician education studies in analytical chemistry. In addition, I did application courses for histochemistry and radiation. My career path has been different because from day one, and throughout my career, I have been involved in all kinds of animal research lines. After the BCN lab (biological psychiatry at the UMCG) was closed in 2006, I started working in the Molecular Neurobiology group of Professor Paul Luiten as a research technician.

## Why did you choose to become a technician?

**JAN KEIJSER:** It was not really a choice, but rather a bit of coincidence. There were several educational options after

high school; I could choose between sport education, technician school or becoming an officer in the army. I decided to do the technician's training and I stayed in the field.

**FOLKERT POSTEMA:** I had a friend from elementary and high school whose father worked in a pharmacology lab in Utrecht. Occasionally we visited him and I found it very impressive. I had no idea what education I should choose. I did not know what kind of job would suit me; this is the same problem that people still cope with nowadays. Nothing has changed in that regard. I was offered the job as animal caretaker of dogs at the university in the department of medical physics. I thought I would like it, so I took the job. Within a week I was actually assisting in operations wearing a suit, mask, and gloves. After three years I already had great biotechnical experience. At that time there were no animal laws yet. We simply bought the dogs from private persons. Now it is weird to remember that everything was possible then. Anyway, what I liked to do was not only operation techniques, but also thinking about the scientific question, the discovery of underlying mechanisms. I wanted to know why we do something and how to improve our laboratory techniques. Therefore I had to know more about biochemical processes, so I started to study analytical chemistry, which has been very beneficial. Now I can advise people in animal experimentation, which contributes to my motivation and gives me energy. I ask them what they want and help them to fine tune their methods. I strongly believe it is very important to be critical about assumptions and hypotheses and the methods you want to use.



## What do you like most about being a technician?

**JAN KEIJSER:** The advantage of working in a scientific environment is the combination of research, technical work, and education. When I was a student I worked in a routine lab for six months, but the diversity in my current job gives me more energy and is a bigger challenge. Working with students is very inspiring to me. Altogether, this varied job gives me energy!

**FOLKERT POSTEMA:** What I like the most is the challenge to find satisfying scientific answers using good hypotheses and research lines. A lot of questions still remain. We know a lot about the anatomy of the brain, but when we talk about the functions of the brain and brain cells it is different. For example, we still do not know completely what happens after hypoxia and/or ischemia. We still have to elucidate the mechanisms for cell death. For instance, we should investigate cerebral inflammation systems because researchers believe that inflammation might be the cause of all kinds of diseases. Brain research is an ongoing story that will never end. In this department we

## » CONTINUATION DOUBLE INTERVIEW WITH TECHNICIANS JAN KEIJSER EN FOLKERT POSTEMA

> Jan Keijser:  
This varied job  
gives me energy!

> Folkert Postema:  
My enthusiasm is  
still the same as  
on day one.

have very interesting research topics such as whole body stimulation (WBS) and electroconvulsive shock (ECS). All kinds of components can be measured showing an increase or decrease, or no significant effect, but when is it relevant to human welfare? I prefer experiments with a soft and tender approach to animals and nerve cells. My enthusiasm is still the same as on day one, my experience is still growing and in the future there will still be enough to do.

**JAN KEIJSER:** I also believe we can still learn a lot about our brain, it is a supercomputer.

**FOLKERT POSTEMA:** Yes, also with respect to the time course of different processes. Some processes occur in milli- or nanoseconds and we always have to ask the question which came first, the chicken or the egg. We can study many effects, but often these are secondary and we have to find the primary effects. This is not so easy.

**JAN KEIJSER:** I think people will do brain research for many more generations.

**FOLKERT POSTEMA:** Yes, the brain is a mystery, but we do learn more and more over time. I would like to emphasise that it is very important that we can do so much brain research in animals here. This is the only place in Groningen where this many different methods are used. The UMCG only has facilities for (animal) brain imaging, but for other molecular brain research many UMCG colleagues come to CBN.

**JAN KEIJSER:** I appreciate the collaborations between different groups and the increased collaboration with the UMCG.

#### **Do you dislike anything about being a technician?**

**FOLKERT POSTEMA:** Only the salary.

**BOTH:** Hahaha.

**FOLKERT POSTEMA & JAN KEIJSER:** There is nothing that we really do not like. We do not complain!

**JAN KEIJSER:** The salary might be a disadvantage. Of course, it matters with which job you compare it, but if you really want to become rich, do not become a technician. However, we do not have to complain.

**FOLKERT POSTEMA:** No indeed.

**JAN KEIJSER:** I believe every job consists of pleasant and less pleasant tasks. For example, the struggle for research money is less enjoyable. In recent years it has become more difficult to get funding. Moreover, sometimes research becomes quite hectic, but maybe only because we're getting older now.

**FOLKERT POSTEMA:** We have to coach many people, many students. This can be quite busy during neuroscience research courses, for example. Sometimes there are many people here; students from the university and also from the technicians' school.

**JAN KEIJSER:** Yes, during the neuroscience research course there are about ten to twelve extra bachelor students in the lab while other research and management tasks are going on. Sometimes this is a disadvantage and I can be tired at the end of the day. It is really fun to do many different things, but in some periods you have to do too many things at the same time. Still, I experience most days as a nice challenge and inspiration.

**FOLKERT POSTEMA:** There is nothing wrong with being busy. It is also in line with healthy aging ideas; it's good to remain active. It's good to use our brains and bodies.

#### **Who do you prefer to work with: bachelor/master/PhD students or researchers?**

**JAN KEIJSER:** For me personally, I like to work with PhD students, because they stay for a period of several years. You can go into more details, work together as a real team and try to discover the answers to a question. I like that very much and I am often coupled to PhD students for multiple years. I like coaching master students too, because they are usually motivated and work here for five or six months. You establish the interaction between the student and the staff of the department including the technicians, which is fun. Many bachelor students still have to learn how to work alone and are not used to working outside the regular hours from 9 AM to 5 PM, because they have planned to do sports or shopping or whatever. Most master students really do not mind

that they have to work late or during the weekends. This motivation is also inspiring for us.

**FOLKERT POSTEMA:** I have been involved in many PhD projects about different topics which was always nice. I think it is the most exciting in the first two years. This is a period of gaining results, questioning whether the hypotheses make sense, is the analytical method working properly? The collaboration is more intense and slows down when the PhD student starts writing. I do not care what kind of students I have to coach. It's person dependent, how they work and if they get your message. The younger they are, the less experience they have. Therefore you have to tell them exactly what they have to do and what we expect from them in time, discipline, and accuracy. I like to see them growing in experience. Making people enthusiastic is a major part of the job.

**JAN KEIJSER:** I also like to see how the students grow from a bachelor student to master student to PhD.

**FOLKERT POSTEMA:** It is an important goal to make the students independent. We teach them to make their own decisions and to be critical in a healthy way.

**JAN KEIJSER:** I also like to teach them how to work in a team, not only as an individual.

**FOLKERT POSTEMA:** Yes, research is teamwork, and this department is really a nice place to be because of the good atmosphere.

**JAN KEIJSER & FOLKERT POSTEMA:** There are no bad students. We want to make them all enthusiastic and try to inspire them.

**FOLKERT POSTEMA:** In this department teaching is very important and time-consuming. Therefore, the technicians have to be more independent and have to be able to make their own decisions to spend their limited research time in a useful way. We have to guard the quality of what people do. We have a high level of responsibility, which is nice.

#### **Would you like to tell the BCN community a bit more about one of your favourite research topics?**

**JAN KEIJSER:** We are working together on a nice subject:

## » CONTINUATION DOUBLE INTERVIEW WITH TECHNICIANS JAN KEIJSER EN FOLKERT POSTEMA

whole body stimulation (or vibration). This is a project in the research group of Professor Eddy van der Zee. I personally cannot do animal studies in this research project, because I am too allergic. Folkert and several master students do the animal studies and later the immunocytochemistry. I try to answer some molecular questions with growing neural cells (hippocampal neurons), trying to discover how whole body stimulation changes cellular processes in neurons with, for instance, western blotting and viability tests. Last year, Dr. Roelof Hut (Chronobiology) received a grant and he bought a confocal system which will give us the opportunity to observe living cells and treat them with glutamate or amyloid  $\beta$  after WBS (vibration). We hope to demonstrate that the neuronal cells survive such treatments better after whole body stimulation. The results are preliminary, but the cells are growing well and they survived the stimulation. As usual there are always setbacks in the beginning. The used cell line adhesive touched upon differentiation and the adhesion with the ground was lost. The cells were floating and therefore no longer suitable for use in this model. Currently, we are testing another cell line which looks promising. With immunocytochemistry in brain slices, we have found differences in choline-acetyl-transferase (CHAT) and early gene c-Fos. I hope to demonstrate this in the cell line also with electrophoresis and immunocytochemistry.

**FOLKERT POSTEMA:** My favourite topic is whole body stimulation, this is based on the power plate which is already in use at the gym or in physiotherapy. For this research, we use mouse models. One of the final goals is improving the lives of patients with Parkinson's disease, because the blood flow in the brain and muscles increases during whole body stimulation. If your muscles or joints are damaged, whole body stimulation can promote the cure. The vibration is very small and soft, taking only ten minutes a day. You do not even feel it with your hand. Nevertheless, for mice this has a huge effect and you find an improvement in memory performance tasks and muscle power. Selective neuronal circuits

become activated, also due to the sensory stimulation. Acetylcholine, including CHAT, is important, but so are serotonin and dopamine. There is a human part of the whole body stimulation project as well. 130 Students have been on the power plate, and the results fit with our mice experiments. Another favourite research topic of mine is the electroconvulsive shock (ECS). CBN is the only department with a device especially made for mice and rats. We can give the animals an electroconvulsive shock when they are under anaesthesia, but nobody knows yet what ECS causes exactly into the brain. There are a few studies about this topic, but with our immunocytochemistry we hope to go deeper into the neuronal systems and changes due to ECS. I also have to mention the interesting cardiac studies. This research is about neuronal injury and depression after a myocardial infarction. They want to investigate the underlying mechanisms after myocardial infarction probably leading to mood disorders and/or depression by looking at systemic inflammatory reactions and neuroinflammation. Clearly, we are never working on one topic, but we always do parts of different projects.

**JAN KEIJSER:** Yes, I am mainly involved in PhD projects. The last three years I was involved in the PhD research of Ate Boerema. In March 2012 Ate Boerema defended his thesis which was titled: The brain at low temperature: Neuronal and behavioural dynamics in mammalian hibernation and torpor. During hibernation, the brain undergoes cyclical changes. The cold periods are separated by a short warming. The number of contacts between nerve cells goes down in the cold periods. During torpor, phosphate groups are bound to a protein that forms part of the neuronal skeleton. This is known as tau hyperphosphorylation. Accumulation of phosphate groups in tau proteins will eventually lead to damage of the neuronal skeleton and the nerve cell will die. In hibernators, this process is reversible and there is no damage. This finding has led to the conclusion that heat from torpor is necessary for the healthy condition of the brain. It was nice to work with Ate on that subject.



**FOLKERT POSTEMA & JAN KEIJSER:** There are still many projects to describe, but this is a little overview of some topics.

**JAN KEIJSER:** Over the years we have been worked with many PhD students for three to four years, so we have investigated many different topics. The more recent projects that we really like to promote are the whole body stimulation and myocardial infarction with depression studies. Professor Uli Eisel is more involved in inflammation.

**FOLKERT POSTEMA:** Yet, inflammation seems to affect memory, so then we are back to Professor Eddy van der Zee. I always try to combine all topics in a way that benefits more people.

**JAN KEIJSER:** Yes, we also have collaboration with chronobiology which is also very nice and an extra motivation to be in science.

■ DAFNE PIERSMA

# Interview with Bonnie de Vries, technician in the departments of Behavioral Biology and Chronobiology

***You work as a technician in the departments of Behavioral Biology and Chronobiology. Can you explain what this work entails?***

For most of the time, and together with my colleague, biologist Ilse Weites, I perform endocrinology assays in which hormone levels are quantified. Levels of steroid hormones, for example testosterone and androstenedione, in eggs and plasma, are important in Behavioural Biology research. Melatonin and cortisol, measured in human saliva, are the major hormones in Chronobiology research. Analysis of these hormones often occurs with the help of isotopes in the isotope laboratory, which is situated in the basement of the north wing of the building.

***What do you like about your work?***

Most of all I like the freedom to discover things myself. For example, the work I do with materials, measuring hormones from animal sources, differs from the way you measure them in human plasma. Egg yolk and albumen needs to be extracted before measuring. Different extraction methods can lead to very different outcomes. The available kits we are using for hormone measurements are exclusively validated for human plasma. It is nice to be involved in discovering these differences and working out which method will be the best one. Working here as a technician cannot be compared to the work of a hospital technician. I have a lot of input here, I have a say in what can be done and what should not be done. Of course, the professor instructs me, but I have a lot of freedom in arranging lab work. PhD students and postdocs from many countries also make use of the isotope lab, and I really enjoy helping them with analysing their samples.

***What do you dislike about your work?***

I dislike the fact that I am still not strict enough with people on certain work matters. Especially when guests are about to leave and they haven't finished their work. Sometimes they leave the lab in a mess,

which results in my having to clean up after them. Quite often I keep quiet and that is something that I have to work on, though I am getting better at speaking up. So basically, there is no bad side to this job.

***You had already worked as a technician elsewhere before you ended up here. Tell us a little bit about your other positions.***

I started in 2000 in the Biological Centre in Haren, attending to people who participated in the research of the biological clock in humans. I did the melatonin assays. A vacancy arose when a DNA technician retired, and I filled the position, which is my present one. I worked for 10 years in the Medical Genetics department of the RUG before I started in Haren. I really enjoyed it, until a time towards the end when I felt that I didn't fit in anymore. It felt like I was constantly being monitored and my freedom was restricted. That is why I really appreciate the freedom that I have here. Before Medical Genetics, I worked at the General Practitioner's lab, which is now called Lab Noord. I didn't work there for long because it was too commercial and automated. Before that I worked as a technician in a psychiatric hospital in Assen. I learned a lot there, and it taught me a lot about people and their mental state. It was difficult to see patients locked away, ordinary people like you and me. It was a good life experience and a big change from my earlier position, which was as a technician in the Wilhelmina Hospital. I have worked in many places but I will never find a better work place than my present one. I think it is very important to do something that you really enjoy. When you don't enjoy what you are doing then it will never turn into the type of work you want it to be.

***Biology moved to a new building, how did you feel about this?***

It was difficult to be positive in the first year after the move. The isotope lab was not what we had expected it to be. It is still difficult to work there when you compare it to the way we worked in Haren.



The problem doesn't lie in the square meters, but more in the possibilities to carry out the work well in a practical way. We lost a lot of time already just setting up our equipment in such a way that there was still enough space for us to work. In the last few months some colleagues have put a lot of effort into creating a proper workplace. I am very grateful to them for their help. There have definitely been many improvements, and I really hope it will soon reach the level we had in Haren.

***Is there anything else you want to share with the BCN community?***

People should broaden their views and work together, so that the available knowledge and equipment can be combined in order to solve the tasks at hand. Use the qualities and knowledge of everyone in your team. I think it is very important that supporting personnel are included in the decision process, and that there is a good collaboration between the researchers and the supporting personnel.

■ EMILY DE HARTOG



## > BCN RESEARCH MASTER

# Let's do the BCN-research master, I said. It will be fun, I said.

Approximately 8 months later, I found myself locked in the basement of the Centre for Life Sciences (CvL). Although I had locked myself there, I couldn't help but feel imprisoned after several weeks of continuous testing for over 10 hours each day. I was paranoid, underfed and suffering from a severe lack of sunlight, social contact, coffee breaks and weekends.

Sometime prior I had come up with the stupendous idea of trying to boost the brainpower of mice using several experimental conditions based on either passive exercise (vibrating) or active exercise (running). In theory this idea was not stupendous at all; in fact, it still isn't: Mice and people turn out to get smarter from being vibrated in the right way, possibly via the same mechanisms by which physical activity boosts cognition as well. No, the stupendousness of the idea was to be found in my optimistic planning of the experiments.

As a bachelor student I had encountered willing test-subjects in the form of neurons, heart cells and bacteria. O, the joy of working with these guys: They're numerous, cooperative and, if a test happens to go terribly wrong, there is always a petri-dish of fresh reserves standing by. Yet mice are something different. They are more awesome in many ways: They are fluffy, multi-cellular and are a more interesting test subject when one is interested in complex learning behavior. However, testing this stuff takes a lot of time and I'm still not sure whether bacteria or mice are better at

smelling bad (though neither smell is one you'll "love in the morning").

Moreover, my mice turned out to be exquisitely stupid and somewhat slower learners than I had anticipated. So the four-day break which I had planned in the middle of my behavioral testing month had vanished by the time I was halfway through my experiments.

Luckily, fellow research inmates were there to save the day: Brownies and a cup of thee were snuck into my cell once, and during the sparse time I spend in the yard, I was supported with cigarettes, coffee and, the by then, mostly awkward social contact. The conversations with my supervisor always cheered me up, as results seem to be interpreted more optimistically (or realistically) by experienced professors who do not spend every minute of every day contemplating the "live" observed learning behavior of their test subjects.

When I emerged from the depths of the CvL, I had originally planned another two weeks of testing in June. Post-hoc analysis of the whole situation revealed that I actually liked my minor project very much, although I suspect my brains have sort of confused the relief of finishing the tests with the actual emotions experienced during the testing period. It could also be a case of "gedeelde smart is halve smart", as I learned that neither cutting 30 brains, nor counting hundreds of marked neurons by hand nor doing all of your statistics twice because of über-complicated excel sheets is more fun than doing hundreds of

learning tests with mice. What makes it fun, of course, is the satisfaction at the end of the run, when one gets the "results".

The fruits of my labor and many fruits of many laborious fellow students were presented at the BCN summer symposium. If there is one thing I've enjoyed during this research master, it is that I can't wrap my mind around about one third of the stuff that was presented. It is during these mixed events that I learn to look to the brain, behavior, and neuroscience in general in the way that a cognitive psychologist, mathematician, behavioral ecologist or movement scientist does. Of course, these people are all BCN students, but the diversity of the backgrounds of the students and the many different research topics a BCN master student encounters are, in my view, the things that give this master just that little bit extra every once in a while.

For this reason, even though I long for a few weeks of music festivals and holidays, I am secretly looking forward to spending more time in basements next year as well.

■ PETER ROEMERS

# The short term benefits of antidepressants

On May 14th, Prof. Dr. Catherine Harmer from the Psychopharmacology and Emotion Research Laboratory (PERL) of Oxford University gave a masterclass on the topic of the newest findings in antidepressant research. The seats of the masterclass reached full capacity quite fast, but luckily, she also gave a talk on the topic for the general public. The title of her talk was 'Why do antidepressants take so long to work?' and gave insights to the work of her lab in Oxford.

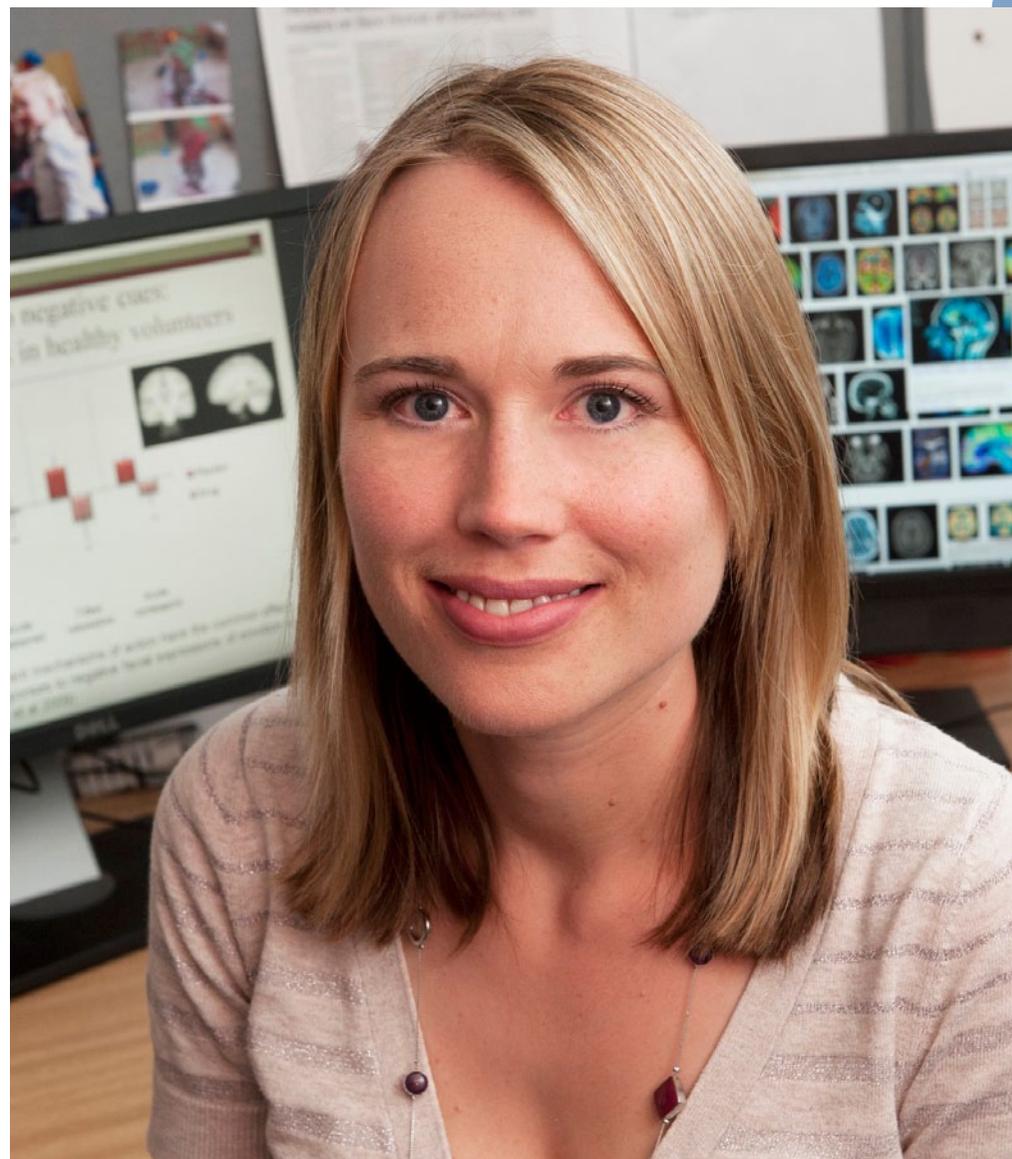
Prof. Dr. Harmer has a background in Psychology, and received her Diploma from York University. Her interest in biological and pharmacological, as well as cognitive abnormalities, shaped her research interest. The Psychopharmacological Emotion Research Laboratory focuses on neuroscience, drug discovery, imaging and psychiatry.

Her talk focused on the cognitive neuropsychological model of antidepressant drug action. To date, little is known and understood about the direct effect antidepressants have on mood and cognition. Studies so far have not conclusively pointed towards a coherent reason for why the drugs seem to work for some patients but not all, and why symptoms only decrease after weeks after initial intake. Current research suggests that the positive effect of antidepressants might exert their influence earlier than previously believed. There seems to be a subtle effect which is measurable before any therapeutic effects are obvious. More specifically, healthy participants and depressed patients showed a decrease in negativity bias after only one dose. This shift in perception of environmental cues might shed new light on theories about how antidepressants work. Namely, that this shift in attention is the grounds for a decrease in depressive symptoms after several weeks of intake. The findings might show that depressed patients benefit from antidepressant treatment earlier than expected, which might in turn increase compliance of the patient – a huge problem in depression treatment. This early decrease in negativity bias was also predictive of therapeutic response after 6 weeks of treatment, which suggests that one might foresee the benefits of the treatment and could be used as a biomarker.

Prof. Dr. Harmer's talk was very inspiring and made us think about the future of depression research. It became obvious that there is still a lot to explore but that current research is already progressing to a better understanding of the disease and its treatment opportunities.

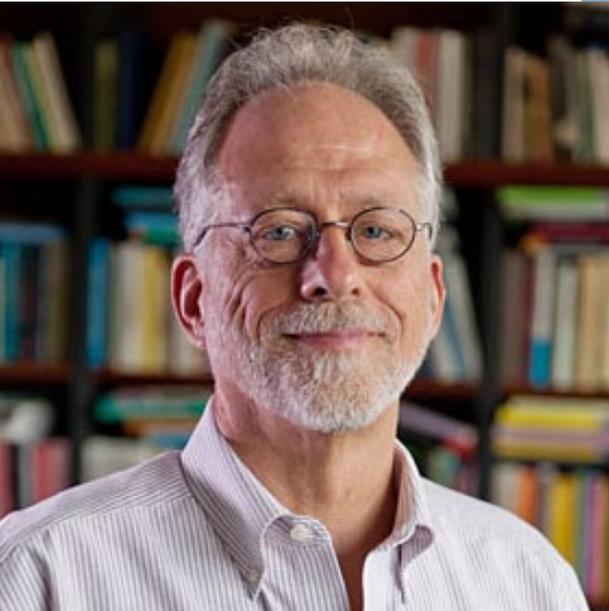
■ ANNIKA LUCKMANN

■ RICCARDA PETERS



# Ape mind, Human mind

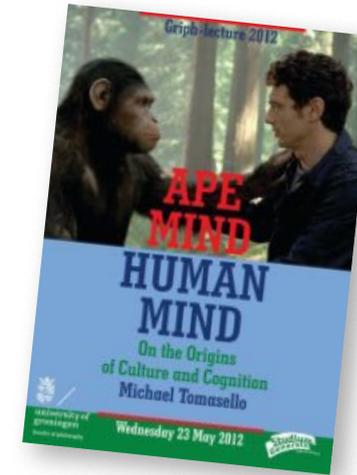
On the origins of culture and cognition



On Wednesday, May 23rd the Co-Director of the Max Planck Institute for Evolutionary Anthropology in Leipzig, Michael Tomasello, was invited to give the Griph Lecture, the annual lecture of the Groningen Institute of Philosophy (called “Griph”). The lecture was organized in close cooperation between the Faculty of Philosophy and Studium Generale Groningen. Tomasello tried to answer the question why the minds and societies of apes and humans differ as much as they do. The lecture was well-attended and there were barely any seats left.

Since 1998, Michael Tomasello has been the co- director of the Max Planck Institute for Evolutionary Anthropology in Leipzig, and since 2001, he has been the co- director of the Wolfgang Köhler Primate Research Center, also in Leipzig. His research interest lies in the investigation of the very origins of culture and cognition, which he pursues by conducting comparative research on non- human primates and children. He looks at the similarities and differences between humans and other primates in particular, asking question like: What is it that makes humans unique, why is it that we have those complex technologies and other species do not? In his lecture, Tomasello argued that what is unique in humans is not individual brain power, but the adaptation for putting our heads together with others.

Tomasello started by introducing a large scale study which showed that in a test of skills of physical cognition, 2 ½ year old children and chimpanzees



performed almost identically. However, on tests of social cognition and intention reading, children scored nearly twice as high as chimpanzees. He stated that it is not that chimps and other great apes do not have any skills of social cognition -- in fact, his research started by

trying to show how sophisticated their social skills actually are. For example, they understand that others have goals and know that the others see things, etc. However, the focus of this particular lecture was not on the similarities between chimpanzees and humans, but on the differences between them. Specifically, he argued that what is different is that humans put their heads together collaboratively, and that humans became different in two steps. The first step was actual, small-scale collaboration (e.g. teamwork), in which humans form joint goals, have joint intentions and communicate about them to coordinate their activities. As an example, he named collaborative foraging in early hominids. The second step was larger, namely culture and collective intentionality, one example being group wide social norms. He first talked about collaboration and in the remainder of the talk focused on culture and collective intentionality. Through the course of his talk, he compared children and chimpanzees.

One point he stressed was that chimpanzees do cooperate with others. However, he pointed out that they do so for different reasons, namely in order to outcompete the others to, for example, get the food first or escape the predator first.

According to Tomasello, what makes human cognition unique is not individual computing power. Even though our brains are three times the size of apes, they are larger so that this huge brain allows us to put our heads together for joint goals and commitments, and cooperative collaboration. This later scales up to the large scale cultures that we live in. Therefore, the difference between humans and chimpanzees is a small difference that makes a big difference.



# BCN Symposium: B, C & N of Communication

The BCN Symposium “Behaviour, cognition and neurology of communication” covered a broad palette of perspectives on communication by humans and other animals.

Daniel Wolpert, a professor of engineering at the University of Cambridge, once argued that the entire purpose of the human brain is to produce movement. As proof of this, he gave the example of a jellyfish, which moves around in the ocean for some time, and then settles on a rock to stay there for the rest of its life. The first thing this jellyfish does is to digest its own nervous system. It makes a great meal, and is useless from that time forward anyway.

We could make an even stronger argument for communication. That is, from the communication chauvinist’s point of view, the entire purpose of the brain is communication. First, all living creatures with a brain communicate, and all creatures that communicate have a brain, or at least some sort of nervous system. Second, all communication, including speech, sign language, writing, gesture,

birdsong, and even scent traces is mediated via the motor system. In this way, sensory and cognitive processes may be viewed as inputs that determine future communicative acts. Finally, not only is communication a very important purpose of the brain as a whole, but the basic operating principle of the brain itself is communication and communication only. The brain is an organ which specializes in sending messages from one neuron or neuronal network to the other. Thus, the brain is made of communication, and its purpose is communication.

The BCN symposium, organised to address the topic of communication, covered three domains: animal communication, and, in humans, normal and atypical communication. The first domain was biologically oriented and addressed different modes of communication in animals. This theme started

with a keynote paper on communication by scent (glands as effector, smell as sensor; Kevin Theis), and later was discussed in the afternoon with presentations on social behaviour in foragers (Daniel van de Post), group formation based on kinship perception (Sjouke Kingma), and auditory-vocal learning in songbirds (Sanne Moorman). The second domain was a mixture of neuro-cognitive and linguistic studies of normal verbal communication which addressed the linguistic processes of audio-visual integration in speech perception (Esther Janse), the role of attentional processes in message selection (Tjeerd Andringa), the role of top-down processes in speech perception as compensation for hearing loss (Deniz Başkent); as well as shifts in perspective during the interaction between speaker and listener (Emar Maier). The third domain concerned communicative disorders, and was a combination of neurophysiological, computational, and linguistic and behavioural approaches. Paavo Leppänen discussed the early signs and symptoms of developmental lan-

guage and reading disorders in children by means of auditory processing (neurophysiological event-related potentials, ERP), Roelien Bastiaanse presented the cross-linguistic and ERP-analyses of time-reference in speakers with agrammatic aphasia, and Ben Maassen on neurocomputational models of disorders of speech motor control in children. The final paper in this session (Marleen Janssen) addressed behavioural and neuro-cognitive consequences and intervention in a complex sensory condition: deaf-blindness, in which effectors are normal but input channels extremely limited.

Indeed, a broad palette of topics within B, C & N of communication. Social communication forms the basis of group behaviour; processes of communication are amongst the most complicated our brain accomplishes; pathology in communication is a severely invalidating condition. Communication lies at the very heart of our existence.

■ PROF. BEN MAASSEN



# BCN Symposium: B, C & N of Communication Perspectives from the audience

Session 3 of BCN symposium on communication was on the theme “Disorders of speech, language and communication”. The session was divided into three talks.

Prof. Roelien Bastiaanse gave a very pedagogic and entertaining talk titled “Time reference in agrammatic and healthy speakers”. Enumerating examples from various languages, she showed that the difficulty of agrammatic speakers with reference to the past is due to impairment of the processes that are needed to refer to the past and not due to problems with past tense in general. The talk was made lighter with a number of video examples. Lessons learnt from the talk: Jambo means “Hello” and Hakuna Matata means “no worries” in Swahili.

The second talk by Prof. Ben Maassen titled “Computational modelling of childhood apraxia of speech” dealt with the condition affecting children

where the knowledge of sound does not lead to speech production because of perceptual-motor problems. He introduced the audience to a neuro-computational model, which promises to test the deficit at various stages with the help of simulation. It was an interesting talk although perhaps too technical for people not familiar with modelling.

The third talk, given by Prof. Marleen Janssen, was different from other talks as it aimed at raising the audience’s awareness on deafblindness. Her project deals with finding practical solutions to help deafblind children to communicate, interact and learn. With heart touching real life examples, we learnt that deafblindness is not an intellectual disability. Enough help and stimulation enable deafblind children to express their natural curiosity.

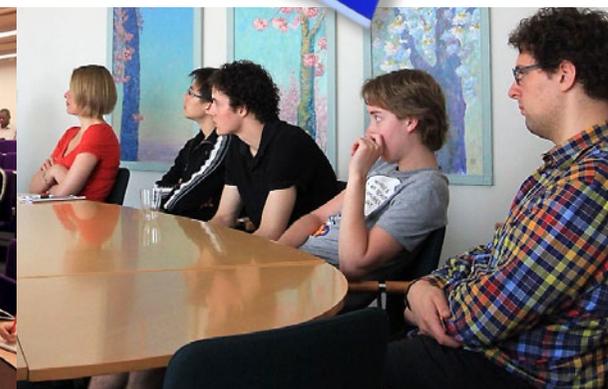
■ JEANNE CLARKE  
■ PRANESH BHARGAVA

Although I was a little skeptical at first when reading an abstract on hyena-communication, the BCN Symposium started with a great presentation by Kevin R. Theis. He made me enthusiastic about hyena-pasting (hyenas leaving their scent somewhere), and I think that already says enough about the niceness of his talk. After two other morning lectures on ‘Risk factors for developmental reading disorders’ by Paavo Leppänen and ‘Individual differences in speech perception’ by Esther Janse, BCN provided everyone with a lunch which most of the participants enjoyed in the sun.

In the afternoon I participated in the second parallel session ‘Speech and Beyond’. The three speakers in this session, coming from different faculties of the University of Groningen, took a broad approach on the topic of speech, hearing and listening. I appreciated their presentations

as they were comprehensible for non-specialists and original questions were discussed: ‘Should we speak of mixed quotation/unquotation instead of direct speech/non-direct speech?’, ‘Why do we say hearing-loss instead of listening-loss?’, and ‘Why are annoying sounds annoying?’. The three talks did justice to the session title ‘Speech and Beyond’, and taking everything together I think it was a successful BCN Symposium.

■ MARIEKE HAAN,  
CLCG, FACULTY OF ARTS RUG



# BCN Symposium: Research Master Presentations

## Perspectives from the audience

When cycling up to the Bernoulliborg I was not quite sure what to expect of the two-day BCN Summer Symposium. Ok, I knew beforehand that my fellow research master students and I were going to present our minor and major projects either with an oral or a poster presentation and that there were some invited speakers. However, these elements can be the ingredients of two very boring days, or, as it turned out to be, two very interesting days.

On both days the presentations captured a very broad range of topics, ranging from sperm ejection in drosophila to different types of scanning techniques, and tracking the development of cells

after a stroke to listening effort in different types of hearing, and much more. The poster session at the end of both days truly gave the opportunity not only to present your poster if you had one, but also to find out what others have actually been doing the past five/six months as well as the opportunity to discuss your own work with senior researchers and fellow students. After two long but interesting days the BCN Summer Symposium ended with a joint meal meant to let students socialize.....but we still managed to end up discussing the value of fundamental research and why we cannot do without it.

■ RENSKÉ BOSMAN

I was on the organizing committee of the symposium with three other students. As organizers, we had to read the abstracts of the research projects for all the research master students and advise the exam committee on which students should be allowed to give presentations. Also we had to be on the lookout for suitable keynote speakers, invite them, hang up posters all around the affiliated faculties, and host the symposium. I truly recommend organizing the symposium to future BCN students. It is very rewarding and satisfying. Another advice I'd give to future BCN students: Try to organize meals or nights out for all the tracks, together. It was really great to exchange philosophical ideas

about the mind in a more lighthearted way, while drinking beer and enjoying the roof terrace of 'de Spiegel'. I hope the others have enjoyed the symposium just as much as I have.

■ ROBIN MILLS



# PhD day 2012: Clear Communication and Social Media

**Social media is considered the next big thing and has taken the world by storm. Although not everyone has a clear idea over what social media is, almost everyone has a Facebook account. Most of us use Facebook for sharing information about the music we like, books we read, places we visited or for posting pictures of cute cats. However, social media sites can also have a serious purpose. For example, building online profiles, such as a LinkedIn account, has become an important strategy in increasing awareness about your skills as well as finding employment. In turn, future employers have started to pay more attention to social media sites during the recruitment process. The value of social media in the business world is rarely questioned, but what about the academic world? I mean, wouldn't your colleagues think that "facebooking" at work is a form of procrastination?**

Slowly but surely, social media has become a part of the academic world. More and more scientists use Twitter and Facebook to talk about their work and future projects. Academic journals like Nature, Science, PNAS and PLoS ONE have an online profile and use social media to promote their contents. Social media can provide a variety of benefits for researchers. For one, it gets you in touch with people who share the same interests as you. Getting connected will keep you informed about interesting topics and techniques. In the best case it can result in new projects and future collaborations. Secondly, social media promotes you and your research. You will not be just a name in a research article, known only to your colleagues and to few other researchers you met at a conference. Through social media, others can discover you on the net, together with the key words that define your research. They can decide to follow you, interact with you and even give you feedback.

Reading all the above, it would be safe to conclude that there is a lot of potential in social media. This inspired us, the BCN PhD council, to dedicate the annual PhD day to 'Social Media'. The PhD day took place on the 30th of May 2012. We invited 6 speakers to give workshops on how to write a catchy press release, to pitch your research in 30 seconds, to give 'to the point' interviews and to explore the art of scientific blogging. The PhD day started with 4 parallel workshops, each given twice, in order to ensure that each PhD student could attend at

least 2 workshops. The workshop sessions were followed by a plenary lecture.

We invited Mariëtte Blienkendaal to give Workshop A "Science Communication: Sell your research in 500 words". Mariëtte Blienkendaal was first trained to be a scientist, but decided to focus her career on scientific writing. Therefore, she was the perfect person to tell us about how the world of science should meet with journalism. As a scientist, we should not only be able to talk to experts in our own field, but it is also important to explain to the general public what we are actually doing and why. Mariëtte started by giving a general introduction on how journalism works. For example, in journalism you always start with the nice results and then explain why these results are important and in which context we should see them. This can feel contradictory for most researchers, as we are used to our old 'introduction-methods-results-discussion paradigm'. But to keep the general public from falling asleep, we should first get them engaged in our exciting research. Another useful tip is to be very selective about what you tell the journalist. They could take one detail from your story and write a complete article on that, so don't make speculations and be clear. You could also ask if you can read it before publication to make sure that the article covers what you would like to be published. And 'there is no such thing as off the record', be very cautious what you say.



## » CONTINUATION PHD DAY 2012: CLEAR COMMUNICATION AND SOCIAL MEDIA

After gaining some knowledge about how journalists work, we tried some interviewing of our own. We had to find someone among the other BCN PhD students who was not very familiar with our own field of research and explain our research in two minutes. After this, the other person should be able to tell you the goal of your research, your most important result, why your research is interesting, and your unique selling points. It really placed a mirror and made you think how you choose your words in order to bring the message. This workshop was very useful in how we should talk to journalists about our research.

A press release is a common and efficient way to promote your work to the general public. However, a magazine could also send someone to conduct an interview on your research results. Therefore, we invited Marjolein Marchal to cover this topic in Workshop B “Science in sound bites”. Marjolein is a communications advisor and has worked as a freelance journalist for several years, for media such as nrc.next and several university magazines (Erasmus Magazine, Folia and Mare). With her experience in interviewing scientists, she is the right person to tell us about common pitfalls and how to avoid them.

Let’s imagine that a magazine or web site calls and asks you if they can come to your office in one hour for an interview, Marjolein said. How would you prepare? All of us would rehearse the important points of the research. None of us took the other person, the interviewer, into account. That’s a common pitfall according to Marjolein. We should not think of the interview as a monologue, where the researcher is in charge. The interview is a process that involves two persons, therefore, its important to start

thinking of questions that the interviewer might ask. Shortly after the workshop began, we were coupled with other students in the group and were asked to give and take interviews with each other. Each question would have to be answered within one minute. After this exercise, it became clear how difficult it was to explain your findings to people who might have never heard of machine that makes magical pictures of the brain. We were told that with practice and experience it becomes easier to give interviews, even though some topics will always be more easier to explain to the public. Furthermore, Marjolein pointed out that the interview outcome is the responsibility of both the journalist and the researcher. Therefore, it is important to check if the interviewer understood your findings correctly.

Marjolein continued to further defy our principles of the scientific format. During our PhD, we are told to write to the point abstracts that reveal all the important details of our study. In addition, we try very hard to choose a title that encompasses the essence of our study. According to Marjolein, this is exactly what you should not do while giving an interview. You want the listener to be interested in your story. But if you expose all the conclusions of your research in the beginning, you will quickly loose their interest. Marjolein gave us some time to come up with catchy phrases and words that would convey the gist of our research in an attractive manner.

Talking to the press and media about your research has its perks. But let’s face it, it’s not something that happens daily. Other methods such as Facebook, Twitter and blogging could prove to be handy in promoting your research to others. We asked Eva Teuling to give workshop C “(micro)blogging: why would I?”. Eva earned

a master in molecular biology at Wageningen University in 2003. She then did a PhD in molecular biology at the Erasmus Medical Center, followed by a post-doc in neuro genetics at the University Medical Center of Groningen. So trust me when I say she knows a thing or two about scientific research. Early in her scientific carrier she noticed a gap between research at the scientific level and how it was translated to the general public. “I was genuinely annoyed by the bad media coverage of genetics”, she said. Therefore she decided to write her first blog ‘genetic bullshit’ at [www.sciencepalooza.com](http://www.sciencepalooza.com). This experience pushed her to pursue scientific blogging at a professional level. At the moment, she holds the title of scientific outreach officer at the ERIBA institute in Gronigen.

During this catchy workshop, Eva gave examples of blogs that translated different scientific concepts to the general public, varying from visual neuroscience to climate changes. Part of the workshop was dedicated to Twitter, which is a form of micro blogging. Eva told us that Twitter is a very efficient platform for sharing ideas and keeping in touch with interesting persons in your field. Then she tried to persuade us to start our own blog or (micro)blog. She explained that a blog isn’t only something you write for your friends when you live in another country or when you are travelling, and that Twitter isn’t only a place where people share party pictures and tell what they are eating. We learned that blogging and (micro)blogging are increasingly accepted as serious ways to communicate news, activities, and science. During this workshop, Eva gave us tips on how to get started at (micro). You can find her presentation at the following link: <http://www.slideshare.net/evateuling/blogging-for-scientists-ph-dday050>.



## » CONTINUATION PHD DAY 2012: CLEAR COMMUNICATION AND SOCIAL MEDIA

The last workshop of the PhD day was dedicated to clear communication. The workshop was given by Jonathan Mall, and was titled 'impress in 30 seconds or less' (also known as "the Elevator talk"). Jonathan is a Ph.D. candidate at the University of Groningen. In addition, he is a certified debater with a charismatic personality. In the beginning, Jonathan introduced us to what an elevator talk is and gave us some recommendations on the do's and don'ts. For instance, it helps to complement your remarkable talk with an eye-catching exterior. On the other hand, if you are working, say, in cancer research, it does not help to tell you want to reduce the death toll, because however good your intentions are, you will be associated with people dying.

Then we were asked to write a short summary of our future elevator talk and practice it in our mind. After that, the most interactive part of the workshop began. We were separated into two groups who formed two concentric circles in the room with each member of one group facing a member of the other (the number of participants was chosen to be even precisely for this purpose). Each participant from the outer circle would now give his or her elevator talk to the person whom he or she was facing. After receiving feedback on the talk, an exchange of the roles followed. After each partner acted both as a talker and a listener, every person from the outer circle would move clockwise to the next person in the inner circle, and a new iteration of fun would begin.

This practice session was a nice experience indeed. It turned out that watching someone giving an elevator talk was akin to seeing someone play a musical instrument - what the person is doing does not seem excessively

complicated until you try to do the same yourself. Though I did have a number of considerations about how to present myself and my work to a layman, I found it really challenging to fit my talk into 30 seconds without turning it into an unintelligible tongue-twister. Though we all had changed partners at least three times, and thus had plenty of practice, there was still a lot of space for improvement in our 30-second-long self-presentations. When making up your talk, you had to keep the terms as general as possible because the person you'll be trying to "impress" surely could not be expected to have a detailed knowledge of your research topics. However, if you imagine yourself at a real conference talking to, say, a famous professor at whose lab you want to do a post-doc, surely you are going to go into details - I hesitate it will suffice to just tell, however brilliantly, that you're in the same field.

The keynote lecture titled "The social impact of media: Influence of and the resistance against social media" was given by Gerda Jonkers and Martin Specken. Both speakers are affiliated with the Hanze institute in Groningen. Gerda Jonker analyses trends, composes scenarios, and is developing methodologies to research latent needs of consumers. During the first part of the presentation, Gerda Jonker explained the relationship between social media and branding in the business world. With minimalistic and colorful slides, we were lead through trends and anti-trends, complex scenarios and trend ladders. These concepts were translated into practical examples by Martin Specken. He advises people and organizations in the interest of human-computer interaction. For example, Martin Specken illustrated how universities use social media as a branding tool. More and more universities and institutes have their own

website and "Youtube" channel where they share news and upload videos of lectures. Universities use Facebook, Twitter and blogging to attract prospective students and stay in touch with current or former ones. He also showed how social media could be used as a practical tool in recruiting participants for research studies. Furthermore, he showed us some interesting social media sites such as:

- > Slideshare.com, a site where people can upload and share publicly or privately PowerPoint presentations, Word documents and Adobe PDF Portfolios.
- > Pinterest.com, a visual platform that allows members to "pin" or display images, videos and other objects to their virtual board.
- > Delicious.com, a social bookmarking service where you can keep, share, and discover web links.

After these keynote, it became apparent that social media could and should be used as a tool in promoting science in general, and your research in particular. So start sharing! You can find the slides of their presentation at the following link <http://www.specken.nl/phdday050/handout.pdf>.

The Ph.D. day concluded at Jazzcafe De Spieghel, where the students and the speakers met over drinks. The Ph.D. day received positive evaluations from the participants.

We hope to see you all next time!

■ EMI, AMARINS, AND VLADIMIR, PHD COUNCIL



## NIC-NIRS Symposium: fNIR Imaging “The poor man’s fMRI”

The NIC-NIRS Symposium, held on the 29th of May 2012, was organized to celebrate the newly purchased Near Infrared Spectroscopy (NIRS) for functional brain imaging by the Neuroimaging Center (NIC) Groningen. The afternoon symposium was hosted by Prof. André Aleman, professor of Cognitive Neuropsychiatry at the Department of Neurosciences of the UMCG and the Department of Psychology of the University of Groningen, and was sponsored by NIRx, BIOPAC, and BCN. BIOPAC Systems provides flexible tools for data acquisition and analysis solutions for life science research and education, and, even more important for making the symposium a memorable event, introduced one of their fNIRS devices there. Breaks between the speakers’ presentations were used by curious symposium attendees to test the fNIRS device on their own, while the speakers’ presentations focused on fNIRS application in cognitive and clinical neuroscientific experiments. Speakers were Dr. Simone Cutini, a postdoctoral research fellow of the Department of General Psychology at the University of Padova (Italy), Prof. Arie Bos, a developmental neurologist of the Beatrix Hospital of the UMCG, Dr. Martin Herrman, at the Clinic for Psychiatry and Psychotherapy of the University of Wuerzburg (Germany), and Dr. Branislava Ćurčić-Blake, postdoctoral research fellow of the NIC at the UMCG. Even though the popularity of fNIRS in the neuroscientific field has increased over the last decade of research, the technique is not yet used in the Netherlands that often. The afternoon symposium was set up to inform participants about the diversity of applications of fNIRS and to discuss some aspects of data analysis associated with fNIRS.

fNIR (functional near-infrared) imaging is a spectroscopic method for measuring the level of neuronal activity in the brain. Similar to the more common functional magnetic resonance imaging (fMRI), fNIR is based on neuro-vascular coupling, that is, the relationship between metabolic activity and oxygen levels in feeding blood

vessels during mental activity. fNIR makes it possible to monitor brain tissue oxygenation while subjects are exposed to behavioural tests, perform cognitive tasks and/or receive brain stimulation. fNIR presents a temporal resolution that is approximate to real-time output of task performance and seems therefore highly suitable

in the experimental setting. Moreover, given fNIR’s noninvasiveness and its ease of application, it lacks many drawbacks associated with fMRI. In line with this, Andre Aleman opened the symposium by stressing that fNIR is often called “the poor man’s fMRI”, given that fNIR’s imaging qualities are less specific than those obtained from fMRI but still comparable. Moreover, fNIR challenges fMRI properties by being much more portable and easy to apply. Furthermore, fNIR’s ease of integration with electroencephalogram (EEG) or transcranial magnetic stimulation (TMS) makes it a promising technique for future research.

As fNIR comes with comfortable sensors for an adult or pediatric population, and is highly resistant against movement artifacts, fNIR even can be integrated with stimuli including virtual reality. Simone Cutini, the first of the presenting researchers of the NIC-NIRS Symposium, emphasized that fNIR imaging provides a good compromise between temporal and spatial resolution. fNIR’s tolerance to artifacts (e.g., movements by the participant) makes fNIR the measure of choice, especially in more “hard subjects”, as Cutini calls them (e.g. patients that due to their condition can’t hold still or keep their eyes centered, two behaviours which can distort EEG signals but not fNIR imaging). Cutini states enthusiastically: “Even running and fNIR imaging is possible.” Drawbacks such as the fact that fNIR imaging lacks the anatomical information as provided by fMRI can be overcome by using the ICBM 152 brain template as a reference that provides both a set of brain coordinates and related anatomical markers. To highlight fNIR imaging’s capabilities, Cutini cited his own research on the SNARC effect (Spatial Numerical Association of Response



## &gt;&gt; CONTINUATION NIC-NIRS SYMPOSIUM: fNIR IMAGING “THE POOR MAN’S fMRI”



Codes). The SNARC effect is taken as evidence for a semantic representation of numbers in the brain, called the mental number line, which suggests that numbers have spatial representation which is nearly linear in adults.

Cutini notes, “No fMRI was ever able to identify the SNARC effect, however, as can be read soon, (Cutini et al., submitted), fNIR imaging makes it possible to visualize neuronal activity associated with the mental process related to the SNARC effect.”



Arie Bos from the Neonatology Pediatric Department of Beatrix Children’s Hospital (UMCG, Groningen) followed Simone Cutini, and outlined how functional imaging with near-infrared spectroscopy (NIRS) can be used as a monitoring tool in preterm infants. One of the advantages of NIRS in preterm or older infants is that NIRS can be used over the whole body, which is not possible with fMRI. This makes it possible to assess, for example, kidney and abdominal functioning. Even fractionated tissue can be detected by NIRS, since fractionated tissue presents with a distinct oxygen extraction (FTOE). Overall, Arie Bos stressed the fact that NIRS in neonatology can be seen as a promising tool as it can be used in clinical studies as a monitoring tool to measure cerebral and physiological oxygen handling. The next step in research using NIRS would be to relate NIRS data from neonatology to long-term outcomes of the developing child.



The third speaker at the symposium was Martin Herrman from the Department of Psychiatry, Psychosomatics and Psychotherapy at the University of Würzburg (Germany), who described how NIRS can be used in the field of social neuroscience. Social neuroscience focuses on the reciprocity of biological systems and cognitive processes and social behavior. In Herrmann’s case, together with colleagues, he applied fNIRS to a well-known real-life joint action paradigm (as described in Egetemeir et al., 2011), in which participants and an interactional partner (the experimenter) were seated facing each other at a



table, and had to grasp and displace objects such as a large plate, a small plate, a napkin, a fork, and a cup from a tableware set according to certain rules. The experimental conditions were single action (participant manipulates his set of tableware on its own), observation (the participant was asked to observe the experimenter moving the experimenter’s tableware set), joint action (the participant and experimenter had to move their tableware sets in alteration), and joint simultaneous action (the participant and the experimenter manipulate their tableware sets simultaneously). They found that joint action was generally associated with a stronger activation of distinct brain areas. Moreover, the magnitude of neuronal activation, as measured by fNIRS, was associated with the type of joint action (alternate or simultaneous).

Herrman’s current work is on genetic imaging, and focuses on the correlation of risk genes with brain activity for psychiatric disorders. Consequently, Herrman used fNIRS data from the joint attention task as described above and genotyped 59 participants for their 5-HTTLPRs-Allele. The 5-HTTLPRs-Allele is believed to facilitate social interactions, since it is related to the individual’s level of anxiety. The idea is that individuals who are more anxious look more to other people and how they (re)act, which as a result, might be associated with activation of the mirror neuron system. The mirror neuron system is believed to be responsible for the coupling of perception and action of external information necessary for the understanding of actions and intentions of others, see also Keysers (2010). Finally, Herrman indicated that fNIRS is now used in Würzburg in a longitudinal study on resting states, the development of dementia, and mild cognitive impairment in the elderly, thus underlining fNIRS’ broad and diverse applicability.

Finally, the symposium was closed with a presentation by Branislava Ćurčić-Blake from the Neuroimaging Centre (NIC) of the UMCG, who is currently trying to combine transcranial magnetic stimulation (TMS) and fNIRS.

Ćurčić-Blake aims to investigate brain connectivity in psychiatric and neurological patients in order to improve current knowledge on brain functioning. Ćurčić-Blake explained that fNIRS can be especially helpful in studies applying TMS. TMS is known to influence axons of neurons as well as connected areas. However, as these connected areas can either be away from or towards the stimulated area, a combination of several neuroimaging techniques is warranted to monitor the actual change in neuronal connectivity. Again, the temporal resolution of fNIRS combined with its fitness for use in more natural environments are one of the convincing arguments for research with fNIRS.

Overall, the NIC-NIRS Symposium was an eye-opening event, intended to increase the awareness of “the poor man’s fMRI”. As became obvious, fNIRS is applicable in various experimental settings and therefore should serve a diversity of scientific disciplines. Given fNIRS’ high resistancy against movement artefacts, one could easily imagine researchers from movement science collaborating with cognitive researchers in order to investigate the complexity of factors involved in behaviour (perception, cognition, action) in an interdisciplinary setting. fNIRS could quickly become of great use in a variety of scientific disciplines.

## ■ KATHI MÜLLER

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## &gt; ALUMNICOLUMN

# Living in the Andes

A Morpho butterfly joins me on my way home. Flying next to my car, metallic blue sparks come and disappear quickly. Six years ago, during my Ph.D, I dedicated much of my time to working with this very same species in the laboratory of the Neurobiophysics Department of the RUG. As a physicist, always interested in biology, I enjoyed very much the possibility of digging into the tiny points of these insects with the tools and methods of physics. Calculations were made, anatomy was revealed, experiments were executed. All that concluded in a colourful thesis called Butterfly wing scales – Pigmentation and structural properties. The work was the logical continuation of a series of studies on phototransduction in butterfly eyes; that is, the transformation of light into electrical signals (now the reason for being part of the BCN program is clear).

Now I work in Colombia, in the university in which I graduated before going to the Netherlands, located in a much more crowded city than Groningen. The city of Medellín has more than two million souls vibrating in a mild climate with temperatures between 18 and 30 degrees, and only two seasons: rain or no rain. A city with the stigma of being once the cradle of Pablo Escobar and his war; a name probably unknown for many of the PhD students today living in Groningen. But the city is also the home of Fernando Botero, the painter, and Juanes, the singer, and others who bring wherever they are the tropical warmth of this part of the world. The millions of souls that I mentioned before made possible the IX Southamerican Games in 2010 that I could enjoy so much.

The position that I have now in academia allows me to continue my research on butterflies and other living beings with photonic structures, but I complement my time as a researcher with other topics in biophysics such as studying the process of calcium release in muscle fibres with fluorescence microscopy, or by doing experimental studies in biomechanics and ergonomics.

I have been in The Netherlands a couple of times since graduation and hope to be there soon; I definitively consider Groningen my second city. My mentor still remembers me and I appreciate much him and his family. I can say that a part of me still lives in the country of the kanaals and the fietsen.

■ MARCO GIRALDO



The mountains of Los Andes and Marco with a 'loro'.

## > INTRODUCING NEW BCN PHD COUNCIL CHAIR



Dear fellow BCN members,

I would like to introduce myself to you as the new chair of the BCN PhD Council. My name is Amarins Heeringa and I am now in the second year of my PhD project in the Department of Otorhinolaryngology (Audiology) at UMCG.

I really enjoy doing research, but I also find it important that we should take care of the conditions in which we work. Therefore I joined the BCN PhD council 1.5 years ago. During that time, I have helped organizing some of the BCN events, such as the PhD day, the sports day, the BBQ and the BCN drinks. I have also been a member of the GSMS (Graduate School of Medical Sciences) Education Committee and the GSMS PhD Council for one year now, but I will leave the GSMS Councils from September on.

For those of you who do not know, the BCN PhD council is representing all BCN PhD students in the Education Committee. By using questionnaires, we hope to get a view on problems that the PhD students are facing, so that we can try to solve those. Furthermore, we organize several social events, such as the ones mentioned above.

To keep you all up to date about interesting events for BCN PhD students, we also have the following blog: [bcnphdcouncil.blogspot.nl](http://bcnphdcouncil.blogspot.nl). You can contact us on [bcnphdcouncil@list.rug.nl](mailto:bcnphdcouncil@list.rug.nl).

I am looking forward to chair the BCN PhD Council and I hope we will see you soon at one of our events.

■ AMARINS HEERINGA

## > PHD AND OTHER NEWS

### BCN Orientation 2012: start September 7, 2012

The 2012 BCN Orientation course will start on September 7. The other course dates are September 21, October 5, and 19, November 9 and 23, 2012.

New to this year's edition are two extra afternoon modules: Communication Skills and Time Management. These modules are part of the course BCN Management Competences in your Ph.D. project (which is the new name of the BCN Project Management Course). Later this year we will offer the modules again, then for those Ph.D. students who also would like to participate.

It is still possible to register for the BCN Orientation Course: please send an email to [d.h.koopmans@umcg.nl](mailto:d.h.koopmans@umcg.nl)

### Agenda BCN Activities:

September 7, 2012: Start BCN Orientation Course

November 2, 2012: BCN's 25th Anniversary Symposium and Party!!!

Check the website for detailed information.

■ DIANA KOOPMANS



## > ORATIONS

### Depressie als continuüm; je ziet het pas als je het door hebt

ORATIE

R.A. Schoevers

TITEL

Depressie als continuüm; je ziet het pas als je het door hebt

LEEROPDRACHT

Psychiatrie

DATUM

24 april 2012

Prof.dr. Robert Schoevers gaat tijdens zijn oratie in op de prevalentie van depressie en angststoornissen bij volwassenen en kinderen, en op interventies om deze te voorkomen dan wel gericht te behandelen. Daarbij staat het continuüm van symptomen centraal - van een depressie kun je veel of weinig last hebben, een depressie kan kort of lang duren, en vanzelf overgaan of niet.

Of is het niet zo simpel en moeten we op zoek naar andere manieren om verschillende vormen van depressie te onderscheiden? Moeten we patiënten dagelijks bemeten via apps op de smartphone om het individuele profiel van depressie bij die ene persoon op het spoor te komen? Moeten we op zoek naar fysiologische profielen van depressie? De uitdaging voor de psychiatrie is om mensen die behandeling te geven die ze nodig hebben, niet meer en niet minder. Daarvoor is onderzoek naar de onderliggende ziektemechanismen noodzakelijk.

Psychiatrische stoornissen zijn verantwoordelijk voor een groot deel van de ziektelast in zowel westerse als niet-westerse samenlevingen, en hebben vaak een recidiverend beloop. Naast genetische en somatische factoren verhogen belastende gebeurtenissen in het vroege leven de kans op het ontstaan. Psychiatrische aandoeningen treffen mensen veelal in hun meest (re)productieve jaren, en hebben aanzienlijke gevolgen voor de huidige maar ook voor de volgende generatie.

Schoevers is psychiater en hoofd van het Universitair Centrum Psychiatrie (UCP) in het UMCG. Zijn onderzoek richt zich onder meer op mechanismen die verantwoordelijk zijn voor het ontstaan van psychiatrische aandoeningen (in het bijzonder depressie) en op interventies om dat te voorkomen dan wel behandelen. Het levensloopsperspectief en gezond ouder worden staan daarbij centraal. Het UCP participeert in grote onderzoekscohorten zoals TRAILS, NESDA, GROUP en LIFELINES en heeft recent het Interventielab gestart waarin nieuwe innovatieve behandelingen worden ontwikkeld en geëvalueerd.

### Handen in beeld

ORATIE

C.K. van der Sluis

TITEL

Handen in beeld

LEEROPDRACHT

Revalidatiegeneeskunde, i.h.b. arm- en handrevalidatie

DATUM

12 juni 2012

De oratie van prof.dr. Corry van der Sluis gaat over het in beeld brengen, het letterlijk en figuurlijk zichtbaar maken, van de arm- en handrevalidatie. Handen zijn een zeer belangrijk onderdeel van het menselijk lichaam. Onze handen gebruiken we voor het uitvoeren van allerlei dagelijkse activiteiten, we hebben onze handen nodig voor werk, hobby's, relaties, communicatie. Stel dat je een deel van je arm of hand mist of dat er iets mankeert aan jouw handen? In dat geval is vaak arm- en handrevalidatie nodig om de gevolgen van de arm- of handproblematiek op te lossen, te minimaliseren of te compenseren. Van der Sluis zal in haar oratie twee onderdelen van de arm- en handrevalidatie belichten: armprothesiologie en handartrose. De komende jaren zal haar onderzoek zich specifiek richten op deze onderdelen.

Het leren aansturen van een armprothese is voor mensen met een armamputatie of voor degenen die met een korte arm worden geboren, niet eenvoudig. Tot nu toe is nauwelijks wetenschappelijk onderzocht hoe deze patiënten het beste getraind kunnen worden.

Verschillende vragen spelen daarbij een rol: welke taken moeten worden aangeboden in de training? Welke feedback is nodig? Is er plek voor behandelingen als motor imagery of spiegeltherapie in de training van patiënten die een armprothese willen gaan gebruiken? Welke effecten heeft het oefenen van de gezonde arm en welke mogelijkheden biedt virtual reality voor deze patiënten?

Gezond ouder worden, healthy ageing, is een uitdaging voor de toekomst.

Ouderdomsaandoeningen, zoals artrose van de handen, kunnen veel invloed hebben op de kwaliteit van leven. Patiënten met handartrose worden op diverse manieren gerevalideerd, maar de effectiviteit van de meeste behandelingen is onbekend. Ook werken met handartrose zal aandacht krijgen in het onderzoek: waarom werkt de ene persoon met handartrose gewoon door en lukt dit een ander niet?

Arm- en handrevalidatie zal de komende jaren niet alleen in beeld gebracht worden door onderzoek, maar ook door innovaties, zoals eHealth, in de patiëntenzorg te implementeren en door onderwijs te geven aan studenten, artsen in opleiding en medisch specialisten. Dat onderwijs zal vooral worden verzorgd door het HandPolsCentrum van het UMCG.

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

>> CONTINUATION PROMOTIONS

## > PROMOTIONS

### Improving the basis: revision of an early childhood home intervention program. The Dutch version of the Portage program - revised

P R O M O V E N D U S

A.T. Hoekstra

P R O E F S C H R I F T

Improving the basis: revision of an early childhood home intervention program. The Dutch version of the Portage program - revised

P R O M O T O R

Prof.dr. B.F. van der Meulen

Prof.dr. A.J.J.M. Ruijsseenaars

### Opvoedingsinterventieprogramma Portage aangepast

Het Portage Programma is een vroegtijdig interventieprogramma, dat is ontwikkeld als thuisbegeleidingsprogramma voor gezinnen met kinderen tussen de 0 en 6 jaar met problemen in de opvoedingssituatie. Het doel van dit programma is om de ontwikkeling van het kind te stimuleren, gedrag van het kind te veranderen en ouders te ondersteunen. In Nederland is het programma bekend onder de naam Portage Programma Nederland (PPN).

Promovenda Aafke Hoekstra heeft het PPN op drie punten herzien en vergeleken met het bestaande programma. De vergelijking tussen de effectiviteit van de gereviseerde en de oorspronkelijke versie laat zien dat de gereviseerde versie (PPN-R) gedeeltelijk betere resultaten oplevert voor de ontwikkeling van kinderen en dat er geen verschil is tussen resultaten voor gedragsproblematiek van de kinderen en opvoedingsvaardigheden van

de ouders. In verband met het kleine verschil voor de ontwikkeling van kinderen ten gunste van het PPN-R beveelt zij het gebruik van het PPN-R aan boven het gebruik van het PPN.

De drie belangrijkste revisiepunten van het oorspronkelijke programma zijn (a) de revisie van de focus (meer gezinsgericht), (b) de revisie van de handleiding en (c) de revisie van de Vaardighedenlijst en Activiteitenlijst. De vergelijking van de effectiviteit van PPN en PPN-R is gemaakt door de volgende hypothese te toetsen: Interventie met het PPN-R leidt tot meer positieve resultaten dan interventie met het PPN.

Eenentwintig gezinnen hebben deelgenomen aan interventie met het PPN, zestien aan interventie met het PPN-R.

**Aafke Hoekstra** (Dokkum, 1982) studeerde pedagogische wetenschappen in Groningen en deed haar promotieonderzoek bij de afdeling Orthopedagogiek, Research School of Behavioural and Cognitive Neurosciences (BCN). Het werd medegefinancierd door de Stichting Kinderpostzegels Nederland. Ze werkt als orthopedagoog bij Virenze Drachten. Zij promoveerde op 26 april 2012.

### Neural correlates of prosody and information structure

P R O M O V E N D U S

D.V. Dimitrova

P R O E F S C H R I F T

Neural correlates of prosody and information structure

P R O M O T O R

Prof.dr. G. Redeker

### Uitspraak mede bepalend voor interpretatie tekst

De wijze waarop iemand een woord of zin uitsprekt bepaalt mede hoe de luisteraar de zin interpreteert. Prosodie - de melodie, intonatie en accenten die iemand aan een zin meegeeft - is dus belangrijk voor de interpretatie van informatie. Dat blijkt uit het promotieonderzoek van Diana Dimitrova.

Dimitrova beschrijft in haar proefschrift welke neurocognitieve processen geactiveerd worden in de hersenen wanneer luisteraars gesproken taal verwerken. Ze richt zich met name op de melodie en het ritme van gesproken zinnen, ook bekend als prosodie. Haar elektrofysiologische tests laten zien dat prosodie de vroege en late stadia van taalverwerking beïnvloedt. Wanneer woorden geaccentueerd zijn, worden ze door de luisteraars als belangrijk beschouwd en reageren de hersenen op de accentuering al 200 milliseconden na het begin van de stimulus. De verwerking van prosodische prominentie is onafhankelijk van het beschikbaar zijn van context en van de vraag of de combinatie van accent en context congruent is.



## &gt;&gt; CONTINUATION PROMOTIONS



**Diana Dimitrova** (Bulgarije, 1981) studeerde aan de Universiteit van Keulen. Ze verrichtte haar onderzoek aan de Faculteit der Letteren bij het Center for Language and Cognition (CLCG) en bij de School for Behavioral and Cognitive Neurosciences (BCN). Ze werkt nu als postdoc in Bulgarije. Zij promoveerde op 10 mei 2012.

### Metabolic consequences of sleep restriction in rats

P R O M O V E N D U S

R.P. Barf

P R O E F S C H R I F T

Metabolic consequences of sleep restriction in rats

P R O M O T O R

Prof.dr. A.J.W. Scheurink

### Bijslapen in het weekend helpt niet: chronisch verstoorde slaap risico voor ontwikkeling suikerziekte en overgewicht

Metabole ziekten als overgewicht en type 2 diabetes komen steeds meer voor in de Westerse wereld. Paulien Barf ontdekte dat chronisch verstoorde slaap een risicofactor is voor de ontwikkeling van deze ziektes.

Uit recent onderzoek was al bekend dat een tekort aan slaap of een verstoring van de slaap een rol kan spelen bij de ontwikkeling van de genoemde metabole ziekten. Barf heeft nu onderzocht wat het effect is van chronisch slaapttekort op de metabole regulatie in ratten. Daarmee wist ze aan te tonen dat verstoorde slaap leidt tot een verhoging van bloedglucosewaarden. Ze concludeert hieruit dat de ratten glucose-intolerant zijn geworden. Glucose-intolerantie wordt gezien als de eerste stap in de ontwikkeling van type 2 diabetes.

Verder was al bekend dat slaapttekort in ratten vaak leidt tot een verlaging van lichaamsgewicht. Barf ontdekte dat dit wordt veroorzaakt door een verhoging van de energieuitgave tijdens slaapttekort. Maar, als de periodes van slaapttekort worden afgewisseld met periodes van rust, komen de ratten aan in gewicht. Deze afwisseling van slaapttekort en herstelslaap is iets wat in het dagelijkse leven van de mens vaak voorkomt: slaapttekort tijdens de week bijslapen in het weekend. Eerdere studies hebben laten zien dat herstelslaap van belang is voor allerlei fysiologische processen, maar Barf maakt nu duidelijk dat zo'n continue afwisseling voor een lange periode schadelijk kan zijn voor de energiehuishouding en daardoor een risicofactor kan zijn voor de ontwikkeling van metabole ziekten.



**Paulien Barf** (Ameland, 1984) studeerde Behavioural and Cognitive Neurosciences aan de Rijksuniversiteit Groningen, waar zij haar promotieonderzoek deed bij de Basiseenheid Neuroendocrinologie van het Center for Behaviour and Neurosciences (CBN). Inmiddels werkt zij als postdoc bij de afdeling Anesthesiology and Pain Medicine Research aan de University of Washington, Seattle, VS. Haar onderzoek daar focust zich op ontstekingsreacties in de hersenen als onderliggend mechanisme van de metabole gevolgen van slaapttekort. Zij promoveerde op 11 mei 2012.

### Empathy under arrest? Functional and structural neural correlates of empathy in psychopathy

P R O M O V E N D U S

H. Meffert

P R O E F S C H R I F T

Empathy under arrest? Functional and structural neural correlates of empathy in psychopathy

P R O M O T O R E S

Prof.dr. C.M. Keyzers

Prof.dr. J.A. den Boer

Neurale mechanismen onderzocht bij mensen met verminderde empathische vermogens. Hoe komt het dat sommige mensen niet goed in staat zijn om mee te voelen met emoties van anderen? Harma Meffert onderzocht deze vraag door de hersenactiviteit en de hersenstructuur te meten bij mensen met de persoonlijkheidsstoornis psychopathie en bij een controlegroep. Zij liet alle proefpersonen naar filmpjes kijken waarin mensen iets meemaken. De hersengebieden die gebruikt worden om emoties en bijvoorbeeld aanrakingen te ervaren, werden

Luisteraars zijn niet alleen gevoelig voor de aanwezigheid van prosodische prominentie maar ook voor de soort accenten die sprekers gebruiken: corrigerende accenten activeren extra verwerkingsmechanismen. Dimitrova identificeert vroege correlaten van incongruente prosodie in sterk voorspellende contexten en late integratieprocessen voor incongruente prosodie die de verwerking van structurele complexiteit in geïsoleerde en ambigue zinnen aantonen. Ze toont aan dat de hersenen gevoelig zijn voor verschillen in prosodie, zelfs bij afwezigheid van prosodische beoordeling. Echter, door de taak te veranderen, worden ook de neurale mechanismen voor de verwerking van prosodie gemoduleerd.

## » CONTINUATION PROMOTIONS



minder geactiveerd bij mensen met psychopathie, dan bij de controlegroep. Bij de mensen met psychopathie was niet zozeer sprake van het onvermogen om deze gebieden te activeren, maar wel bleek dat zij dit spontaan minder snel doen.

Een belangrijk kenmerk van mensen met psychopathie is dat zij verminderde empathische vermogens hebben: zij kunnen weinig meevoelen met de emoties van anderen en herkennen deze minder goed, in vergelijking met gezonde proefpersonen. Meffert onderzocht of dit te maken kan hebben met hersengebieden die zowel geactiveerd worden wanneer je zelf een handeling uitvoert, een emotie of aanraking ervaart, maar ook als je deze waarneemt bij een ander.

Meffert onderzocht de activatie van hersengebieden door proefpersonen naar filmpjes te laten kijken waarin handen elkaar liefkozend, afwijzend, pijnlijk of neutraal aanraken. Wanneer de proefpersonen zonder instructie naar de filmpjes keken, waren er nogal wat hersengebieden minder actief in de psychopathiegroep, vergeleken met de controlegroep. Echter, wanneer de proefpersonen de opdracht kregen om mee te voelen met een van de handen in de film, verdwenen veel van de groepsverschillen. Vervolgens onderzocht Meffert verschillen in hersenvolume in een aantal gebieden. Ze concludeert dat mensen met psychopathie wel mee kunnen voelen met anderen, maar dit spontaan minder sterk doen in vergelijking met controle proefpersonen. Gerichte instructie kan deze verschillen verkleinen. Meffert stelt dat dit een van de eerste studies is waarin de hersenactiviteit bij mensen met psychopathie is gemeten met een dergelijke vraagstelling. Zij pleit voor meer onderzoek om haar bevindingen verder te toetsen en onderstreept het belang van dergelijk onderzoek om betere behandelingen voor mensen met psychopathie te kunnen ontwikkelen.

**Harma Meffert** (Groningen, 1977) studeerde psychologie aan de Rijksuniversiteit Groningen. Zij voerde haar onderzoek uit bij de afdeling Neurowetenschappen (Social Brain Lab) van het UMCG in samenwerking met Forensisch Psychiatrisch Centrum Dr. S. van Mesdag in Groningen. Meffert werkt inmiddels als postdoc onderzoeker bij het National Institute of Mental Health in Bethesda, VS. Zij promoveerde op 21 mei 2012.

### The organization of initiation and inhibition of movement. Linking muscle and brain in healthy subjects and patients with Parkinson's disease

P R O M O V E N D U S

C.M. Toxopeus

P R O E F S C H R I F T

The organization of initiation and inhibition of movement. Linking muscle and brain in healthy subjects and patients with Parkinson's disease

P R O M O T O R E S

Prof.dr.ir. N.M. Maurits

Prof.dr. K.L. Leenders

Wat gezonde mensen gedachteloos doen, bijvoorbeeld iets oppakken, is voor patiënten met de ziekte van Parkinson in toenemende mate moeilijk. Zij hebben last van bewegingsproblemen, zoals traagheid, opstartproblemen en beven. UMCG-onderzoeker Carolien Toxopeus bestudeerde de hersenactiviteit bij dergelijke bewegingsproblemen. Zij verklaart deze door achteruitgang in de hersenfunctie die de balans tussen starten en stoppen van de spieren aanstuurt, in combinatie met achteruitgang in de verwerking van wat de ogen waarnemen. Toxopeus promoveert op 6 juni aan de Rijksuniversiteit Groningen op de resultaten van haar onderzoek.

Patiënten met de ziekte van Parkinson zijn niet meer goed in staat om (onbewust) de juiste spieren te selecteren en aan te sturen voor een gewenste beweging. De heersende gedachte is dat er vooral sprake zou zijn van teveel remming van beweging. Op basis van haar onderzoek concludeert Toxopeus nu dat Parkinson waarschijnlijk beter verklaard kan worden door een ziektemodel dat uitgaat van de balans tussen

starten en stoppen van beweging, in samenhang met zintuiglijke waarnemingen, vooral van de ogen.

Om bewegingen te maken, "vertalen" de hersenen een voorgenomen beweging in spieractiviteit. De hersenen activeren selectief de juiste spieren en remmen de spieren die niet nodig zijn. Hoewel niet precies bekend is hoe starten en stoppen van beweging worden geregeld in de hersenen, is wel bekend welke hersengebieden een belangrijke rol spelen. Om de rol van verschillende hersengebieden bij beweging te bepalen, liet Toxopeus gezonde proefpersonen in een experiment bewegende vierkantjes volgen op de computer. De proefpersonen gebruikten een joystick en voerden hiermee verschillende bewegingstaken uit, zoals snelle start- en stopbewegingen van de pols, en doelgerichte en vloeiende bewegingen. Toxopeus stelde vast dat starten en stoppen van beweging verschillend geregeld worden door de hersenen.

Bij Parkinsonpatiënten bleek dat bewegingsproblemen niet alleen worden veroorzaakt door teveel remming, maar ook doordat zij de balans tussen starten en stoppen niet meer goed kunnen afstemmen. Ten opzichte van gezonde proefpersonen lieten Parkinsonpatiënten bij alle bewegingstaken veranderingen in hersenactiviteit zien. Vloeiende bewegingen konden zij niet meer goed uitvoeren. Ook waren de onderarmspieren bij de patiënten veel meer constant actief dan bij gezonde personen. Toxopeus concludeert dat patiënten met Parkinson minder goed in staat zijn om de juiste samenwerkende spieren te selecteren voor een geleidelijke aanspanning. Zij kunnen de balans tussen starten en stoppen van beweging niet goed afstemmen op een voorgenomen beweging. Hierbij spelen

## &gt;&gt; CONTINUATION PROMOTIONS

veranderingen in hoe de hersenen zintuiglijke informatie doorgeven aan andere delen in de hersenen waarschijnlijk een rol.

“Dit onderzoek levert fundamenteel inzicht in de bewegingsproblemen die ontstaan bij de ziekte van Parkinson,” aldus Toxopeus. “We weten nu beter dat deze patiënten problemen hebben met starten én stoppen van bewegingen, maar ook wat er anders gaat bij vloeiende bewegingen. De experimentele setting die hiervoor is ontwikkeld, kan goed worden gebruikt om nieuwe behandelingen van Parkinson te evalueren,” zo stelt Toxopeus.



**Carolien Toxopeus** (Veendam, 1984) studeerde geneeskunde aan de Rijksuniversiteit Groningen. Zij voerde haar onderzoek uit in het kader van een MD/PhD traject gefaciliteerd door de Junior Scientific Masterclass bij de afdeling Neurologie van het UMCG. Toxopeus volgt momenteel de opleiding tot radioloog in het AMC, Amsterdam. Zij promoveerde op 6 juni 2012.

### Time reference in standard Indonesian agrammatic aphasia

P R O M O V E N D U S

H.Y. Anjarningsih

P R O E F S C H R I F T

Time reference in standard Indonesian agrammatic aphasia

P R O M O T O R

Prof.dr.Y.R.M. Bastiaanse

### Problemen met tijdverwijzing van afasiepatiënten onderzocht

Mensen met afasie hebben door een hersenbeschadiging moeite met spreken. Voor sprekers van verschillende verbogen talen is tijdverwijzing een bijzonder probleem. Harwintha Yuria Anjarningsih verzamelde en analyseerde gegevens van Indonesisch sprekende afasiepatiënten om na te gaan of problemen met tijdverwijzing worden veroorzaakt door problemen met het verbuigen van werkwoorden, door moeilijkheden met het verwijzen naar een bepaald moment in de tijd (bijvoorbeeld verleden tijd) of door andere nog onbekende elementen.

**Harwintha Anjarningsih** (Indonesië, 1981). Zij promoveerde op 7 juni 2012.

### Perinatal motor function loss in human spina bifida aperta

P R O M O V E N D U S

R.J. Verbeek

P R O E F S C H R I F T

Perinatal motor function loss in human spina bifida aperta

P R O M O T O R

Prof.dr.O.F. Brouwer

### Bloedingen in het ruggenmerg tijdens geboorte van kinderen met open ruggetje geven extra schade zenuwweefsel

Renate Verbeek bestudeerde de schade die spina bifida aperta bij kinderen veroorzaakt. Zij toont aan dat bloedingen in het ruggenmerg vanuit kwetsbare bloedvaten op en onder het niveau van het sluitingsdefect tijdens het geboorteprocès schade veroorzaken aan zenuwweefsel.

Verbeek verrichtte spierecho- en histologisch (weefsel) onderzoek in foetussen en kinderen. De bevindingen ondersteunen de hypothese dat bloedingen in het ruggenmerg tijdens het geboorteprocès schade veroorzaken aan spierschade op bovenop de al aanwezige schade veroorzaakt door het sluitingsdefect van de rug zelf. Deze schade resulteert in achteruitgang van de beenspierfunctie na de geboorte en in het eerste levensjaar. Na het eerste levensjaar lijkt de spierschade zich te stabiliseren. Het al voor de geboorte afdekken van de open rug kan het ruggenmerg beter beschermen wat leidt tot meer behoud van beenspierfunctie in vergelijking met kinderen geopereerd na de geboorte. Belangrijk is nu om een zorgvuldige afweging te maken tussen de met opereren voor de geboorte geassocieerde risico's voor moeder en kind en

de mogelijke voordelen voor het kind, alvorens opereren voor de geboorte te beschouwen als standaardbehandeling voor kinderen met een open rug.

**Renate Verbeek** (Hoogkerk, 1984) studeerde geneeskunde aan de Rijksuniversiteit Groningen. Zij verrichtte haar promotieonderzoek op de afdeling (kinder)Neurologie van het UMCG in het kader van een MD/PhD-traject van de Junior Scientific Masterclass. Het project vond plaats binnen de Onderzoeksschool BCN. Zij promoveerde op 18 juni 2012.

### Quantitative sensory testing (QST) - does assessing sense make sense?

P R O M O V E N D U S

K.H. Konopka

P R O E F S C H R I F T

Quantitative sensory testing (QST) - does assessing sense make sense?

P R O M O T O R E S

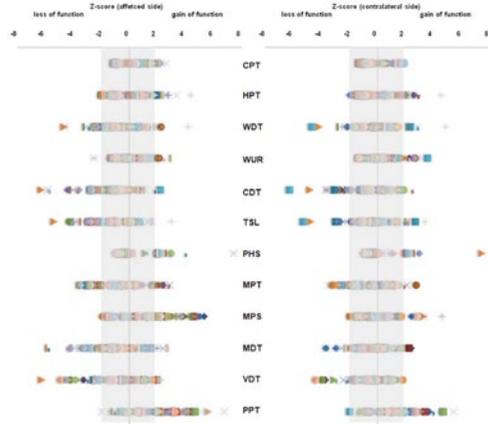
Prof.dr. M.M.R.F. Struys

Prof.dr. G.J. Groen

### Onderzoek naar meetinstrument om veranderende prikkelgevoeligheid bij chronische pijn in kaart te brengen

Chronische pijn die gepaard gaat met zenuwbeschadiging is een nog slecht begrepen fenomeen dat bekend staat als neuropathische pijn. Patiënten die hieraan lijden ervaren (pijn) prikkels op de huid anders dan gezonde personen. Karl-Heinz Konopka heeft met behulp van een gestandaardiseerde methode de veranderende huidsensaties bij patiënten met neuropathische pijn onderzocht.

## >> CONTINUATION PROMOTIONS



Een Duits onderzoeksnetwork ontwikkelde de gestandaardiseerde Kwantitatief Sensorische Testen (KST). Hiermee heeft Konopka het somatosensorisch functioneren (reageren op prikkels op de huid) bij patiënten met neuropathische pijn en gezonde vrijwilligers bestudeerd. Hij stelt vast dat patiënten die aan een kant van hun lichaam neuropathische pijn hebben, ook aan de andere kant van hun lichaam veranderde somatosensorische reacties ervaren.

Neuropathische pijn komt vaak voor. Schattingen geven aan dat 1-2% van de mensen hier last van heeft, en bij ouderen zou dit zelfs 8% zijn. Konopka stelt dat het gebruik van KST kan leiden tot beter inzicht in de relaties tussen somatosensorisch functioneren en gradaties van neuropathische pijn. De KST is een gevoelig onderzoeksinstrument voor de klinische praktijk en kan worden ingezet bij de ontwikkeling van geneesmiddelen om bijvoorbeeld homogene patiëntenpopulaties te identificeren.

**Karl-Heinz Konopka** (Essen, Duitsland, 1965) studeerde biologie aan de Universiteit van Bielefeld. Hij voerde zijn promotieonderzoek uit

bij de Afdeling Anesthesiologie van het UMCG en in het kader van de Onderzoeksschool BCN. Het onderzoek werd gefinancierd door het Top Instituut Pharma. Konopka werkt inmiddels als Associate Director Translational Medicine bij de firma Grünenthal in Duitsland. Hij promoveerde op 18 juni 2012.

### A quantitative approach to social and geographical dialect variation

P R O M O V E N D U S

M.B. Wieling

P R O E F S C H R I F T

A quantitative approach to social and geographical dialect variation

P R O M O T O R E S

Prof.dr.ir. J. Nerbonne

Prof.dr. R.H. Baayen

### Dialectvariatie beter in beeld te brengen

Het centrale thema van Martijn Wielings proefschrift is het onderzoeken van dialectvariatie. Om een objectief beeld te krijgen van dialectvariatie meten we dialectafstanden op basis van honderden woorden automatisch op basis van genoteerde uitspraken. Wieling verfijnde deze afstandsmaat door het gebruik van (automatisch bepaalde) akoestisch gevoelige klankafstanden. Daarnaast introduceert hij een nieuwe methode die het mogelijk maakt om groepen van vergelijkbare dialecten te vinden, waarbij tegelijkertijd de onderliggende taalkundige basis (gebaseerd op klankcorrespondenties) wordt bepaald.

Voor zowel Engelse als Nederlandse dialecten vond Wieling aannemelijke geografische dialectgebieden samen met hun meest

kenmerkende klankcorrespondenties. In het Fries is bijvoorbeeld de toevoeging van 'sj' erg kenmerkend: 'wachten' wordt 'wachtsje'.

Wieling ontwikkelde een integrale aanpak, die de invloed van diverse factoren op dialectvariatie per woord kan bepalen. Niet alleen kan via deze methode gekeken worden naar de invloed van geografische ligging, maar ook naar de rol van verschillende sociale en woord-gerelateerde factoren (zoals leeftijd van de spreker en woordfrequentie). Wieling ontdekte bijvoorbeeld



bij Nederlandse dialectwoorden dat deze het meest verschillen van de standaardtaal in de provincies Friesland, Groningen, Drenthe, Overijssel, Limburg en Zeeland. Daarnaast blijkt dat de dialectuitspraken van een gemeenschap met een klein aantal inwoners of een hoge gemiddelde leeftijd meer afwijken van de Nederlandse standaardtaal dan die van een gemeenschap met een groot aantal inwoners of een lage gemiddelde leeftijd. Ook blijkt dat meer frequente woorden meer resistent zijn tegen standaardisatie (ook in andere talen). Wielings dissertatie gaat specifiek over uitspraken in dialect. Het zegt niets over het accent van deze sprekers in de standaardtaal.

Over Wielings onderzoek verscheen in september 2011 het persbericht Nederlandse dialecten en hun relatie tot standaard Nederlands.

**Martijn Wieling** (Emmen, 1981) studeerde informatica en Behavioural and Cognitive Neurosciences (research master) aan de Rijksuniversiteit Groningen. Hij verrichtte zijn onderzoek bij het Center for Language and Cognition Groningen, Faculteit der Letteren. Zijn onderzoek valt binnen het dialectometrie-onderzoek o.l.v. John Nerbonne. Wieling gaat per 1 september werken als onderzoeker met een Rubicon-beurs bij de Universität Tübingen, Duitsland. Hij promoveerde op 28 juni 2012.

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

## > ONE CAN ALSO LEARN FROM “STELLINGEN”

*Een promotietraject is vergelijkbaar met parachutespringen: een sprong in het diepe, spanning en enthousiasme tijdens de val en voldoening na de landing.*

> Paulien Barf

*If you believe that prosody does not matter, you should try to speak without it.*

> Diana Dimitrova

*In bytsje bryk is minskelyk. (Frisian proverb)*

> Aafke Hoekstra

*In some political circles ‘inburgering’ is interpreted as ‘limburgering’.*

> Karl-Heinz Konopka

*Every developing child displays a healthy array of psychopathic behaviours.*

> Harma Meffert

*Voor een verdere ontwikkeling van de emancipatie van vrouwen in Nederland en daarbuiten zijn sterke grootmoeders onmisbaar.*

> Carolien Toxopeus

*“Achteruutkiekn gef kopzeer biet veuruutgaon.” – Drents proverb (“Looking back gives a headache while moving forward”)*

> Martijn Wieling

## > COLOPHON

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&gt; COLUMN

## Reappraising your PhD-project

I am currently in the second half of my Ph.D. project at the Interdisciplinary Centre for Psychopathology and Emotion Regulation, UMCG. Like most adults, I spend more hours working than any other activity. I will therefore use this column to share three random aspects of my project about “environmental influences on Neuroticism (N)” that fascinates me. N, or emotional instability, refers to one of the “big five” super ordinate personality dimensions and covers the extent to which individuals experience negative emotions (e.g. fear, anger, worry, depression and dissatisfaction) and the world as threatening. N is important because it predicts somatic symptoms, most indices of psychopathology (both axis I and II), and accounts for higher economic costs than do common mental disorders. In addition, N predicts numerous, concrete and important life outcomes (mortality, divorce, occupational attainment) across multiple domains, often better than SES and IQ do. Paradoxically, N is both one of the most stable individual differences and one of the most susceptible to environmental factors.

One striking aspect is the extent to which human beings construct and evoke the ecological niches they subsequently inhabit (cf. extended phenotype). Humans place themselves in certain romantic relations, social networks, jobs and experiences; hence, they tend to pick the nurture that suits (and amplifies) their nature. N emerges from this interaction, which nicely depicts the circularity of the system through which genes come to influence behaviour. However, there is no clear boundary between genes and

environments. For example, experiences program the epigenome and modulate adult neurogenesis or sperm aneuploidy, just as environmentally-mediated phenotypic changes seem to be inherited transgenerationally (non-Mendelian RNA-based inheritance).

I’m also impressed by the universal maturational decrease in N between age 20 and 40, closely interwoven with biosocial enactments in age-graded roles such as partner, parent and worker. Interindividual differences in the timing of such transitional events often have specific antecedents and consequences, closely interwoven with sociocultural imperatives and social clocks. Moreover, albeit personality is deemed to be relatively stable, humans remain capable of meaningful intra-individual changes along the lifespan. These changes often associate with diverging experiences (e.g. within partnerships, work, or accidents) and are reflected in one’s relative position with regard to others within a generational cohort.

Third, differential epidemiology indicates large bio-social-cultural forces behind variation in N, as mean-level N appears to differ around the world. For example, interindividual variance and gender differences in N lay on a continuum that runs from non-western societies (e.g. parts of Asia and Africa) to the most prosperous and egalitarian societies in the West. It appears that innate differences in N become accentuated when environmental impediments are levelled, similar to siblings within one family. Moreover, many

studies indicate the impact of sociohistorical environments which appear to result in significant intergenerational differences in N. Arguably they reflect changes in e.g. sociocultural norms and experiences (cf. wars, economic depressions and the baby-boom), media and technology, and family size or number of close others.

These three random aspects may emphasize my feeling that even a decade would be much too short for me to grasp even the basics of the bidirectional interaction between environmental influences and Neuroticism. However, I enjoy the chance to think about this topic for (at least) the time of my Ph.D. project, and wonder why human personality is structured the way it is, why N is so susceptible to environments (and to which input most), what the function of the large interindividual difference in N is, and how N pays for itself in fitness currency. Doing so may help to articulate prevention strategies, because if we learn which contexts and conditions activate N, we may learn to influence an important vulnerability for mental ill health and low wellbeing, as well as understand a fundamental part of our being.

■ BERTUS JERONIMUS