IN THIS ISSUE
From the boardroom 2
The secret behind scientific success:
  An interview with Jackie Senior 3

Scientist in the classroom: Bridging the gap between teacher and student 5

I am interested in whatever works for patients:
  An interview with Iris Sommer 8
Intro new staff writer: Floor Arts 11
The Art of Science: An interview with Mila Moxom 12
Working with (against?) work pressure in academia 15
Now what? Life after the defense 17
Intro new staff writer: Sebastián A. Balart Sánchez 18
Mindwise: Chocolate can give you an edge 19
Mindwise: After Brexit: Locating the future leaders of psychology in Europe 21
Start NWO-Programme Dutch National Research Agenda (Nationale WetenschapsAgenda, NWA) 23
Short Interviews about the BCN retreat, 8-9 March 2018 24
MAPS summer school 26
The royal lecture 27
Symposium on the 15th Anniversary of the Neuroimaging Center Groningen 29
Dear BCN community - This is your PhD Council 30
Cool links 31
Put a face to our names 32
Grand stuff 33
PhD and other news 34
Promotions 35
Cheeky propositions 43
Colophon 43
From the boardroom

On Tuesday, May 8, the Netherlands Organisation for Scientific Research (NWO) and the Ministry of Education, Culture and Science jointly organised a festive meeting to mark the start of the new research programme for the Dutch National Research Agenda. The meeting took place from 14:30 to 16:30 in Pakhuis de Zwijger in Amsterdam. During the meeting, those present were informed about the design of the programme and various speakers described future perspectives. Potential applicants were encouraged to attend the meeting.

From June 21 to June 24, 2018, the 30th Annual Meeting and Anniversary Event of the Society for Light Treatment & Biological Rhythms (SLTBR) will take place in Groningen. Founded in 1988, SLTBR is a multidisciplinary group dedicated to promoting research and knowledge transfer about the biological effects of light. The topic has received widespread attention since the Nobel Prize in Physiology or Medicine 2017 was awarded jointly to Jeffrey C. Hall, Michael Rosbash and Michael W. Young for their discoveries of molecular mechanisms controlling the circadian rhythm. In view of this event, the BCN Symposium 2018 will be devoted to chronobiological research and incorporated into SLTBR 2018. The first session will take place on Thursday, June 21, from 8:45 to 12:30 in the Bernoulliborg on the Zernike Campus (room 5161.0253), with presentations by Bill Schwartz (University of Texas, Austin) and Samer Hattar (NIMH, Bethesda), followed by an interactive discussion and student pitches. The second session will take place on Friday, June 22, from 9:00 to 12:30 in the Blue Room of the University Medical Centre Groningen, again with presentations by Bill Schwartz and Samer Hattar, followed by two talks by Peter Meerlo (University of Groningen) and Robert Levitan (University of Toronto). Details about the programme and registration can be found on https://cursus1.webhosting.rug.nl/gsms/courses/bcn-courses and the SLTBR website (http://sltbr.org).

BCN’s scientific director, Robert Schoevers, has invited the NWO Advisory Group Brain, Cognition, Behaviour and its coordinator, Rob Heinsbroek, for a visit to Groningen. This will take place on Tuesday, June 19. Several presentations by BCN members have been scheduled.

* BY FRANS ZWARTS
* PHOTO BY ELMER SPAARGAREN
The secret behind scientific success: An interview with Jackie Senior

Jackie Senior is the editor and webmaster in the Department of Genetics at the UMCG. She has a scientific academic background, a B.Sc. in Geology, and over 43 years of translating and editing experience. Her role in the genetics department not only includes the editing of research articles, applications for funding, and Ph.D. theses, but she is also involved in translating texts from Dutch to English and provides one-on-one training to authors (Ph.D. students, postdocs, and research/clinical staff). She is a founder and honorary member of the Society of English-language professionals in the Netherlands (SENSE’), a group that includes editors, translators, interpreters, and copywriters, and language teachers. Although her beginnings in the field of academic editing originated out of a need from researchers, she claims that it was a matter of “being in the right place, at the right time, with the right sort of skill set, and being able to learn more.”

You have over 23 years of experience working at the UMCG and UMC Utrecht. From your perspective as an editor, what changes in the article submission process have made the most significant impact in the field of genetics?

Everything has gotten a lot quicker and more efficient. Not so much the manuscript preparation, but the review process is quicker. The new platforms in which reviewers access the manuscripts and journals that expedite communication through email and establish tighter deadlines for providing comments are reasons why this process is quicker. Open access journals and pre-prints have also helped speed up the publication process. The ability for people to give feedback is as good a process as two reviewers giving you sometimes useful feedback, and sometimes not particularly useful comments.

What changes do you foresee in the near future?

Open access will become more widespread, which implies that researchers will have to find the budget for this in the near future (around €2500 per article). The advantages are that your article is available to everyone, including the general public, and that researchers and universities can put articles on their websites. Publishers have come to the realization that the business model that has predominated for the last 50 years is no longer sustainable and have begun to understand that open access is here to stay. Good analogies are found in the media and music industries, where media platforms like YouTube and Spotify allow for ideas and music to be spread widely. In regards to the scientific exchange of ideas, the ability to be able to read an article on a website and add comments that other people can see will change how science articles are reviewed and revised. People sometimes have good ideas but need to be steered in a particular direction and this is where people with more experience can contribute.

Do you think that the pressure to publish is greater in a scientific field that is highly innovative and changing rapidly, like genetics, than in other fields that are changing more slowly?

I do not think it is greater, I think it is different. All researchers are under pressure to publish new and innovative knowledge all the time. While basic researchers work on experiments that can be split off from the main project and published as an article, clinicians might have to collect tens or hundreds of patients for a study. For clinicians, this becomes a problem when they are studying a rare disease or when patients need an extended follow-up.

In your opinion and with your experience as an editor, what are the factors that make a department successful in regards to academic output?

Good ideas – and realizing that having a good idea is just the first step of the process. That idea needs to be discussed with different people and then it needs to be worked out. In this sense, this is where writing a grant application becomes important. It is during this
process that researchers work out the details and think of the problems they might encounter. It takes at least six months to work out a good idea. That is something that younger researchers find difficult to accept. The internal review process, which involves getting people in the department or other colleagues to comment on a proposal, is essential. This all has to be done before Kate McIntyre and I begin the editing process (Kate will succeed me when I retire this summer). During the editing, we not only look at the language and syntax, but also at how the argumentation is built up and at what is missing or duplicated. By this, I mean we look at how “A” ties in with “B”, are the conclusions feasible given the evidence presented, and so on. Because proposals are sometimes written by multiple people, the editor’s main task is to see the proposal in its entirety and assess its congruence and flow. In this step of the process, we suggest if some information might be more suited to being presented in a table or figure, which might take the author more time to produce. Another reason to start early! Overall, this internal review process has been a key to why our department has had many successful proposals. All that polishing produces a good product, whether it’s a grant application or an article, which allows an external committee to concentrate on the science.

On a personal level, what advice would you give to junior scientists in regards to daily and periodic habits that could assist them in becoming successful academic writers?

Read well-written articles, not only for the science but also for the structure. If you find an article that you consider good, a couple of days after reading it for the scientific content read it again for the language, the structure, the argumentation and how the material is presented. For non-native speakers, it is very important to look at the vocabulary top authors use to describe different processes. Simple sentence structure and clear ideas are important too. We have to remember that in science you are writing for an international audience and that scientists need to read a lot, so it is your job when communicating your ideas to make them as easy as possible for readers to absorb. During your postgraduate years, it’s good to get into the habit of reading one or two articles a day, scientific or non-scientific, from well-written sources.

Another important habit that Master’s or Ph.D. students should develop is to write a bit in English every day. This can be about your experiments, about what you’ve read, or even keeping a diary. Every journey begins with a step.

Another recommendation I would give to junior scientists before they start to write an article or proposal is to think about their audience (who are you writing for and what is your main message?), so you know how to pitch your story. What I see with many young scientists is that they try to put everything they have done into one article and it ends up being too complicated. There are ways to include information that you want to present to the reader but which is not part of the main story, for example, in figures and boxes. For this reason, I would recommend having one main message and two or three sub-messages. I would also recommend writing those messages up and then thinking about how you will get them across to your audience.

Where do we go from here?

Language professionals are a significant component of a successful academic group. Having an editor is as important as having a statistician assist in analyzing the results, or a clinician help in collecting the data, or a technician perform the experiments, they are another member of the team that can help you achieve success. According to Valerie Matarese, language professionals come from diverse educational backgrounds, from linguistics and language teaching, translation studies, humanities, business and finance, basic biomedical and clinical sciences, and more. For further reading on the role of language professionals and their role in academic writing, see Supporting Research Writing: Roles and Challenges in Multilingual Settings.

The UG’s Talent Development Program led by Prof. Ritsert Jansen is now recruiting a team of editors to assist scientists at this university in their grant writing process. This service will be available for competitive candidates in the near future. Currently, in-house editors are not common at this university. One reason is that the workflow and academic output must justify the investment, but acquiring the services of a freelance language professional might be well worthwhile. SENSE was founded in 1989 as a support network for editors in addressing the needs of their clients, including academics. SENSE has over 330 members with diverse backgrounds. It offers a forum where scientists and other professionals who require content and language editing services can contact this group and post a call with a description of the editing job (e.g. topic, type and length of text, deadline). Editing services range in price, but one can expect to pay around €500 for a 4000-word article.

1 SENSE www.sense-online.nl/
2 See, for example, www.theguardian.com/science/2017/jun/27/profitable-business-scientific-publishing-bad-for-science
4 Including VAT (BTW)
Scientist in the classroom: Bridging the gap between teacher and student

Connecting to the experiences and existing knowledge of students is one of the most challenging aspects of being a teacher. The larger the difference between the teacher and the student, the more important this aspect becomes. It doesn’t matter how interesting the class is or how motivated the students are, knowledge won’t be exchanged if the material is not presented in an understandable “language”. The Junior Massive Open Online Course (MOOC), aimed at children aged 10-12, provides a striking example of a successful connection between teachers and students.

This is the second part of a two-part series on the Junior MOOC. Part 1 was published in the previous issue of the newsletter. In the first part, the coordinator of the Junior MOOC (Douwe van der Tuin) provided background information on the initiative and Natasha Maurits and Martine Maan were interviewed about how they experienced teaching their parts of the course.

The Junior MOOC is an initiative by the Children’s University of Groningen that provides primary school-aged children with an introduction to academic education. By means of a combination of short video “lectures” and paper lesson material, young children are presented with an accessible glimpse into university-level education. Primary school teachers (and their students) have been excited about this initiative and ten thousand children have already taken part in the previous two editions of the course. The third edition, which started at the end of March this year, has been received positively as well, with 400 teachers already signing up their classes (this number could increase even more as signing up is still possible).

In this issue, Jacob Jolij and Jan-Willem Romeijn talk about how they experienced recording their videos, how they connected to the young pupils and what their motivation was behind participating in this initiative.

Thanks for answering these questions! To get started right away, why did you want to participate in this initiative?

**JACOB:** I have a long-standing interest in science communication – I really like bringing science to the general audience. The opportunity to do something like that for children seemed like a great challenge and a lot of fun!

**JAN-WILLEM:** Connecting to children and telling them about the beauty of science and about the fun involved in it… How can that not be a good idea?

The lessons were centered around a certain topic. What was the topic of your lesson and why did you decide to pick that topic?

**JACOB:** My module is about attention. I chose this particular topic because attention is such an important topic in everyday life – you see applications of our understanding everywhere, from traffic, to education, to art!

**JAN-WILLEM:** My lecture is about what science is, how it works, and whether it gives us knowledge. As a philosopher of science, these are central questions. And they are also fitting and pretty fundamental questions for a course on science in general.
How did you make the complicated material accessible and interesting for the young children?

JACOB: Magic! Very literally – we had a stage magician come over and demonstrate a couple of magic tricks, for which I gave an explanation. Magic tricks are largely manipulations of attention and are very practical examples of things like inattentional blindness and change blindness. Given that kids love magic, and love to learn such tricks themselves, it was a pretty safe bet. Of course, it’s important not to overcomplicate things. Even though children are often a lot smarter than we grown-ups think, it’s really important to stick to one or two big themes and take your time to explain things. Twice if necessary!

JAN-WILLEM: The questions above may seem very abstract, perhaps even a bit grandiose. But the nice thing about doing philosophy with children is that they find such questions completely natural. They haven’t yet unlearned to be surprised by what is normal, and they are more daring to ask about the big stuff.

What do you hope the children will have learned from your lessons?

JAN-WILLEM: Something about what makes science so special. In all our videos we drew attention to the idea that science is about asking good questions, about being inquisitive. I hope that children will remember this when they feel school is boring, or closed-minded, or authoritarian. Ultimately, science is more about challenging authority than about following it.
At the end of a lesson, children could send in questions about the material that was taught. I saw the videos where you answered some of these questions and many of the questions asked by the children were very interesting and creative. Which question stuck with you the most?

JACOB: There was one question that clearly demonstrated that the student asking the question was stumbling upon the mind-brain problem by her own thinking, which I found very impressive. However, one of the most fun questions was “Does psychology work with animals?” The obvious answer is yes – take operant conditioning as an example, it’s probably one of the most potent ideas in all of psychology. Works brilliantly in rats, pigeons, dogs, and students! Answering this question made me realize once again that human nature is not that far removed from our four-legged cohabitants of this planet.

JAN-WILLEM: In my lecture I discussed how we can learn about the world from our senses, but also from each other. Some questions showed that children liked this social side of knowledge. The two parts were preceded by a part in which I talk about doubting everything, as a method to investigate what we really know. Several kids asked if there is anything, among the things they perceive or learn, that they can know for sure. I liked those questions too because they reveal how trusting children are, and also how serious they are about understanding their world.

To conclude, one of the goals of the initiative was to introduce the children to the full width of the scientific fields, possibly so they could get inspired to pursue a scientific career themselves. Would you recommend a career in science to primary school children?

JACOB: Oh, I am very sorry to hear that it came across as if the goal of the course was to inspire children to pursue a career in science, because that was most definitely not my aim. I was indeed very disappointed that some schools decided to teach our course only to the classes for “gifted children”. Not that I want to discourage anyone from pursuing a career in science, but the main goal of the course was to show what science is, in particular to an audience of whom many will not necessarily end up with a university education. I think it’s quite obvious, if you follow the media a little, that the public image of science and scientists is eroding. Partially, that is because some in the general audience perceive scientists as estranged individuals who do not care about the “real world”, but only about their next research grant (ok, the general audience might not be completely wrong there…). It’s very important to show that scientists are not some noble class of priests, but (fairly) normal people with questions about how world works, but armed with a very structured method to answer such questions – a method anyone could use to evaluate claims that are being made about the world around us!

Now, to get back to the question, recommending a career in science, or any career for that matter, to primary school children is utter nonsense in my opinion. At that age, children should not be concerned too much with what they will do in 20 years, but rather play and enjoy all the mysteries the world still holds to them. Those who want to pursue an academic career will find their way to our or other universities sooner or later!

JAN-WILLEM: No, I would not recommend a “career” in science. I would recommend doing something that speaks to you, and following your curiosity or your sense of joy to where it leads you. If you then find yourself in the library or the lab all the time, well, then science might be for you. I think that what I am trying to say is: be attentive to yourself and you’ll have a good chance to find beauty and joy in the work you do.

Any final remarks?

JACOB: Two things actually – first, these kinds of things are really cool. If you have the opportunity, I can highly recommend taking part in such initiatives. Second, this was a grassroots initiative. Diederik Roest and Natasha Maurits initiated this wild idea, and it’s really amazing how this all snowballed into the first university MOOC for children world-wide. The university supported us throughout the process, and I think this really shows that you can get a lot of things done within this organization. Don’t be too modest if you have a great idea – you can make it happen!
I am interested in whatever works for patients: An interview with Iris Sommer

Iris Sommer is a person of big ideas. Since moving to Groningen to continue her work as a professor at the UMCG, she has been stepping out of her niche of investigating psychosis and auditory hallucinations and focusing on cognition on a truly large scale. She is interested in transdiagnostic mechanisms of and treatments for cognitive impairment, and in finding biomarkers for neurological and psychiatric disorders. I had the opportunity to ask her about her recent move, past and future work, thoughts on (popular) science, and how it all comes together.

You started working here in September, so you have already had a taste of conducting research here in Groningen. What are your first impressions?

I am astonished by the number of experts here at the UMCG and the RUG on various topics that are close to my interests and from whom I can learn. Cognition is of course a very broad topic and can be studied in animals, healthy volunteers, cohorts, the elderly, and in several patient groups using several types of methods. It has been a great time so far. I took my time to get to know people and their work. It has been very inspiring. I am enjoying this time a lot. There is an expression in Dutch “wittebroodsweken”, which means the honeymoon period. After you haven been a professor for 7 years, the learning curve starts to plateau, but by changing places and topics, the curve becomes steep again. It is a very stimulating feeling, and I have learned many new things in the past few months.

And your impressions of Groningen? Have you experienced any differences between the north and the south of the Netherlands?

It is cold, which I do not like. I have not yet fallen in love with the city, but it may still happen. People are friendly and willing to connect. There is perhaps less rivalry here than in the middle of the Netherlands, though this could be just my impression.

Speaking of changing topics, you have an impressive list of publications. What have been your main research interests so far and do you want to continue this line of research here?

About 90% of my publications have been related to hallucinations, psychosis, and schizophrenia. I used to work in a niche, trying to understand psychosis and find better treatments. Within that niche, I was rather broad. I used any kind of observations – neuroimaging, blood markers, social observations – and was investigating several types of treatments, including anti-inflammatory components, direct current stimulation, and hormones. I have more or less left that niche since coming to Groningen. I want to look into psychiatric health and cognition in a broader sense. I am interested in patients from different departments, such as internal medicine, neurology, geriatrics, surgery, and oncology, who also experience cognitive deficits, low mood or psychotic symptoms. I am looking for shared
Scientists should have patience and wait for the 5% that does work.

What do you think are some of the benefits of treating symptoms instead of diagnoses?

Some patient groups are largely overlooked. I have already experienced this while working at the psychiatry department in Utrecht. There is, for example, ample research interest in hallucinations in schizophrenia that has led to several new treatments being developed. But a high number of borderline personality disorder patients, about 50% of them, also suffer from hallucinations, yet little research is directed towards them. They are hugely undiagnosed and undertreated. The same can be said for cognition. We focus on cognition in Alzheimer’s disease and mild cognitive impairment, but it is largely overlooked in other patient groups such as oncology patients. I find it interesting to use the knowledge gained from specific groups and apply it to others who suffer from the same complaints. The first step is knowing whether the underlying mechanism is the same. If so, interventions that have been developed for one group may be applicable to another as well.

You mentioned that you have investigated a variety of treatments. Drug trials, neuromodulation, mobile-based interventions … Yes, also psychotherapy. I am interested in whatever works for patients.

Neuromodulation is often considered a cure of unlimited potential – if you can rewire the brain, you can achieve anything. What is your opinion on neuromodulation and where do you position it compared to other treatments?

I like it a lot because it has so few side effects. It is a very safe and simple solution. When using it to treat hallucinations, I had quite some negative results, making me less enthusiastic about it. For cognition, however, it might have more potential. I do not necessarily find it the most promising treatment for cognitive impairment. My hopes are placed more on anti-inflammatory remedies. Calming the immune system, including the microglia, might lead to a better outcome. This can be done with anti-inflammatory medications, but also physical activity, sleep pattern changes or nutrition.

If you want to find what works, you inevitably also find things that do not.

Yes, and that is science. If you set alpha at 0.05, you have 95% chance of negative findings. I think that is why scientists should have patience and wait for the 5% that does work.

Taking that into account, where do you see the future of neuromodulation? Transcranial magnetic stimulation is already a registered treatment for depression in the Netherlands. For depression, there is quite good evidence that it does work. For cognition, we have to wait. I have not seen convincing evidence in favour of it yet, but I have also not seen convincing evidence against it. I also find hormonal therapies very promising. There is a large gender difference in immunology and also in cognition and sensitivity to stress. In some diseases, females fare better than males. Schizophrenia is a clear example, as well as autism and ADHD. Stimulation of the oestrogen receptors could be beneficial for different patient groups.

From your work on auditory verbal hallucinations in schizophrenia patients and healthy volunteers experiencing hallucinations, it is apparent that even though the same brain areas are activated during hallucinations in both groups, the emotional content of voices is quite different. Whereas patients tend to experience threatening voices, voices heard by healthy individuals are often friendly or soothing.

We compared the two groups with functional MRI. I was expecting the pattern of activation to be different in healthy individuals hearing voices because their hallucinations are less negative, less annoying, and less emotional. You could imagine that in that group brain activity during hallucinations is more left lateralised, but this was not the case. We were able to scan about 25 healthy individuals while they experienced voices, and they did not differ significantly from patients. Twenty-five is a moderate sample size for fMRI. Had I been able to scan 100 perhaps, there would have been subtle differences. But these individuals experience infrequent auditory hallucinations. We had to scan about 100 to obtain the sample of 25. You can make an appointment at the time of day when they tend to hear voices, but it often happens that they do not experience them when in the scanner. It was very hard to obtain that sample size, and I do not think we will ever be able to get higher numbers of participants.

What accounts for this difference between schizophrenia patients and healthy voice hearers? Perhaps social factors such as childhood traumatic experiences?

Interestingly, we found that healthy voice hearers also experienced increased rates of childhood trauma. Childhood trauma apparently predisposes you to hallucinations but not necessarily to negative hallucinations. If you ask people what exactly they hear, it may still be related to trauma, even though the content of hallucinations is positive. It can be a comforting or a calming, soothing voice that is still related to danger and threat.
Here we are talking about topics such as brain stimulation, brain activity, transdiagnostic mechanisms. What is for us science can for laymen sound like fiction. You have done a lot for communicating science to the general public. Why do you think it is important to inform and include the public, and should more be done in that direction?

Yes, I find it very important. We need to communicate our findings and whereabouts to patients, families of patients, but also to people who are not directly involved. They should also have an idea of what it is like to do science. They have the right to know and we have the duty to inform them, because our funding is raised from taxes. I do not know whether it is growing, but there is a kind of paranoia about research and the medical profession that was not present 20 years ago. It is not only geared towards science, but also towards politicians and journalists; it is a general tendency. Providing more information can perhaps moderate this paranoia towards scientists. If the public knows what we are doing, it makes us less spooky, and we might be distrusted less. I love science. It is a great job that we have, and I would love to give some of that enthusiasm to others. To make youngsters enthusiastic about science, attract bright young people for research, or to at least read about it.

Opening up to public can also be a double-edged sword. When more information is available, more doubt can be generated.

Absolutely, I did some twin studies several years ago and I received some strange messages from people comparing me to Dr. Mengele. But when you interact with the public, most reactions are nice and very good questions are raised. It makes you realise that the money spent on research could have been allocated for something else and that you should make good use of it.

Talking about fiction, what would you do if you had unlimited funding?

Right now, I am working with a small but great and very interdisciplinary team looking into developing speech as a new biomarker. If you want personalised treatment, you need biomarkers. I have been studying biomarkers for a long time and very few strong ones came out. Using speech samples is simple, by talking to a person and having them say a few sentences you already get rich data. You can analyse articulation, intonation, prosody, but also the linguistic aspect – words used, the complexity of sentences, looseness of associations. Speech data is not only very rich but also disease-specific. We did some analyses using speech as a biomarker for psychosis and found very high effect sizes, up to 0.9 for differentiating people with psychosis from healthy persons. With unlimited amounts of money, I would like to build a smart phone app that records speech from everyday phone calls and provides direct feedback to the patients. For Parkinson’s patients, this could be a reminder that they are under- or overmedicated. Speech is a motor act and is therefore influenced by dopamine. In bipolar patients who are manic, speech becomes faster, louder and associations become long-distance. The app could tell them their speech has manic characteristics and they need to take appropriate actions. It would also be useful for general physicians to differentiate between health and disease, or for example beginning parkinsonism and depression. I see a big future for speech as a biomarker, and I actually do not need a lot of money for it! Just some smart people and time …

What is the advantage of using biomarkers compared to traditional diagnostic procedures?

I do not think biomarkers should replace traditional diagnosis, but could facilitate it. Sometimes, making a diagnosis is easy. When you have a typical patient with typical symptoms, you do not need biomarkers. Other times it is not so easy – there are some symptoms of depression but not all, and then an additional biomarker is very useful. For some diseases, there already are reliable biomarkers, but in psychiatry we have very few. It should aid the physician in the process of making a diagnostic decision.

Where do biomarkers, transdiagnostic research, and new treatment methods come together?

Now there is growing insight that major psychiatric illnesses have overlapping mechanisms and shared genetic underpinnings. We are likely not looking at different disease entities. This is also evident in epidemiology. Individuals with depression, as well as their first-degree relatives are at an increased risk for other mental illnesses too. I believe there are genetic components that predispose you for suboptimal brain function, making one less flexible in set-shifting and adapting to new situations, and perhaps also less socially adept and more vulnerable to stress mechanisms. This also predisposes one to psychiatric disorders. Additional genetic make-up, environmental circumstances, age, and gender define whether one will develop an illness and what kind of illness it will be. There is also progression from one illness to another. A colleague who is now in Rotterdam investigated children of patients with bipolar disorder. She found that even at a very early age these children have behavioural problems, and later on sleep disturbances and anxiety, followed by depression. Only at the age of 20 or higher, they develop mania signalling bipolar disorder. Similar progression can be seen in schizophrenia, from anxiety or social difficulties attributed to an autism spectrum disorder, to personality disorders and finally psychosis in young adulthood. Older patients with schizophrenia often develop dementia. In my view, the common basis...
Do you ever feel like a tourist in your own country? It was the feeling I experienced when I moved here, to Groningen, in the beginning of January. I thought this was pretty surprising, since I was born and raised in the Netherlands and I have been living here all my life. I am from the south, though, from Nijmegen. Any native Dutch can tell by my way of speaking, which I think is very fascinating, as well as speech and language in general; it is for a reason that I am a linguist. My initial plan was to become a speech-language therapist, but one year as a research assistant at the Max Planck Institute in Nijmegen made me realize that science is where I should be. Next to linguistics and science, I have an enormous passion for singing. I have always been amazed by what voices can accomplish, both physiologically and emotionally. And the best part: It is something that we carry with us all the time, so we can sing our hearts out whenever we want to.

So now that you know this about me, it may not be very surprising that my research here at BCN is on the role of voice characteristics and linguistic information in speech processing. I work at the UMCG Otorhinolaryngology department in Deniz Başkent’s dB SPL research group. So far, I have experienced my PhD as a major opportunity to further develop and improve myself, both academically and personally. Writing skills are definitely part of this, and since I am a little better at writing than speaking, I am very happy to be a new member of the BCN writing staff.
The Art of Science: An interview with Mila Moxom

Following up on the artistic pictures of the human brain that former BCN PhD student Sandra Hanekamp likes to post on Instagram, this time we linked up with the artist Mila Moxom. In this interview, Mila talks about the way in which her bachelor’s degree in psychology from RUG influences her artistic vision, an art project that blends the boundaries between art and science, and the ethical responsibility that comes with the scientific progress and technological advances.

The topic of your art project is science and technology. How did the project start?

After graduating with a bachelor’s degree in psychology from the University of Groningen last year, I started attending the LUCA school of Arts in Brussels, Belgium to study photography. As an assignment, we had to come up with a project which centres on the topic of science and technology. My teacher suggested I take on a critical or rather negative standpoint towards science and technology. For me this was not possible. There are many ways in which progress in science and technology benefits society, but, of course, nothing has only positive sides. I think the two are inseparable. Thus, taking a stance only against the negative side would mean I am not willing to see the positive aspects to it.

What may be some of the reasons the topic of science and technology tends to come with a negative connotation?

I think one of the issues at hand is that many people don’t understand technology and science. What I realized is that academics tend to interact with academics, and non-academics with non-academics. To my own surprise, coming from a research university into photography class, I was confronted with other students’ projects about science and technology, which mainly focused on photographing nature and conducting museum or archive visits. What I am trying to say here is that there is a big difference between people with different backgrounds in terms of their interest in science. I think this can get rather counter-productive. With my project, I wanted to bring my former research surroundings into photography, and share it with people that will attend the Breda Photo Festival, where the project will be presented.
Which of your experiences as a psychology undergraduate student were most valuable in shaping your approach to this art project?

There are several pieces to this puzzle. The first one is about my interest in the facial expression of emotions, which started during my second year of my bachelor’s degree. At that time, I was a research assistant, running a study investigating the recognition of facial expressions in people suffering from schizophrenia. It has been found that those suffering from schizophrenia have deficits in detecting facial expressions of emotion compared to healthy individuals, which we further elaborated upon in our study. I have two books about facial expression of emotion that I used to read when I was bored; everything starting from Darwin’s theory about universal facial expressions, to research done by Paul Ekman and W.V. Friesen. I was fascinated by it, and secretly always dreamed of recapturing those 6 basic, “outdated looking” emotions.

Another important piece of this puzzle is being introduced to the possibilities of pupillometry. At a time when I urgently needed money, my friend offered me the opportunity to participate in his eye-tracking studies. At that time, he was a research assistant working with Sebastiaan Mathot, who is an assistant professor in the Department of Experimental Psychology. His main research is about pupillometry, the measurement and study of pupil size and reactivity. The pupils become smaller or bigger depending on the amount of light that falls on the eyes. Recent research in this field suggests that the pupil light response occurs even when people shift their attention to a bright or dark object without moving their eyes. Based on this premise, Sebastiaan and his research team are working on developing human-computer interfaces that decode what’s in the focus of people’s covert attention. Such eye-tracking devices can be used to communicate with people with locked-in syndrome by teaching them to select letters or words using covert attention. Sebastiaan Mathot’s programme used flickering letters, which one could use to write a whole word just by covertly attending to each one of those letters!

I do think there will be great developments in this area in the next years, from which we could benefit in various ways. For example, pupillometry could also be used in the clinical setting as a diagnostic tool, or even in order to study people’s behaviour when looking at art. But I think there is more than enthusiasm to be felt, because, on the other hand, there are many big companies such as Apple and Google which invest in eye-tracking devices and use them for their own (not as beneficial) purposes. There is already a lot of eye-tracking involved when it comes to gaming or phones. I think there’s a thin line between good and the bad aspects to it, especially when we think about the future. For instance, there is no one who knows me better than my phone knows me. It knows more about me than my parents or my best friend. And I wouldn’t want to imagine what more it will know about me, my psychology and physiology in the future …

At this point, I sense an overarching concern of yours regarding the ethical implications and the responsibility, both at an individual but also at a societal level, that comes with knowledge and technological advances. How do these pieces come together in your project?

I knew I wouldn’t be able to do research on the facial expression of emotions or pupillometry, but, nevertheless, the idea came about, and I wanted to create a project that combines the two. I wanted to have a programme similar to that used by Sebaastian Mathot, with the sole difference of using photos of emotional facial expressions instead of letters in order to construct collages composed of various facial emotions. But let me start from the beginning.

First, I took photos of people’s facial expressions. I usedEkman & Friesen’s six basic emotional expressions as a basis and recorded the different stages of showing one emotional expression. After I took all the pictures, I cut the faces into 4 pieces, so that you only see 1/4 of the facial emotional expression. Yavor Ivanov, a student from the BCN programme has built the programme that I have mentioned.

> One can be happy or sad, surprised, angry, fearful, or disgusted about science and technology, its fast development, and about how we willingly adapt to it. I do think the complexity of the whole spectrum of emotions defines the relationship humans have with science and technology. <
The programme is a human-computer interface, which uses the same technique as already discussed (Mathot, Melmi, van der Linden, & van der Stigchel, 2016). It decodes the locus of covert attention using pupillometry. A person looks at a fixation point that has two photos on its side, and shifts and sustains his/her attention to one of the photos. The photos will flicker brighter and darker, and the currently attended object’s light will trigger a relatively weak pupil light response. The interface will detect the pupil’s fluctuating size over time, gather evidence, and try to guess which image one is attending to in their mind’s eye. After a few pictures of the puzzle are shown, and a few choices are made by the software, the viewer is presented with a new, distorted face staring back at them. Almost like an alien.

What message are you trying to communicate to the audience through this innovative medium?

Nowadays, I get the feeling we more and more lose control over technology and its impact on our lives. Scandals, such as that regarding Facebook data ending up at Cambridge Analytica without prior agreement, make us aware of how little we can influence what we give away in terms of personal information shared online. I guess most of us had this moment, where you thought about something, and then saw an advertisement on your screen with the exact thing you just had in mind. Even though some regard it as a conspiracy theory, it is just progressive technology, apps tracking our conversations, our microphones, our entire phone contents, including our contacts. This information is retrieved without our explicit approval, and used to personalize advertisements, their content and timing. In the future, who knows; they may use it for more than just marketing…

Our programme itself cannot help humanity, but human-computer interfaces that have an ethical idea behind them will do that. Our programme will hopefully help by making people more aware of what’s currently possible with technology. But it can also have darker applications.

All I can say is that we become more and more alienated without mostly realizing or knowing much about why and how. The only thing I know is it will have both good and bad effects. Hence, the range of emotional expressions. One can be happy or sad, surprised, angry, fearful, or disgusted about science and technology, its fast development, and about how we willingly adapt to it. I think the complexity of the whole spectrum of emotions defines the relationship humans have with science and technology. However, the most important thing is how we use technology and how we will deal with it in the future. It depends on ourselves. In the end, I wanted to hold a mirror up to us, humans.

For more pictures from Mila’s project, visit https://hummanus.tumblr.com/.

References
Working with (against?) work pressure in academia

Today I followed a workshop given by Jeane de Bruin [www.hakunamatata.nl] and Brigitte Hertz [www.bhertz.nl] on work pressure in academia. This workshop followed a month-long writing challenge for academics, in which the goal was to write for two hours every day. I really enjoyed the challenge of consciously shifting priorities towards generating content and away from responding to things, because even if producing is harder, in the end it is more rewarding (see also my earlier blog post [www.mariekevanvugt.blogspot.nl/2017/01/a-new-way-of-dieting-or-other-habit.html] here.

The first insight from the workshop was that the main tool for dealing with work pressure is trying to make the right decisions. It is very easy to get swept away by the onslaught of things to do, and the implicit attitude of “I am busy, so I am working hard and doing it right” instead of thinking about WHAT you are doing.

In managing your work you can think about three levels. The first level is working on a day level. You can start the day with the things that are important to you (e.g., writing this grant application). Moreover, do not have the illusion that you can multitask, because you really cannot, and not only the quality of your work suffers, but you also feel much more stressed (at least I do). In addition, I find it very helpful to focus the energy in my day by looking at the goals I defined by means of emacs orgmode [www.orgmode.org]; a plain text system in which I stick on my projects with to-do items and due dates. This system ensures that no projects are forgotten. I also really like to use it to keep track of each student I am supervising (each student has their own file in which I write a few notes after every meeting with what they have done and what they will do for the next meeting). You can also think about time management at the project level, in which you want to make sure you pick the right projects, and are not afraid to drop projects if they are not leading to something fruitful. Two things I learnt there are first, to take regular space for reflection on how it is going with a project and what is next and so on. This is difficult because the busy woodpecker in me would like to continue doing something “productive”, but reflection can really save a lot of time and increase quality in the end. Particular things to think about are potential roadblocks or plan Bs: what could go wrong, and what should we do then. I think too little about this, and maybe this wastes a lot of time. On the really long-term level, time management is also thinking about what is important for the long term. What is my passion? Where do I want to be 5-10 years from now? I usually only think about this when writing my tenure dossier or a job application, but it is important in deciding what projects to pursue and even what to do in a single day as well. One skillful way of forcing yourself to reflect on this is chatting about it with a mentor over lunch. I highly recommend that. It also made me realize I should review my toggle [www.toggl.com] time log a few times a year to check...
what my time is being used for, and whether that is what I want. Right now I only review my toggl logs every week when the system mails me the hours tracked.

We then talked about the famous Eisenhower quadrants with urgent – not urgent and import – not important. I have thought about this a lot, and I think that most stuff I do is in the “important” section of the matrix. One thing that I never grasped until this workshop was the distinction between “being important for me” and “being important to do”. For example, helping a colleague is a good thing to do, but won’t generally help my career ahead. So maybe in the matrix it falls in the category of “not important” in that sense. I realized that I spend too much time following news (partly news, partly news related to science and academic how-to). I made the resolution to limit my news intake to 15 minutes a day, so I won’t waste too much time on it. In the end, that won’t really get me too much ahead, apart from staying up to date with the world and getting ideas for lectures, student assignments and grants. Another skillful means for reducing the “not important stuff that needs to be done” is to wonder whether or not someone else can do it. I put this into action by requesting a student assistant for the next course I am teaching. While initially this is more work in instructing the person and making all procedures more explicit (grading sheets!), in the end it will save me time. And of course, it is always helpful to remember that saying yes to something means saying no to something else (also described in the book Busy [www.bol.com/nl/p/busy/920000040053712/?Referrer=ADVNLGOO002008M-G-46909024525-S-375600060643-920000040053712&gclid=Cj0KCQiA__JTUBRD4ARIsAL7_VeVif6LzLwS8uznNbR59lq8bSThH6T9Oq8Sn-0wq1EMFBoaylFaVJ_caArgoEALw_wcb] by Tony Crabbe). A final insight from the Eisenhower quadrants was that focusing on the things that are important and not yet urgent will help to increase quality (because you can let the projects rest and then realize you have made some mistakes) and improve your health.

We also discussed what our university can do to reduce work pressure. One important thing I think is that I waste a lot of time searching for information on how to do things, reinventing the wheel, not being aware of procedures. Sharing knowledge more efficiently would really help. We also need to work on more delegation and most importantly better delegation: the insight here was that delegation is not just dropping the task onto someone but also training them how to do it. In the short term, training takes time, but in the longer term, it reduces errors and therefore headaches. It would also be cool if promotion weren’t so focused on grant acquisition, because grant acquisition is such a highly risky process that is a lot of work with very uncertain outcomes. I learnt that Utrecht University [www.uu.nl] also has a career path focused on teaching, which sounds really cool. Finally, it would be nice to build more of a collaboration culture at university, rather than the current competition culture.

The last part of the meeting focused on recognizing stress in your work. I think I am blessed in this department because while I feel sometimes exhausted, I never have trouble sleeping and I feel generally happy. I credit the ballet dancing that is a fixture in my schedule, together with the meditation practice that I do every morning and every evening. I think it is really important to stick to those things as priorities in addition to work priorities, because otherwise you waste a whole life working and being unhappy.

In the end, reducing work pressure relies on the confluence of both individual action (trying to work on what is important and inspiring and taking good care of yourself) with institutional action; the universities will have to change because in the long run the current work culture in which many academics put in way too many hours compared to their contracts, and especially in which evaluation is biased towards metrics of grant acquisition that you have little control over is not sustainable. It is helpful to reflect on this both at the individual level and to think together with colleagues and decision makers on how to improve the work culture.

BY MARIEKE VAN VUGT
PHOTOS BY SANDER MARTENS
Now what? Life after the defense

When we think of PhD students, we normally think of isolated beings, crunching data in a quiet lab, making scripts who only they can understand. For this ‘tight’ PhD group, it’s not quite the case. Hans van der Horn and Myrthe Scheenen collaborated as PhD students on the same project from beginning to end, taking advantage of their different academic backgrounds and strengths to accomplish not just their own PhDs goals but to have fun while they were doing it.

Congratulations to both of you. You just graduated last semester, so cheers for that. Now, to get to know you better, what are you both currently doing?

MYRTHE: I am currently working at Maarsingh & van Steijn, which is quite a mouthful, but it’s a psychologist practice here in the city. I’m also doing a training programme, so afterwards I can become a licensed psychologist. It’s hard to explain in English; it’s a really Dutch thing. But it’s a highly coveted programme, and it’s difficult to get in. So, I was happy to get in here.

HANS: Well, I am training to be neurologist, so a specialization in medicine.

I knew a bit about what you were doing, and I was wondering if all of this was planned for a future goal. I mean, what does this future look like? Is it in academia or private practice?

HANS: Well, I believe that in the field of medicine, the brain is the most interesting part of the human body. That was one of the most important reasons, I think. And, yeah, it’s nice that besides research, you interact with patients, and see what the clinical side of the stuff you are researching looks like. You get to see the things you read about in the textbooks. So, that’s it. That’s the motivation for me.

MYRTHE: Yeah, it’s the same for me, because now, with the programme I’m doing, you have to do clinical work full time. This is new to me. I really miss doing research, and I hope to be able to incorporate research in the future as well. Half and half will be best.

So, both of you are all still in love with academia? That’s interesting; a lot of graduates don’t want to keep doing research anymore.

MYRTHE: We never had those kinds of issues. We had some bumps, but never the valley of – how do they call it? Some people call it like, “the valley of misery”. I don’t know.

HANS: The valley of despair. Oh, you will know it. You have to wait until your third year. You have to be really strong. It’s not that bad at the end.

How did these plans come together? Were you motivated long before or was it something more spontaneous? What was the relationship with the PhD?

HANS: Well, I think it’s in clinical neurology, hopefully in academia to be able to do research, I hope. Half of the time.

MYRTHE: I never had the thought of “Oh, I need to do a PhD or this”. But, I did the honors programme and got to work here, and then one thing led to another.

I did my master’s thesis here. I really liked the project, and the team got to know each other. That went very well. So, I was very excited about the PhD project. However, it isn’t a good route to go into clinical work. Because when I was applying for jobs, it was even like, “A PhD, why? You know we don’t practice psychology by books, right?”. They say, “You don’t have any clinical experience, you are just a scientist”. They didn’t know what I was. In many practices, they aren’t doing research. The place that I am right now, they do research as well. One member actually works at the university, so they have a connection and it is a much better place.

HANS: It’s quite interesting, because in the medical field when you want to get a training position in an academic clinic, for most of the specialties, especially for neurology but also for surgery or internal medicine, or whatever, they see as a pro to have a PhD. Working experience is also important, but it is just as important that you have a PhD.
Okay, so I am interested in this valley of despair and also about the joyful moments along the way during your PhD.

HANS: I think that most of the despair is when you write something or do an analysis and put a lot of work on it, and then after a few months you get your promoter or co-promoter saying: “It might be better to do it this way. Let’s redo all of the analyses from this perspective”. That’s, well, the most frustrating thing. To go back to the drawing board and do things that were not planned. Also, the battles with reviewers are sometimes quite frustrating. But there were a lot of joyful moments with the team – our research team was really tight – when we were at conferences or going out for a drink.

MYRTHE: At some point, you are looking at your own text so many times that you are so fed up. That ended up being something totally different. I think is because you want to hit some marks, like “That’s done, that’s done”, and sometimes you don’t get it and the work just piles up. But our team was really tight. Our promotor calls us a creepy tight group. We actually became friends, Myrthe de Koning as well. We hung out all the time. We went for drinks and dinner. It was fun!

About the transition to your new life, does it have to be hard?

HANS: I think it’s quite harder; it’s on a different level. During the PhD, you can also work really hard but you are focused on one subject. In the clinic, you have all kinds of tasks, and they demand a lot from you. It’s totally different. The transition was quite black and white compared to the PhD. It’s more fixed, demanding.

MYRTHE: I had the same experience. It’s much more tiring and you’re still learning a lot of things. You’re also seeing patients all day. You never realize what kind of freedom you have during your PhD. You don’t have to be there, or you can be early, late, and it doesn’t matter as long as you have your work finished on time. And in this job, you have responsibilities; you have to be there every day. It’s completely different, I think. And you are dealing with more people, and you have patients depending on you, which is also quite different from being responsible only for your own work.

Well, if you were talking to new PhDs and they asked you how to have a successful PhD, what would be your advice?

HANS: Well, I don’t think everyone will have the advantage of being in such tight-knit research team or have at least more than one PhD student to collaborate with. But if I have to give a suggestion: try to talk to other PhD students, just exchange thoughts and experiences to learn from each other. Also, maybe take some courses abroad, whenever it is possible.

MYRTHE: I say, just have some fun, enjoy it. You are paid to learn and to do research, and it’s fun. I think most of people forget that and regret not having fun. Also, be more proactive about what you want to do for your thesis. Otherwise, you get a lot of opinions from other people and can get lost.

HANS: Yeah, stick to the plan. Have a plan. A time table, at least.

MYRTHE: Early, otherwise you can fall into the valley of despair. You have to take control of your own project. Put that on a t-shirt.

HANS: And also, you have the BCN clinicians who also do science. Those people don’t have a lot of time, so you really have to be proactive and demand time to have the supervision you need.

Thank you for the interview. It was a real insight into your past PhD life.

HANS: Not a problem and good luck!

MYRTHE: Thank you and goodbye!

Intro new staff writer

I am a psychologist and a neuroscientist, in that order. I believe that the study of the human psychology and brain functions has profound implications in how we understand ourselves and others. I think it’s incredible that by any thought or feeling we can find a neural trait, a neurological crumble that helps us understand who we are.

The research project I am working on is about studying the trajectories of recovery – successful and pathological – in elderly individuals with mild traumatic brain injury. We try to determine what clinical and neuropsychological profiles are associated with each, as well as sort and organize the neural crumbles along the way.

My idea with the BCN newsletter is to meet new interesting people while discovering and communicating their work, in hopes of connecting a curious mind with an interesting topic.

PHOTO BY SANDER MARTENS

| BY SEBASTIÁN BALART |
Mindwise: Chocolate can give you an edge

Do you like chocolate? Don’t feel guilty: a vast majority of people would probably say yes. The popularity of chocolate is indeed easy to understand, if only because it is typically quite sweet, a taste we have evolved to prefer from the times when our ancestors roamed the wild, looking for ripe fruits to eat. But there is more to it. Chocolate also contains ingredients such as tryptophan and phenylethylamine, which stimulate the brain’s pleasure centers. You may have heard, or even experienced first-hand, that eating a bar of chocolate can have positive effects on your mood – those ingredients are a primary reason.

Chocolate, or more specifically cocoa, has other molecules that influence your body and brain as well. The most important of these are so-called flavanols. If you consume these regularly for a while, your insulin resistance decreases, which helps prevent diabetes, and your cardiovascular health improves. Flavanols also have neuroprotective effects in elderly people, helping to counter cognitive decline. Good reasons to indulge in some cocoa every now and then!

Even right after consuming a single serving of flavanol rich chocolate, the blood flow in your brain already increases, and if you were mentally
fatigued, you recover a little better. Flavanols thus have clear effects on our cognition and brain, but we do not know why exactly. What we do know is that when you consume flavanol-rich chocolate, nitric oxide synthesis is activated in your body. Nitric oxide has many biological functions, two of which may be related to the immediate effects of cocoa flavanols on cognition. First, nitric oxide induces vasodilation, which affects vessels in the brain, and increases blood flow. Second, nitric oxide can act directly, as an actual neurotransmitter in the brain. It seems likely that either or both of these mechanisms could produce improvements in cognitive functions.

Surprisingly, it is also yet unknown what specific cognitive functions are affected by cocoa flavanols. If you experience less mental fatigue, for instance, on your way to the university you must mind the road for any kamikaze cyclists that might appear. Once there, you need to focus your attention on the fascinating lecture your professor is giving. And back home you will want to concentrate on your textbook, rather than on the lyrics of the heavy metal song your roommate is enjoying. We did not take half measures in setting up our study. We pre-registered everything beforehand on the Open Science Framework, including the design, our hypotheses, and analysis plan. We completely randomized and counter-balanced the order of our tests, tested every participant in all conditions, and ran the study in double-blind fashion, so that not only our participants, but also the experimenter was unaware of the condition being tested each time. Finally, we made sure we would not be measuring just a placebo effect by comparing our experimental high-flavanol cocoa drinks with both a neutral baseline, and another cocoa drink that looked and tasted the same, but which contained no flavanols.

We tested 24 women and 24 men, each of whom completed close to 3600 experimental trials in four separate sessions (thanks, really!), and we found they were demonstrably faster in our visual search task after they had consumed flavanol-containing cocoa. The visual search task they did was a staple test of spatial attention, in which you need to find specific targets within arrays of other, distracting items, as quickly as you can. For instance, you may be asked to search for a green teddy bear amidst its red brothers, although we used lines rather than teddy bears in our version. Either way, from the flavanol-induced increase in visual search speed, we can probably safely conclude that cocoa flavanols enhanced the efficiency of spatial attention, and confirm that consuming cocoa flavanols can indeed improve this aspect of cognition.

So, the next time you are about to hit the road, or actually, the next time you need to attend to anything specifically, ask yourself whether some high-flavanol chocolate might be in order...

> They were demonstrably faster in our visual search task. <

Aytaç Karabay completed his BA in the field of psychology at the Ankara University in Turkey and master’s degree in the field of experimental psychology at the Brooklyn College, City University of New York in the US. Now, he is in the 3rd year of his PhD programme at the Department of Experimental Psychology at the University of Groningen under the supervision of dr. Elkan Akyürek. His research is focused on temporal attention, temporal integration, perceptual grouping and cocoa flavanols. More information about him and his research is available on his personal website aytackarabay.com.

Our paper in Psychopharmacology:
https://link.springer.com/article/10.1007/s00213-018-4861-4

Our project on the Open Science Framework:
https://osf.io/zfg85/

More research from our group:
https://elkanakyurek.com

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Mindwise: After Brexit: Locating the future leaders of psychology in Europe

This past October, the editor of the British Psychological Society’s magazine, The Psychologist, asked a group of authors to answer an important question: “How can UK and ‘European Psychology’ thrive beyond Brexit?” The section that was supposed to come from the responses never made it to press. Still, the question itself seems worth discussing. It also provides us with an opportunity to reflect on our department’s position and possible future role in European psychology after Brexit.

Let’s start with the harsh reality: psychology isn’t going to stop being dominated by the English language. This is due primarily to the dominance of American Psychology post-WWII (see e.g., Pickren, 2007; van Strien, 1997). But it’s also because the discipline’s second language today is no longer German or French, as it once was, but Statistics (e.g., Gigerenzer et al., 1989; Hacking, 1975, 1990; Porter, 1986). So, questions like the BPS editor’s – regarding the future of British Psychology, and also British Psychologists – can be simplified: psychology itself won’t change very much as a discipline. Psychology will remain English, in Europe, even without the British.

It’s quite possible that Brexit’s impact won’t be immediately detectable in quantitative examinations of research output (discussed generally by Burman, in press). Grant money will flow to different institutions, however, and so will top students: Oxford, Cambridge, and University College London will no longer be eligible for EU support. Large multi-institution partnerships will accommodate the political change too. So, if we are going to predict how these changes will unfold, and prepare ourselves for what’s coming, we need data that can serve as a proxy for these important phenomena that are harder to track.

To my knowledge, no data have yet been collected to directly answer the BPS editor’s question regarding the future of European psychology after Brexit. We must therefore rephrase it so that the extant data can be made relevant. I see two obvious ways to do this; two sub-questions that could stand-in for the original.

First: where are the best non-native English-speakers to be found in Europe? This reflects the practical language constraint. And, second:
where are the top European Psychology programmes? Thus: my path to “how” is via “where.”

To answer my first sub-question, we can refer to the recent report by Education First: the seventh edition of their English Proficiency Index. In Europe, six countries were ranked “very high” according to their criteria: Netherlands, Sweden, Denmark, Norway, Finland, and Luxemburg. (An easy and promising start.)

To answer my second sub-question, we can leverage the existing quantitative assessments of quality. This then means referring to institutional rankings. While doing so is controversial, it’s at least data-driven.

The new Times Higher Education rankings for psychology were published just before the BPS editor’s original call went out. Examining the global top 50 suggests the following national centres, presented in order of appearance: Netherlands (Amsterdam, Groningen, Radboud), Sweden (Karolinska), Germany (Free University of Berlin, LMU Munich, Humboldt, Heidelberg), and Belgium (KU Leuven & Ghent).

The Clarivate Analytics data reported by US News and World Report offer a similar set of results in response to a Psychiatry/Psychology subject search: Sweden (Karolinska), Netherlands (Amsterdam, VU Amsterdam, Groningen, Utrecht, Maastricht, Radboud), Belgium (Catholic University Leuven & Ghent), Germany (Munich), and Denmark (Aarhus).

And the QS World University Rankings for Psychology provide still another dataset. Their list is less nationally diverse: in Europe, only the Netherlands (Amsterdam, Groningen) and Belgium (KU Leuven, Ghent) have departments that rank in the global top 50. But we do indeed find the other expected names in the alphabetical listings that follow: Aarhus, Freie Universitaet Berlin, and so on.

Focusing solely on my second sub-question, and comparing the datasets, it’s clear that several of the same institutions appear on all three lists. Sometimes they are referred to by different terms (e.g., “KU Leuven” vs. “Catholic University Leuven” or “LMU Munich” vs “Munich” or “Free University of Berlin” vs “Freie Universitaet Berlin”). However, my purpose was not to celebrate particular institutions. Rather, my intent was to use these data to provide a sense of where the leading centres of post-Brexit English-language European Psychology will be found: the countries in which partnership efforts ought to be focused, as British scholars scramble to secure their futures.

Combining the two sub-questions then provides an answer to the BPS editor’s question: the greatest potential for growth for post-Brexit English psychology is most likely to be in the top-rated psychological and English-speaking countries (esp. Netherlands at Amsterdam and Groningen, but also Sweden at Karolinska and Denmark at Aarhus). This north-westerly trend makes sense, too, since near-neighbours should be friendlier than more-distant rivals. But it’s also perhaps less obvious than trying to focus on the present administrative centres of Europe: psychology’s future will follow its own path, and those who seek to thrive ought to follow it too.

BY JEREMY TREVESLYAN BURMAN
IMAGE BY BANKSY 2017, VIA DUNCAN HULL

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On Tuesday, May 8, Professor Stan Gielen, director of the Netherlands Organisation for Scientific Research (NWO), presented the research programme NWA. The meeting took place in Pakhuis de Zwijger, Amsterdam, with an audience of approximately 200 people.

The NWA was realised following an open consultation process under the leadership of a so-called Knowledge Coalition. Prof. Beatrice de Graaf and Prof. Alexander Rinnooy Kan chaired the process; they were interviewed about the history. Until the deadline of 1 May 2015, everybody in the Netherlands could pose his or her scientific question. In total, almost 12,000 questions were submitted. Five scientific juries then assessed the questions for “feasibility for research”, “level of challenge” and “connection with national strengths”. With this approach, they successfully reduced the huge number of questions to 140 cluster questions. Three conferences about these cluster questions were subsequently held with experts from science, industry and society. Using related questions in the NWA, the Knowledge Coalition compiled 25 routes with input from the entire scientific field. The routes illustrate the coherence between scientific and societal disciplines and actors with respect to complex societal issues. [see: https://www.nwo.nl/en/policies/dutch+national+research+agenda]

The aim of this programme is to bring together large consortia of researchers, who conduct “game-changing” research projects in multidisciplinary collaborations. An important part of the programme is the participation of the whole knowledge chain: industry – civil society organisations – knowledge institutions. As examples of research questions that require a broad consortium and long-term projects, Gielen mentioned cybersecurity and climate change. The ultimate goal is that research projects are started within each of the 25 routes. An equal distribution across the routes is hopefully the outcome, but not a condition. Also, it is highly unlikely that all routes get started in 2018. In 2018, there will be 70 M€ available, in 2019 108 M€, and from 2020 130 M€ yearly. The call went out on 24 May. The deadline for pre-application is 1 September, and the deadline for the full proposal is 18 December. The first round of awards will be determined in April 2019. The call for the 2019 round will go out early in the year (January) so that the grants can be awarded in the same year.

Applications can be submitted in three bandwidths: 500 k€ - 2 M€; 2 M€ – 5 M€; 5 M€ – 10 M€, each with their own rules and conditions. In the third bandwidth 5 M€ – 10 M€, one should think of an 8-year project, with equipment investments and, because of its duration, a midterm evaluation.

Who can apply? In addition to assistant, associate and full professors with a tenured position at a Dutch university or one of the other knowledge institutions – the regular NWO-criteria – researchers at universities of applied sciences and TO2 institutes can apply. Co-applicants can be non-profit civil society organisations based in the Netherlands; companies can join and bring in means but cannot receive grant money. International (non-profit) partners can receive grant-money if their expertise is needed (‘money follows collaboration’); their added value must be convincing. NWO is negotiating with neighbouring countries to apply this principle in both directions. The so-called figureheads (‘boegbeelden’) who started the routes – with quite some funding: 2.5 M€ for each of eight programmes – must compete like everybody else. But, of course, they have a head start thanks to being prepared and organised as consortia, and the funding.

To get a consortium started, funding can be applied for to organise matchmaking meetings (max. €10.000 per application), for idea generation (high-risk, high-gain) in networks, and renovation of the NWA (max. €50.000).

Evaluation-criteria are:
- Quality of the research proposal, including innovation.
- Quality of the consortium.
- Potential scientific and or societal impact (“game-changing”).

The audience asked many questions about the evaluation committees. These will not be recruited from the old-boys network, but will be broadly recruited from all layers of the knowledge chain. There will be fewer than 25 committees, because there is much overlap between routes and most research questions will fit into more than one route. Gielen refused to give any further details about the committees, and concluded with saying that this instrument is innovative, unique in the Netherlands, Europe and the world, and will be evaluated cautiously.

BY BEN MAASSEN
Short Interviews about the BCN retreat, 8-9 March 2018

Interview with Juliana Feiden, winner of the BCN retreat presentation with her work: “The influence of conceptual number processing on conference establishing: an ERP study in Brazilian Portuguese” Department of Neurolinguistics

Hi, Juliana. This is the second time that you are attending the retreat. How did your experience change from the first time to the second?
Actually, this is the first time that I’m at the retreat. I really liked coming here and being part of it as a presenter.

You won the best presentation at the retreat. Congratulations for that! So, you will be speaking on behalf of the presenters of the BCN. How it is to be on the other side of the spectators? And what can you say about the other presentations?
Thank you! It was a very enriching experience to be able to present my research to such a broad audience. As we were presenting to people from different fields, the feedback and the questions I received were very interesting and also helped me to see my work from a different perspective, which is very constructive for my next steps as a PhD student. With respect to the other presentations, it was such a great opportunity to learn what my BCN fellows are doing at the moment, and I was really inspired by their work.

To finalize, beyond the presentations and the activities, what would you say is the intrinsic value of the retreat as PhD student?
I think that the intrinsic value of the retreat is the unique opportunity that BCN provides us to be in contact with PhD students from different research fields. This enables us to share not only our research projects but also discuss some issues we all face in academia, such as time management and publishing. It was great to meet so many new peers from different disciplines and learn from each other.
Interview with Fiona Stenveld  
Department of Geriatric Medicine (Universitair Centrum Ouderengeneeskunde, UCO)

Hi, Fiona. Truth to be told, as a second year PhD student, what were your expectations and first impressions for this BCN retreat, and how did they change as the day unfolded?

My expectations for the BCN retreat where high. Diana told me it was a great experience and lots of fun, and my colleague Leroy (third year PhD student) told me this as well. Besides being a good experience and a place to learn, I didn’t know what else I could expect from the two days. My first impression of the programme was that it is really tight and all planned out. I was worried in the beginning that I would have troubles listening for that amount of time, but the presentations were short and the there was a great variety in subjects. This made it easier to take in, and people really put effort in their presentations. I liked listening to them.

As a first year, I didn’t know the whole extent of the BCN research topics, labs or even people. As an example of that, the presentations were quite diverse. Could you briefly describe some of the other topics you heard about in the “speed-date” activity?

I think, as a first-year student, I had the same feeling. I think now, because of the retreat, I (eventually) gained a better understanding of the range of topics in BCN. During the speed-date activity, I talked about, among other things, cochlear implants (and how to improve them), how to improve work situations, cultural differences (this was not a research topic, but it came up in the speed-date activity and we did not have any time left to discuss our research), and of course I also talked about my own research about sleeping problems in the elderly.

Now, what can you tell us about the other more social activities. How would you describe the BCN community?

I think the BCN community is an open, international/diverse group and up for anything. I went cycling on the first day and I was surprised by the difficulty of the cycling track. I’m used to cycling because I’m Dutch, but I thought it was very hard and I got a bit scared sometimes. So, I thought everybody was very courageous (especially those who were not used to biking).
The ability to communicate with others is vital to our development, well-being, and healthy ageing. Verbal communication and the capacity to comprehend spoken language is the primary way to share our experiences with others. Impairment of this ability, as for instance through hearing loss, has consequences for the individual and society, such as atypical development, increased risk of dementia, or low quality of life.

To comprehensively study speech perception, we must consider a range of sensory, cognitive, linguistic, environmental, and societal factors. A good illustration of the multifaceted nature of speech perception is the connection between hearing loss and dementia: sensory impairment may accelerate cognitive decline, or lead to withdrawal from society, which in itself may also lead to cognitive decline. Researchers who are interested in speech perception, thus, need to consider this intertwined link between sensory and cognitive processing and social embedding.

The focus of the MAPS summer school is the multidisciplinary approach needed to understand speech perception, in its process from sensory to cognitive representations, and in its function in well-being. MAPS aims at stimulating skills in translational neuroscience, and it will bring together researchers who combine multiple disciplines in their approach to speech. The summer school is intended for Research Master students, PhDs, MD-Phd and practitioners with basic knowledge of cognitive psychology and neuroscience.

Confirmed speakers:
- Prof. Anne Cutler
- Dr. Branislava Ćurčić-Blake
- Dr. Sam Evans
- Prof. Elia Formisano
- Prof. Sonja Kotz
- Dr. Shiri Lev-Ari
- Dr. Helen Nuttall
- Prof. Iris Sommer
- Prof. Steven van de Par
- Dr. Jaime Undurraga

Organizing committee (University of Groningen):
- Dr. Anita Wagner
- Dr. Terrin Tamati
- Dr. Simone Sprenger

Link: [https://www.rug.nl/education/summer-winter-schools/summer_schools_2018/maps/](https://www.rug.nl/education/summer-winter-schools/summer_schools_2018/maps/)
The royal lecture

On King’s Day, with the King visiting our beloved city, Groningen briefly changed into the media-capital of the Netherlands. It was the perfect opportunity for the university to showcase itself. So, no-less than our very own Nobel-prize winner Ben Feringa gave the royal family a lecture about his nano-car, while the Young Academy focused on an audience of children, inviting them to participate in various spectacular experiments that were performed with much enthusiasm.

PHOTOS BY SANDER MARTENS
Symposium on the 15th Anniversary of the Neuroimaging Center Groningen

In 2003, the Neuroimaging Center opened its doors to the BCN research community. To celebrate its 15th anniversary, the NIC is organizing a symposium in collaboration with BCN on Wednesday 26 September at DOT. Save the date to eat cake and enjoy a number of lectures from internationally renowned scientists!

Confirmed speakers are:

- Prof. Krista Lanctot (Canada) on cognitive neuroimaging of aging
- Prof. Serge Dumoulin (Amsterdam) on visual neuroscience
- Prof. Kenneth Hugdahl (Norway) on the neural basis of hallucinations
- Prof. Mary Phillips (USA) on neuroimaging of depression and emotion

Fifteen years ago, the Philips 3 Tesla MRI machine was installed at the Neuroimaging Center. Last year it was replaced by a brand new one by Siemens, located in the UMCG. The old one was dismantled last month.
Dear BCN community

This is your PhD Council

We are a direct connection between you and BCN. We represent you at the Education Committees and at the Graduate School of Medical Sciences (GSMS). We also promote educational events such as the PhD lunch, and organize social activities such as borrels (drinks) and the pub quiz at the BCN Retreat. We are always happy to hear what kind of educational events or activities you want. Also, when you have suggestions for new activities, for speakers you want to attract (e.g., for seminars or master classes), or in case of general concerns about current policy, don’t hesitate to send us an email: bcnphdcouncil@list.rug.nl.

We had to say goodbye to 5 members. Katja, Marissa, Azzurra, Joana and Laura, we sincerely appreciate all your tremendous work and dedication to the council and the BCN community! At the same time, we are very happy that four new people joined the group.

Our current structure, including new members is shown in the pictures.

See you at our next activity!

Your PhD Council

Stefan Huijser
(Chair)
Artificial Intelligence & Cognitive Engineering, FSE

Steven Gilbers
(Co-chair)
Neurolinguistics and Language Development, LET

Mila Roozen
GELIFES – Groningen Institute for Evolutionary Life Sciences, FSE

Rodrigo Moraga Amaro
Nuclear Medicine and Molecular Imaging, UMCG

Mayra Bittencourt Villalpando
Neurology, UMCG

Sebastián Balart Sánchez
Neurology, UMCG

Javier Gustavo Villamil
Neuroscience, UMCG

You?
Cool links

> Brain organoids grown in vitro can be used to study development and pathology, and might in the future be used to replace neurons lost to ageing or disease. A poster by Sergiu Pasca explains how mini brains are grown.
https://www.nature.com/articles/s41593-018-0107-3

> Growing functioning neurons in vitro is a welcome development in the light of recent findings showing that hippocampal neurogenesis ceases in adulthood.

> Like a lost limb can be replaced by a prosthesis, lost hippocampal neurons can be replaced by electrodes. Electrical stimulation that mimics the spatiotemporal firing of hippocampal neurons that underlies encoding was found to improve memory retention.
https://www.wired.com/story/hippocampal-neural-prosthetic/

> Prevention is better than the cure. Sitting was found to predict the thinning of the medial temporal lobe. While we wait for ways to restore memories, we should take a walk.
http://neurosciencenews.com/sitting-brain-health-8774/

> Smiling makes you cooler than Kanye!
http://neurosciencenews.com/coolness-smiling-8775/
Put a face to our names

Part of the charm of any conference is that you can put a face to the famous names behind your favourite papers. We, the creative team behind the BCN Newsletter, are not famous. Not today, and let’s face it perhaps not even tomorrow. But we do hope that you enjoy reading the Newsletter! So here we are… At least now you’ll be able to put a face to our names!
KNAW Heineken Young Scientist Award

BCN member Marie-José van Tol has been awarded with the prestigious 2018 Heineken Young Scientist Award in the Social Sciences for studying the many factors that contribute to depression and other psychiatric disorders.

Vlog

Also check out the vlog Marie-José van Tol recently did for the newspaper Dagblad van het Noorden, in which explains (in Dutch) the relationship between depression and the different seasons of the year:

CMI receives ZonMW grant for image analysis of the early stages of three common diseases

The Center for Medical Imaging (CMI) at the UMCG has been awarded a EUR 1.5 million grant from ZonMW for its CT-scan screening for three common diseases: lung cancer, lung emphysema and cardiovascular disease. These three diseases together are responsible for the highest mortality and morbidity rates and form the greatest economic burden for healthcare in the Western world. They are therefore also known as the Big 3. The aim of this project, B3CARE, is to obtain the respective clinical pictures at an earlier stage, using biomarkers.

Top Master’s Degree Programme for Behavioural and Cognitive Neuroscience

The latest edition of the Keuzegids Masters gives 18 degree programmes at the University of Groningen the distinction of being Top Degree Programmes, including the BCN Research Master. The University of Groningen Research Master’s degree programme in Economics and Business has even been rated best university Master’s degree programme in the Netherlands.

The Master’s degree in Nanoscience is in the top three for the sixth year in a row. The University of Groningen takes an overall first place among the nine classic universities with a total score of 63.5 points and is the third Master’s university in the Netherlands if the technical universities are included.

YAG welcomes seven new members for 2018

We are pleased to announce the seven newest members of the Young Academy Groningen: Dr. Laura Bringmann, dr. Jan Willem Bolderdijk, dr. Nanna Hilton, dr. Tina Kretschmer, dr. Jocelien Olivier, dr. Saskia Peels and dr. Ward Rauws! They will be officially appointed during a ceremony on the evening of Monday, October 1.

Blackbirds in the city: Bad health, longer life

Blackbirds live longer in cities than in forests. But their telomeres, the repetitive stretches of DNA at the ends of the chromosomes, show that these city birds have a much poorer health status than their rural cousins. These findings are from a study of five European cities led by University of Groningen biologists. It was published in Biology Letters on March 21, 2018.

BCN Researchers on YouTube

https://www.rug.nl/research/behavioural-cognitive-neurosciences/organisation/bcn-researchers-on-youtube
> **PHD AND OTHER NEWS**

**New PhD students**

Please inform us whenever a new PhD student starts his/her project. Even though the PhD student already does the registration in Hora Finita, the BCN Office only receives these applications when the entire process is finished, when the information is complete and all signatures have been collected. However, sometimes this process can take months! We would like to inform new PhD students about BCN activities and invite them for courses, such as the compulsory BCN course ‘Management Competence in your PhD project’. To get the most benefit from this course, PhD students should take this course in the first 3 months of their project!

> **So: new PhD student? Inform BCN!**

**Instructors wanted**

BCN is looking for new instructors for the BCN course Management Competence in your PhD project. Please contact me if you are interested! (d.h.koopmans@umcg.nl)

**Winner BCN Best Presentation Award**

Participants of the BCN Retreat could vote for the best presentation of the day. On the first day, Juliana Feiden was the best presenter according to the audience. On the second day, Malte Borggrewe and Aida Salcic ended up tied. Congratulations to all three! Juliana Feiden was the winner on both days, and therefore won the BCN Best Presentation Award! Well done!! You can read an interview with the winner on page 24.

**BCN Orientation Course**

The Orientation Course will start on September 7, for all BCN Research Master students and BCN PhD students. This course is compulsory for all BCN PhD students.

Other course days are: September 21, October 5 & 19, November 2 & 16, 2018

**Mind Mint**

Mind Mint is a website with refreshing research, as they say. Mind Mint consists of a network of PhD students from various academic disciplines and other professionals. It gives PhD students the opportunity to develop communication skills, and would like to create a positive impact on society by reducing the gap between research and the public. Check out their website: https://mind-mint.org/

**Agenda BCN Activities**

- June 11, 12, 13, 14 & 18, 2018
BCN Statistics Course

- June 21 & 22, 2018
BCN Symposium Research and Rhythms

- September 7
BCN Orientation Course starts. Other course dates: September 21, October 5 & 19, November 2 & 16, 2018

Course application: http://cursus.webhosting.rug.nl/gsms

Please check the website for more detailed information.

■ **BY DIANA KOOPMANS**
Congenital heart disease: the timing of brain injury

PHD STUDENT
M.J. Mebius

THESIS
Congenital heart disease: the timing of brain injury

PROMOTORS
Prof.dr. A.F. Bos
Prof.dr. C.M. Bilardo
Prof.dr. R.M.F. Berger

COPROMOTOR
Dr. E.M.W. Kooi

FACULTY
Medical Sciences

Infants with severe congenital heart disease are at risk of neurodevelopmental impairments later in life. It has been hypothesized that hemodynamic alterations are a major contributor to these impairments. This thesis aims to gain more insight into the timing of brain injury by assessing hemodynamic characteristics regarding cerebral circulation or brain function. First, we systematically reviewed all available literature on prenatal and postnatal cerebral findings and neurodevelopmental outcome. Both the prenatal period and the early postnatal period seem to play a major role in neurodevelopmental outcome. Furthermore, infants with abnormal findings both prenatally and postnataally have a nine-fold increased risk of abnormal short-term neurodevelopmental outcome. Future studies should focus on preventative strategies, such as neuroprotective therapy or fetal cardiac surgery.

Mirthe Mebius (1991) studied Medicine at the University of Groningen. Her research falls under the research programme Translational Neuroscience of the research institute BCN-BRAIN. Mebius now works as ANIOS Neonatology at the UMCG. She was promoted on January 31, 2018.

Myoclonus: A diagnostic challenge

PHD STUDENT
R. Zutt

THESIS
Myoclonus: A diagnostic challenge

PROMOTOR
Prof.dr. M.A.J. de Koning-Tijssen

COPROMOTORS
Dr. T.J. de Koning
Dr. J.W. Elting

FACULTY
Medical Sciences

Myoclonus is a frequently encountered hyperkinetic movement disorder characterized by involuntary jerks, or short interruptions of muscle tone.

1. Myoclonus can be anatomically classified into cortical, subcortical, spinal, and peripheral myoclonus,

2. as well as forming a component of functional movement disorders.

3,4. Myoclonus can be present in a large number of both acquired and genetically determined disorders.

Accurate diagnosis and classification of its anatomical subtype is important in determining an aetiological differential diagnosis, and guiding therapeutic management. However, clinical diagnosis of myoclonus remains challenging due to its manifestation in a large number of clinical phenotypes, and the number of causative disease causing genes increasing.
year to year. These challenges and opportunities reinforce the need for a novel and systematic approach to those patients presenting with myoclonus. This thesis provides a new diagnostic approach for patients who present with myoclonus. We describe the challenges and importance of accurate clinical phenotyping, classification of the anatomical myoclonus subtype, and recognition of the frequently accompanying non-motor characteristics. Electrophysiological testing including video-polymyography and advanced techniques (e.g. back-averaging and coherence analysis) proved to play an important contributing role in determining an accurate diagnosis. These, together with the development and wider application of ERD, may also demonstrate future applicability in the diagnosis of highly complex hyperkinetic movement disorders, and in particular functional movement disorders.

Rodi Zutt (1984) studied Medicine at the University of Amsterdam and completed the doctor’s practice for neurologist at the University Medical Center Groningen. She did her research in the Department of Neurology (http://movementdisordersgroningen.com/nl/) and the research institute BCN-BRAIN of the UMCG. Zutt now works as a neurologist/specialist in movement disorders at the Haga Hospital in the Hague. She was promoted on February 7, 2018.

Neurobiological determinants of depressive-like symptoms in rodents: A multifactorial approach

PHD STUDENT
M. Bove

THESIS
Neurobiological determinants of depressive-like symptoms in rodents: A multifactorial approach

PROMOTORS
Prof.dr. M.J.H. Kas
Prof.dr. V. Cuomo

FACULTY
Science and Engineering

In her thesis, Maria Bove focused on depressive-like symptoms that occur in several neuropsychiatric and neurodegenerative diseases, and, using different animal paradigms and models, she tried to disentangle the neurobiological determinants behind these symptoms.

Depression is one of the most common psychiatric diseases. Indeed, the prevalence of depressive symptoms has reached epidemic proportions during the last few decades. Core symptoms of depression include depressed mood, anhedonia (reduced ability to experience pleasure from natural rewards), irritability, difficulties in concentrating, social withdrawal (withdrawal from social contact that derives from indifference or lack of desire to have social contact) and abnormalities in appetite and sleep, the so called “neurovegetative symptoms”. Depression has shown to be comorbid with several neuropsychiatric diseases, such as schizophrenia, bipolar disorders, Alzheimer’s diseases, anxiety disorders, autism spectrum disorders and stress-related diseases. Moreover, depression often occurs during the prodromic phase of Alzheimer’s disease, schizophrenia and bipolar disorders.

In order to study the onset and progression of mental illnesses, environmental factors, such as diets and lifestyle, and genetic factors need to be taken into account. During the last decades, diagnosis in psychiatry only focused on subjective symptoms and observable signs. Although symptoms are an important starting point, genetics and neurobiology underlying these symptoms need to be deeply investigated. To achieve this purpose, animal models can be really helpful to longitudinally study behavioural alterations resembling human symptoms, and ultimately investigate the underlying neurobiology in order to unravel the etiopathogenesis.

Maria Bove (1989) was promoted on February 9, 2018.
Induced pluripotent stem cells: cell therapy and disease modeling

PHD STUDENT
A.Thiruvalluvan

THESIS
Induced pluripotent stem cells: cell therapy and disease modeling

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

COPROMOTOR
Dr. J.C.V.M. Copray

FACULTY
Medical Sciences

In 2012, Shinya Yamanaka received the Nobel Prize for Medicine for his ground-breaking discovery that somatic cells can be transformed into a kind of embryonic stem cells, the so-called induced pluripotent stem cells, or iPS-cells. This iPS-technology enables the generation, in unlimited quantities, of all possible types of somatic cells from a patient to be used for transplantation in regenerative medicine or for extensive studies on the pathogenic mechanisms in a wide variety of genetic disorders. The PhD thesis by Arun Thiruvalluvan reports on research for both potential applications of iPS-cells. From iPS cells, obtained via skin fibroblasts of multiple sclerosis (MS) patients, large numbers of oligodendrocytes (specific myelin-producing brain cells) were generated. The idea that these autologous oligodendrocytes can contribute to repair of brain lesions in MS patients after implantation was successfully demonstrated in a non-human primate model of MS. Besides that, large numbers of nerve cells were produced from iPS cells of patients with the genetic neurological disorders SCA-3 (Spinocerebellar ataxia). Herewith, we obtained detailed insights into the pathogenic mechanisms underlying nerve cell degeneration in SCA3. Understanding of these mechanisms may enable the development of new therapeutic approaches for these, as yet untreatable, disorders.

Arun Thiruvalluvan (1986) completed his master's degree in Biotechnology at the Bharathiyar University, Coimbatore, India. He did his PhD research within the research institute BCN-BRAIN. The project was partly financed by the MS Stichting. Thiruvalluvan now works as a postdoc at the research institute ERIBA at the UMCG. He was promoted on February 26, 2018.

Fitness to drive of older drivers with cognitive impairments

PHD STUDENT
D. Piersma

THESIS
Fitness to drive of older drivers with cognitive impairments

PROMOTORS
Prof.dr. W.H. Brouwer
Prof.dr. O.M. Tucha
Prof.dr. D. de Waard

COPROMOTOR
Dr. A.B.M. Fuermaier

FACULTY
Behavioural and Social Sciences

People are getting older and continue driving into very old age. In the ageing society, the number of persons with dementia is also increasing, and these persons wish to remain mobile as well. Importantly, not every patient with mild dementia is driving unsafely at the time of diagnosis. Many patients prefer to continue driving, but it is difficult for physicians to determine whether an individual patient is still driving safely.

This thesis addresses a new strategy to assess fitness to drive in a clinical setting. A fitness-to-drive assessment including clinical interviews, neuropsychological tests, and driving simulator rides is a promising approach for patients with Alzheimer's disease. In over 90% of patients with Alzheimer's disease, the strategy could predict correctly whether patients would pass or fail an official on-road driving assessment. Many factors play a role here, including the severity of dementia, reaction time, knowledge of traffic rules and hazard perception. Additionally, for patients with different types of dementia (e.g. vascular dementia, frontotemporal dementia, Lewy body dementia), different assessment strategies must be developed to evaluate their fitness to drive. Driving recommendations given after fitness-to-drive assessments effectively promoted driving continuation of patients who were fit to drive and driving cessation of patients who were no longer fit to drive. In the process of driving cessation, patients with dementia may benefit from support to stimulate and facilitate the transition to alternative
transportation, in order to retain mobility and social participation.

Dafne Piersma (1989) was promoted on February 26, 2018. The research was co-financed by the Stichting Wetenschappelijk Onderzoek Verkeersveiligheid (SWOV).

Brain perfusion SPECT analysis: New insights in mild cognitive impairment and neuromyelitis optica

PHD STUDENT
C.A. Sánchez Catasús

THESIS
Brain perfusion SPECT analysis: New insights in mild cognitive impairment and neuromyelitis optica

PROMOTORS
Prof.dr. R.A.J.O. Dierckx
Prof.dr. P.P. de Deyn
Prof.dr. R. Boellaard

COPROMOTOR
Dr. ir. A.T.M. Willemsen

FACULTY
Medical Sciences

The aim of this thesis was to demonstrate that brain perfusion SPECT can help to clarify important questions regarding the prodromal mild cognitive impairment (MCI) stage of Alzheimer’s disease (AD) and relapsing Neuromyelitis Optica (NMO). This is not only pertinent considering our limited understanding of these neurological diseases but also because brain perfusion SPECT is a low-cost technology that is accessible worldwide. A general introduction of this neuroimaging technology is provided, including a novel image analysis approach, based on graph theory, to study brain connectivity. MCI and relapsing NMO are also briefly described, as well as relevant questions related to brain perfusion in these diseases. Our findings indicate that the study of brain connectivity, based on perfusion SPECT combined with graph theoretical analysis, is feasible and useful both for investigating complex problems such as cerebrovascular reactivity alterations in MCI, as well as for clinical use. On the other hand, brain perfusion SPECT combined with voxel-based analysis provided evidence that brain microvasculature is an early disease target in relapsing NMO which suggests that perfusion alterations could be important in the development of brain structural abnormalities in this disease. In addition, our findings indicate that the number of optic neuritis attacks per patient is a potential confounder when comparing relapsing NMO patients with controls, for both tissue volumes and perfusion, and calls for attention in future studies. Thus, the findings presented in this thesis could have significant clinical implications and, therefore, the potential for practical applicability.

Carlos Sánchez Catasús (1960) studied Natural Sciences and Neurosciences at the University of Havana. In 2002, he was promoted in Natural Sciences. His research fits within the research programme CMI (Center for Medical Imaging) of the research institute BCN-BRAIN at the UMCG. Sánchez Catasús now works as a postdoc at the University of Michigan, USA. He was promoted on March 5, 2018.
The nature and nurture of female receptivity: a study in Drosophila melanogaster

PHD STUDENT
J.A. Gorter

THESIS
The nature and nurture of female receptivity: a study in Drosophila melanogaster

PROMOTORS
Prof.dr. J.C. Billeter
Prof.dr. P.P. de Deyn
Prof.dr. R. Boellaard

FACULTY
Science and Engineering

Reproduction is a cooperation between a male and a female to produce offspring. Males initiate reproduction and seduce the female. Females decide whether they accept the advances of the male. Female receptivity, the likelihood to accept mating, is therefore very influential on whether a mating is taking place.

Jenke Gorter investigated what internal and external factors influence female receptivity. What factors can persuade a female to accept the male’s advances and which genes of the female are important to determine receptivity.
In her thesis, Gorter describes the influence of food availability and social context on female receptivity and how this detected. In environments with high food availability or high social density, females increase receptivity after mating but not as virgin. Of the genes determining female receptivity, two related odorant receptor genes are necessary: one is necessary only for female receptivity after mating, whereas the other might be involved both before and after mating. Additionally, variation in receptivity and the underlying genes show that the genetic architecture of receptivity before and after mating are uncorrelated. Genes underlying variation in receptivity after mating seem more often associated to learning and memory processes, whereas genes for virgin receptivity are related to olfaction.

Together these data suggest that receptivity before and after mating have different mechanisms and that receptivity after mating is a more complex behaviour involving learning and memory processes and influenced by environmental factors possibly to match the investment in reproduction to environmental resources.

Jenke Gorter (1990) was promoted on March 23, 2018.

On the role of macrophages, microglia and the extracellular matrix in remyelination

PHD STUDENT
P. Wang

THESIS
On the role of macrophages, microglia and the extracellular matrix in remyelination

PROMOTOR
Prof.dr. D. Hoekstra

COPROMOTOR
Dr. W. Baron

FACULTY
Medical Sciences

Structural perturbations of distinct extracellular matrix (ECM) molecules, such as those causing the aggregation of fibronectin, contribute to remyelination failure of axons in the chronic demyelinating disease multiple sclerosis.

Accordingly, the development of means that prevent the inhibitory effect of fibronectin aggregates or that annihilate fibronectin aggregates might be a promising therapeutic approach to reactivate myelin biogenesis in MS.

The work described in this thesis provides novel insight into the mechanism as to why fibronectin aggregates persist in MS lesions, and consequently led to the development of potential means to overcome remyelination failure, in spite of the presence of harmful fibronectin aggregates. It is demonstrated that matrix metalloproteinase 7 (MMP7), expressed by pro-regenerative microglia and macrophages, is capable of cleaving fibronectin aggregates into fragments. Furthermore, it
was revealed that the expression of MMP7 is decreased in chronic MS lesions. Hence, although MMP7 has been hypothesized to induce demyelination, local application of this proteinase in MS lesions might serve as a useful tool in efforts to rescue remyelination in MS.

Interestingly, fibronectin aggregates can act as a scaffold for other molecules that can modulate the phenotype of microglia and macrophages, thereby inducing these cells to secrete molecular factors that prevent the generation of myelinating oligodendrocytes. However, upon co-treatment with IL-4, an inducer of pro-regenerative microglia and macrophages, the inhibition of oligodendrocyte maturation by microglia and macrophages in the presence of fibronectin is reversed. Moreover, IL-4 exposure overcomes the impaired remyelination in demyelinated forebrain slice cultures in the presence of fibronectin-aggregates. Hence, IL-4 may serve a novel and interesting tool to overcome inhibition of remyelination in MS lesions, due to the presence of fibronectin aggregates.

Peng Wang (1987) studied Zoology at the Northwest A&F University in China. He did his research in the Department of Cell Biology at the UMCG. He was promoted on March 28, 2018.

Optimal bounds, bounded optimality: Models of impatience in decision-making

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THESIS
Optimal bounds, bounded optimality: Models of impatience in decision-making

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Decision-Making is an integral part of everyday life. Most decisions share two features: uncertainty and impatience. Whilst much research has been done on the role of uncertainty, surprisingly little is known about the role of impatience. This dissertation tries to fill this gap.

One of the most important types of decision processes in psychological research is perceptual decision-making, where participants need to choose among several possible interpretations of a stream of noisy sensory information. The mathematical standard model for this type of decision process assumes that impatience plays no role in perceptual decisions. That is, participants should require a fixed amount of information before committing to a decision, irrespective of the amount of time they have already expended on the decision. However, a number of recent studies from neuroscience claim that impatience leads to more optimal decisions. Participants should, therefore, require less information for a decision the more time they have already expended.

Although this impatience hypothesis seems intuitive, the theoretical and empirical support for it is weaker than claimed by its proponents. A literature review shows a number of shortcomings in the setup and execution of experimental studies, as well as in the use of quantitative models supporting the impatience hypothesis. A theoretical analysis further shows that impatience only leads to markedly more optimal behaviour if task difficulty is high. Finally, an experimental study described here could not confirm the prediction that participants flexibly adjust their behaviour to the decision environment. In summary, the standard model of forty years still provides the best account of perceptual decision-making in humans.

Udo Böhm (1988) dis his doctoral research, co-financed by NWO, at the research institute Behavioural and Cognitive Neurosciences of the University of Groningen. He now works as a postdoc at the University of Amsterdam. He was promoted on April 5, 2018.
The impact of neuromuscular diseases on functioning and quality of life

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The impact of neuromuscular diseases on functioning and quality of life

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The group of neuromuscular disorders comprises many progressive conditions causing muscle weakness or spasticity. Questionnaires may be useful to understand the state of health of patients suffering from these conditions, but as yet there are none specifically for neuromuscular disorders. This PhD research generated three valid and reliable questionnaires. The first, the Neuromuscular Disease Impact Profile (NMDIP), was primarily developed to organize individual patient care and support. The second, the Extremity Function Index (EFI), was primarily developed to measure the severity of patients’ functional impairments. Finally, we translated an existing questionnaire – the Stigma Scale for Chronic Illness – to measure stigmatization. Together, these instruments offer a broad and unique understanding of the impact of neuromuscular disorders on patients’ functioning and quality of life. We did not find any differences in quality of life between subgroups with similar neuromuscular disorders. In addition, we found that muscle function impairments form the most common problem (which was also perceived as the most serious), while mental function impairment and pain appeared to be the main predictor of perceived quality of life. Most people with a neuromuscular disorder also experience stigmatization. Particularly self-stigma – the fear of stigmatization – proved a strong predictor of perceived quality of life. These insights may have important consequences for the care and support of patients with neuromuscular disorders. The questionnaires can help these patients to exert influence on decision-making about their health.

Isaac Bos (1952) studied Health Sciences and worked as a nurse consultant for people with a neuromuscular disease and as clinical teaching coordinator. He has been retired since November 2017. During his doctoral research, he was connected with the Department of Neurology of the University Medical Center Groningen. He was promoted on April 11, 2018.

The neuroanatomical organization of intrinsic brain activity measured by fMRI activity in the human visual cortex

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THESIS
The neuroanatomical organization of intrinsic brain activity measured by fMRI activity in the human visual cortex

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The existence of intrinsic neuronal activity has been demonstrated at many scales using a variety of methodological approaches, yet its biological relevance is only beginning to be understood. One way to study intrinsic neuronal activity in humans is by using resting-state (RS) functional magnetic resonance imaging (fMRI). In my thesis, titled “The Neuroanatomical Organization of Intrinsic Brain Activity Measured by fMRI in the Human Visual Cortex”, I describe new RS-fMRI analyses that reveal a remarkable amount of detail about the functional neuroanatomical organization of the human visual cortex. I applied these to investigate local and distributed brain dynamics within and between visual cortical regions, and to show how these dynamics change under different stimulation conditions. I conclude my thesis by interpreting and discussing my findings in the light of various theoretical perspectives. I stress that – in addition to externally triggered responses – there is a constant stream of internal processes that we should take into account. While I have focused on the visual system, the approach I have developed can be applied to any cortical network to study brain dynamics in a variety of experimental conditions. In summary, the findings obtained with my new fMRI analyses provide evidence that intrinsic fluctuations in activity recorded by means of fMRI from early cortical visual field maps are pointers to functionally relevant processes. They support the use of RS-fMRI for characterizing cortical function and connectivity in health and disease.

Nicolás Gravel (1985) was promoted on April 18, 2018.
Pathogenicity of alpha-synuclein in various cell models for Parkinson’s disease

THESIS
Pathogenicity of alpha-synuclein in various cell models for Parkinson’s disease
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Parkinson’s disease (PD) is considered the most common aging-related neurodegenerative disease in the world. Although a small percentage of PD is considered genetic, the major forms of PD are sporadic and considered the consequence of a yet unknown interaction between environmental conditions (e.g., pesticide exposure), lifestyle and genetic risk. The main characteristic of the disease is the presence of alpha-synuclein insoluble aggregates and (consequently?) the loss of dopaminergic neurons in the substantia nigra. The cellular mechanisms behind the death of dopaminergic neurons are still unknown. The PhD research by Thaiany Quevedo Melo addressed these mechanisms using different cell models mimicking PD-affected dopaminergic neurons. In the first model, cultured primary rat dopaminergic neurons were used and exposed to rotenone (a natural pesticide). The effects of rotenone on mitochondrial mobility, function and motor protein expression in the absence of alpha-synuclein aggregates were analyzed. Wild-type and mutant alpha-synuclein were expressed in the second cell model used, i.e. human differentiated dopaminergic neuron-like cells derived from SH-SY5Y cells. The protein aggregation, mitochondrial mobility, and treatment with the neuroprotective neuropeptide NAP were evaluated. In the third cell model, human dopaminergic neurons that were differentiated from iPS cells generated from patients with familial PD, the mitochondrial mobility and morphology were analyzed. Finally, the role of the motor protein Miro in the cellular stress caused by mutant alpha-synuclein was evaluated using yeast cell models. The studies in the different PD cell models revealed that alpha-synuclein impairs mitochondrial trafficking leading to Miro-dependent dysfunction of mitochondria and consequently cell death. Interestingly, the stabilization of microtubules using NAP appeared to recover mitochondrial trafficking and function. These findings strongly suggest that disrupted intracellular trafficking plays a crucial role in PD pathology and its recovery could be a potential therapeutic target.

Stressing reward: Does sex matter?

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Stressing reward: Does sex matter?
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Acute stress influences the way in which we process information related to our own functioning, as indicated by the doctoral research of Stella Banis. In experiments measuring brain activity in addition to behavior, she found that stress exposure reduced attentional preparation to upcoming tasks and impaired the processing of feedback information. This is in line with the theory that precisely these functions are involved in the pathogenesis of stress-related disorders. Stress-related disorders, such as depression and addiction, comprise a major public health concern. These disorders show sex-specific prevalence rates, which may be related to sex-specific stress responses. However, Banis found that acute stress effects on feedback processing were largely similar for male and female participants.

In addition, gonadal hormone fluctuations have been put forward as an important factor in the pathogenesis of certain stress-related disorders in women. Women are generally thought to be more sensitive to stress during the days before menses onset. However, in an experiment in which healthy women completed two sessions in different phases, Banis did not find proof for this idea. An increased sensitivity to stress during the premenstrual phase might be limited to women with Premenstrual Dysphoric Disorder.

Nevertheless, Banis found that menstrual phase modulates the way in which women process information about their functioning. During the days before ovulation, women were more sensitive to information about their performance (am I performing well or not?), independent of whether a reward was at stake. During the days before menstruation, women were more reactive to the prospect of reward.

Stella Banis (1971) was promoted on April 19, 2018.

EVELYN KUIPER-DRENTH, BASED ON PRESS REPORTS FROM THE UNIVERSITY OF GRONINGEN
> CHEEKY PROPOSITIONS

“Als een kind leert lopen en 50 keer valt, denkt het nooit: misschien is dit niets voor mij. (OMDENKEN)”
> Mirthe Mebius

“Success is the ability to go from one failure to another with no loss of enthusiasm.” – Winston Churchill
> Rodi Zutt

“Ondanks dat de tijd oneindig is, heb ik niet oneindig de tijd.” (Despite the infinity of time, I do not have infinite time.)
> Dafne Piersma

“In the Netherlands, a bike is ‘all you need’. Then, ‘you can learn how to play the game.’” – Paraphrasing the Beatles song “All you need is love”
> Carlos Sánchez Catasús

“The way to a woman’s heart is through her stomach.”
> Jenke Gorter

“Hij ken ‘t weten want hij heb ’n bel op de fiets’ is een toepasselijk gezegde in onze twittermaatschappij, waarin het vaak voorkomt dat mensen op luidé manier hun mening verkondigen, zonder te worden gehinderd door kennis van zaken.”
> Stella Banis