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Are you Marvelous Minded?

Marvelous Mind is looking for students who are happy to assist in organizing activities to share our fascination with the marvelous human mind. Marvelous Mind is a series of public outreach events initiated earlier this year by BCN BRAIN UMCG and the University of Groningen. Events usually consist of movies or debates with a link to cognitive neuroscience. Movies are shown in Forum Images and are typically introduced by an expert on the topic at hand, followed by a short discussion at the end of the evening. More info can be found at <https://www.rug.nl/research/bcn-brain/marvelousmind/>

Interested? Send a mail to Isabel Janmaat @ i.e.janmaat@umcg.nl



Now what? Life after the defense:

A double interview with Emi Saliasi & Linda Geerligs

Emi Saliasi and Linda Geerligs are a former research duo from back in their PhD years at the BCN. Now with nourished wisdom from years of professional experience, they have agreed to share their experience in the path to establishing a career. Emi as an Associate Consultant for an international company and Linda is working at the Donders Centre within the Radboud University, two career paths with the same beginning.

Welcome, and thanks for accepting this interview, it's a great honor to catch up with two former PhDs of the BCN. Could you describe your current whereabouts and doings?

LINDA: For the last two years, I have been working as a research fellow at the Donders Institute and in September I will start a new job as assistant professor in the same institute. My research looks at how the brain differs across the adult lifespan and how these alterations in the neural architecture affect people's cognitive abilities. I am also interested in innovative approaches to examining the fMRI data that we acquire, which will hopefully give us new insights in how the brain functions. For example, I am currently using Hidden Markov Models to investigate the timescales at which different brain regions process

information and how that is altered over the lifespan.

EMI: After completing my PhD in Groningen, I started working as a Postdoc at the VU Amsterdam for a period of 3 years, investigating the effects of physical activity on attention and working memory in children and adolescents. Two and a half years ago I left academia and started working for Perrett Laver, a global executive search organization that advises on leadership transitions for educational, research, healthcare, philanthropic, non-profit and cultural organisations in over 60 countries. Located in Amsterdam, I started my career as Senior Research Associate - a role that despite its name has little to do with scientific research - and since recently as a Consultant in training. My day to day work includes business development, client relationship building and supporting universities and other similar



organization in finding great candidates for their vacant positions. Some days, my colleagues and I are working to find an Assistant or Associate Professor in Cognitive Robotics, and others in finding a new Dean or even a Chief Scientific Advisor. As part of this role, I still get to work with different faculties within the University of Groningen - a place that remains close to my heart.

Having shared a project in BCN, is it very different from your earlier work?

LINDA: My day-to-day activities overlap in many ways with the project I started with Emi in 2009. The overarching aim of my research and the focus on healthy cognitive aging has also remained the same. One important difference is that I work more independently now and I am always working on many projects at the

same time. During my PhD, Emi and I were working more as a team and we could really focus on one study at a time. Although I have fruitful collaborations now, these are not as intense as the teamwork Emi and I had and I really enjoyed that aspect of my PhD.

EMI: I still keep the link with research-intensive institutes, however, now I approach it from a different perspective. During my PhD and with Linda on my side as my better half, I was the one diving into the topic of my thesis and implementing different methods to investigate the effects of aging on neural networks underlying working memory, with a particular focus in elucidating how individual differences arose. Now, I identify and engage with those researchers, or academic leaders that could help universities accomplish their vision and strengthen their academic base. I would say there is little overlap between my role now and then, but the passion for science still remains.

What are the major challenges you are facing in your careers?

LINDA: Over the last 9 years I have mainly been working as a researcher. When I start the new assistant professor position in September, I will be more involved in teaching and management. A challenge I see for the future is to manage my time effectively and to make sure that I do a good job in my teaching and management roles while also pushing my research forward and caring for my 10-month-old son.

EMI: My challenge lies in switching off some of the typical features you develop as a researcher. For example, in your project you have control of the whole process of your PhD. You have a say on what experiments

to run and how, how to analyze your data and what article to write and where to publish it in. In the private sector there is a more clear division of labor, so you learn to let go and trust your teammates in delivering a product. The pace is also faster, and it requires for you to be more proactive and action oriented. It is not possible to take your time and read through many articles before you decide on the best course of action. This was challenging in the beginning as it is a different manner of working.

Emi you did a Postdoc at the VU Amsterdam and Linda in Cambridge, does it feel the same finishing a postdoc as a PhD? What are the main differences?

LINDA: I started my postdoc in Cambridge with some degree of trepidation, as I felt like a bit of an imposter in this highly acclaimed environment. Nevertheless, I was also very excited, as I had the opportunity to work in a very big project aimed at studying neurocognitive aging from a range of different perspectives with a huge dataset consisting of 700 participants. It was a perfect match with my interests at the time. The environment in Cambridge turned out to be much friendlier and much less competitive than I had feared and I really enjoyed my time there. Finishing a postdoc was a very different experience from finishing a PhD. At the end of my PhD I felt like there were a lot of things that had to be arranged, such as submitting and revising publications, writing the introduction and discussion for the thesis, formatting the book, finding a printer and so on. It felt like an endless list of tasks that needed to be completed and it was quite a stressful time. At the end of my

postdoc, the transition was much more gradual. I could continue to work on my ongoing projects at the Donders Institute so there was no rush.

EMI: My Postdoc differed from my PhD in that it was more practical, implementation-driven and more embedded in the public health sector. I believe that this is dependent on where, and with whom, you work for your Postdoc. In my experience, some aspects of the postdoc felt like a prolonged PhD. For example, the setting of experiments, collecting the data, analyzing and writing articles were something I have done in my PhD already. The bright side is that the experience I gathered during my PhD was very helpful in being more efficient and more strategic. However, the feeling is not the same. I didn't feel the same extreme attachment that I felt for my PhD work. In many ways, a postdoc is a natural progression from the PhD to a tenure track, you are more confident in what you are doing and can support and guide the PhD(s) working on the same project. In turn, this experience helps you understand better what is needed to coordinate and lead your own group one day.

In your current positions, what are the things you enjoy or make you feel 'I love my job'?

LINDA: There are several things that give me the feeling that I love my job. Conferences for one often give me a lot of new inspiration and energy; I like seeing how the field is advancing. I also really enjoy meetings with fellow researchers and students where we spar about new analyses and questions. Another highlight of my job is when I am working on data analysis and have promising new results or new insights. I also like writing papers,

seeing something that has lived in my mind for a long time become a tangible product.

EMI: Like Linda, there are many aspects of my work I love and enjoy. The most important one has to be the birds-view this role offers. Speaking with many academic leaders, it has provided me with insights on what universities are dealing with in a larger scale. For example, what differentiates one university from the other, what is their mission and vision, how do they cope with the rapid technological advancements, and how do they remain competitive in the such fast changing Higher Education Landscape. Another exciting aspect is seeing how scientists evolve through time, what makes them tick, how did they become successful in the academic sector, what challenges and opportunities did they face. I find that fascinating, the human aspect of science.

Final question, looking back over your years in the BCN, how have those years influenced you both on a professional and a personal level?

LINDA: The years at BCN, both as a master and a PhD student, have formed the cornerstones for my career up to now. I have fond memories of some of the BCN courses that form the foundation of my current knowledge, such as Remco Renken's neuroimaging courses and the neuroanatomy course by Ruud Kortekaas. My research has continued along the trajectory that was set in during my PhD where I gained many skills that I still use every day, such as writing papers, presenting my results and programming my analyses. Working with Emi and my PhD supervisors, Monicque Lorist and Natasha Maurits,

really helped me develop some of these skills and also helped me grow my confidence and independence.

EMI: Looking back, I couldn't have been luckier than being a PhD at BCN and living in Groningen. I remain grateful to what I learned from all of my colleagues and supervisors and how that shaped me to the person I am now. Working close with Linda helped me challenge myself and improve my technical skills, from my first supervisor Natasha Maurits I learned to be fair and professional, and from Monicque I learned the sense of drive and strategy. The list doesn't end here, I was blessed with wonderful colleagues who were always there to help and support you. It really felt like a wonderful time, and despite the many challenges, I always went to work with a big smile on my face.

■ BY SEBASTIAN BALART

Winner give-away book André Aleman

In BCN Newsletter issue 114, an interview with André Aleman about his book: 'Je brein the baas' was published. Here, we made a call for submitting a comic or cartoon about the topic of the book: unconsciousness and free will. The best comic or cartoon would win a copy of the book. The winner of the give-away is Tineke van Lingen with her comic titled: 'Kies ik of kies IK of ik kies?' ['Do I choose, or do I choose whether I choose?']



From the boardroom



On behalf of the BCN PhD Council, Rodrigo Moraga Amaro has attended the board meetings for some time and will continue to do so until November 2019. He will be succeeded by Sebastian Balart, who is a PhD student of Natasha Maurits and Joukje van der Naalt. Diana Koopmans, member of BCN's bureau staff, will from now on also attend the board meetings because she and BCN's secretary Evelyn Kuiper-Drenth are jointly responsible for organising the annual BCN events. In this way, important information will reach the board directly.

The BCN Symposium 2019 will take place on Friday, November 15 and will be devoted to Connecting Levels of Neuroscience through Computational Modelling, as proposed by Marieke van Vugt. She has been asked to establish an organising committee that will assist her. Rodrigo Moraga Amaro has offered to take part in it.

A pre-final draft of BCN's Annual Report 2018 was sent to the board members for a last update on June 24. In July the report has been sent as a pdf file to all BCN members, including PhD and Master students, the university board, deans of faculties, research directors, and national agencies and institutes in the field of behavioural and cognitive neuroscience. You can find it online at <https://www.rug.nl/research/behavioural-cognitive-neurosciences/news/bcn-annualreport2018.pdf>.

Within the framework of U5 – a collaborative network consisting of the universities of Gent, Göttingen, Groningen, Tartu and Uppsala – Erik Boddeke recently talked to the vice-dean of the medical school of Tartu about new initiatives. These include so-called sandwich PhD positions consisting of a two-year period in Groningen and two years abroad, with the doctoral ceremony at the University of Groningen.

Board member Elkan Akyürek (Faculty of Behavioural and Social Sciences) has proposed a collaborative grant scheme for stimulating interdisciplinary research. It depends, however, on the willingness of the participating faculties to make funds available. An option is to establish a pilot experiment.

BCN's academic director, Robert Schoevers, will be a visiting scholar at the University of New South Wales in Sydney between the middle of October 2019 and the end of January 2020.

■ BY FRANS ZWARTS
 ■ PHOTO BY ELMER SPAARGAREN





Mindwise: Reflections of an open science convert Why I changed my research practices – part 1

As a Master-level student I worked with a young and ambitious assistant professor at the University of Toronto. Sadly, Professor Z. and I did not get along very well, probably because of my Dutch directness and insensitivity to hierarchy, I thought. Three years later, however, it turned out that she had manipulated multiple datasets, including the data I had collected when I worked with her. I was appalled. Suddenly it made a lot of sense why working with her had been so difficult. However, this happened in the 1990s and for me the consequences were far from earth-shattering (though they were for Professor Z., who was fired). I adopted the joke that “z-transformation” had gained a different meaning and carried on with my PhD project.



About 15 years later I was on the promotion committee of one of Diederik Stapel's PhD students. I asked a question about a result that later turned out to be based on fabricated data. When I found out about the data fabrication, again I was appalled: I had not been able to tell fake from real at all. I had not even considered the possibility that the data might be fake. However, the magnitude, deliberateness, and shamelessness of Stapel's fraud seemed such an exception that I could think of nothing to take home from it. So, I carried on with my research in experimental psychopathology/clinical psychology, hardly paying attention to what was going on in adjacent areas of psychology.

Sure, I heard about p-hacking. I just did not think that it applied to me. After all, I was cautious, anxious even, to write up my studies as accurately as possible. Among all the data analytic possibilities that presented themselves, I was particularly critical of the ones that easily yielded $p < .05$. Often the results were difficult to interpret and I did not trust my data-analytic approach (Surely there must be a better way of remediating this awkward residual plot?). Indeed, a different approach would then lead away from statistical significance. This, together with doubts about the research method (Everybody else finds this effect, surely I must be doing something wrong!), resulted in a stack of unfinished papers in my file drawer.

Five years after Stapel's fraud first became known, I came across Brian Wansink's blog posts about how exploring data in every possible way can get you publications. The scientific community responded with outrage. On the

one hand, Wansink's data-dredging seemed far more extreme than the post-hoc analyses I used to do. On the other hand, I wondered what exactly, apart from the scale (huge) and intent (find a positive result no matter what), the differences were between him and I.

So, I wanted to find out what exactly is wrong with deciding which analytic route to take based on the data. As I browsed the internet, an online lecture by Zoltan Dienes caught my attention. Dienes described the problem that Gelman & Loken (2014) refer to as the garden of forking paths: the idea that every potential, often seemingly arbitrary decision in data analysis (e.g., how to construct a score; what to do with outliers) contributes to a different end-result. Indeed, it is like hiking: choosing either left or right at the first fork in the path (and the fork after that, and the one after that, etc.) will determine where you will have lunch ultimately. Dienes used the example of one particular published study that implicitly harboured 120 plausible combinations of decisions¹. A plot of the 120 possible difference scores for one particular variable (i.e., a multiverse) showed that their confidence intervals could contain exclusively positive as well as exclusively negative values, and mostly hovered around zero (i.e., no difference). Thus, despite what seemed a convincing effect in the paper, considering the full array of outcomes for that one variable should lead to the conclusion that really nothing can be said about it.

I was stunned. So many possibilities, and precisely one of those rare statistically significant occurrences had made it into the literature! Perhaps by coincidence, perhaps

because certain routes fit better with the authors' hypothesis than other routes? But regardless of why this particular result ended up in the paper, how can readers even know about those other 119? In addition to stunned, Dienes' lecture left me horrified. I realized that even though I had been motivated to steer my decisions away from the paths that would yield significance easily, the very steering with a direction in mind would yield conclusions that were just as likely to be biased as in Dienes' example.

So, now I am working on changing my research practices. No multiverse analyses (yet), but I try to protect myself against post-hoc bias by preregistering new studies before collecting data. There are different formats for doing so, and I like the one that requires me to be as detailed as I can. I find that hugely beneficial. Not only do I need to spell out the method (When to stop collecting data? How to construct a score given the various possibilities for this particular measure?) but also, I need to figure out which analysis I will use given various alternatives. Determining what to do in advance and staying with it saves me a lot of time and doubt later. There is an end-point. That doesn't mean I don't do exploratory analyses anymore. But preregistering helps me to be clear about what I promised myself I would do and what might be interesting other avenues to venture into.

Another (related) way in which I try to find my way in the garden of forking paths is by increasing transparency and openness. I am aware that this does not solve the problem that my conclusions are based on only one



set of decisions among multiple, equally plausible sets of decisions. However, being transparent about the route that led to a particular result should help others evaluate the value of the outcome. In addition, I hope that sharing my data openly enables others to understand the underpinnings of my claim better, and perhaps explore questions of their own with them. It can even help avoid publishing mistakes. So now I aim at posting all pre-registrations, study materials, and data in publicly accessible repositories, insofar as copyright and privacy laws permit. In addition, because I have come to believe that sharing should be common practice, I signed the Peer Reviewer Openness (PRO) initiative. PRO-signatories strive for more transparency by making comprehensive manuscript reviews conditional on open data and materials.

So, all's well that ends well, and I live happily ever after? Not exactly. In fact, I have found it hard to maintain my new research practices in a community that mainly relies on "old-school" reflexes. In parts 2 and 3 of this blog series, I will tell you why.

¹ Dienes used the example discussed in Steegen, Tuerlinckx, Gelman & Vanpaemel (2016).

■ BY INEKE WESSEL
 ■ IMAGE BY ZENGAME,
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Ineke Wessel

Ineke Wessel (Twitter: @InekeWessel) received her PhD degree from Maastricht University. She studies (emotional) autobiographical memory. Her research interests include the involvement of memory in the origins and maintenance of psychopathology and the malleability of emotional memories themselves, including false / recovered memories. Her work applies to clinical psychology (e.g. Memory processes in Posttraumatic Stress Disorder), as well as forensic psychology (eyewitness memory). Relatively recently she became fascinated with the question of what the current replication crisis in psychology may mean for clinical psychology.

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> **STAFF MEMBER COLUMN**

A short travel-survival-guide across the Land of Science

A recent online investigation of the RUG found that many PhD students are stressed, with quite a lot of them experiencing burn-out symptoms such as tiredness, low self-confidence and little joy in working. Luckily, only 20% of invited employees completed the online investigations and I have good hopes that the 80% who did not complete it, have more energy, more self-confidence and more joy in academic life and scientific work. Typically, people who recognize the topic under investigation tend to complete the questionnaire, while those that the matter does not apply to tend to skip it. As I cannot be sure of the latter, I feel the need to reach out to all PhDs in stress.

During your PhD, you are travelling through a beautiful country, the Land of Science. This travel can be rather interesting, even enjoyable, but you need to be aware of the potential stressors this land inhabits and know how

to handle them. Here is a list of the seven most common stressors that you may encounter and how to cope with them.



1. First week at the lab

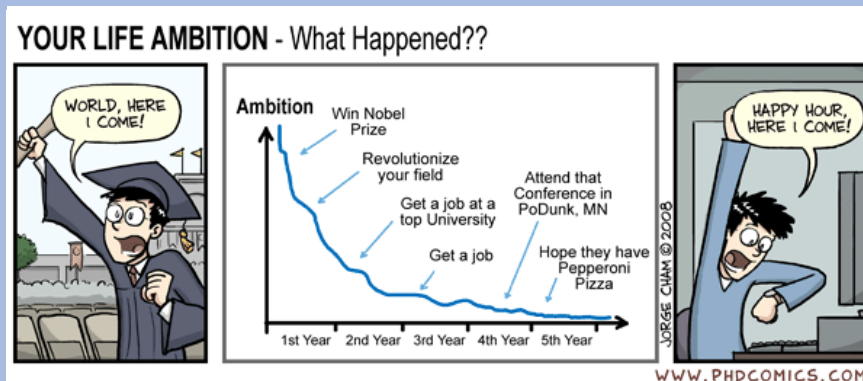
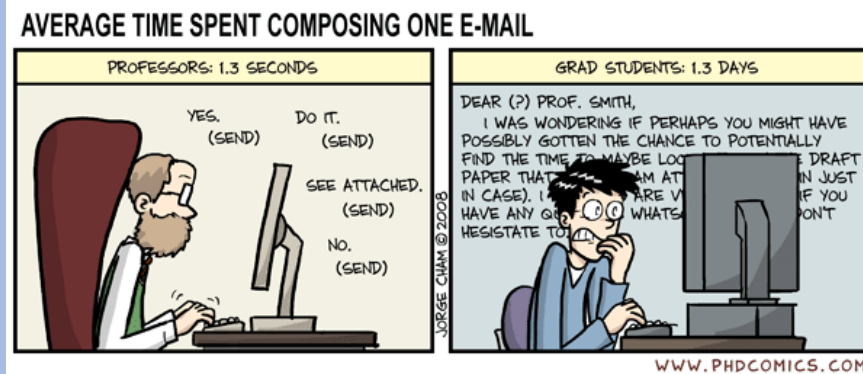
Welcome to RUG/ UMCG! You are most wanted and in fact most necessary. Yet, this does not mean that everything is ready for you to start in the first week/month. Given the bureaucracy of all large organizations, prepare for the likelihood that your first week(s) will not contain any science but instead will be a sheer search for basic needs: table, computer, badge, email, keys, etc. Consider it to be your first achievement when you have dealt with all of these things.

2. Ethics committee

The ethics committee is a group of dedicated people who (for the majority) hold additional full time jobs and have taken up the extra duty of checking your research plans without being paid or compensated to do so. In fact, these are good-willing human beings. As there are many different disciplines, the chance is high that there are no experts in your specific domain in the ethics committee. This means that they may misunderstand your plans, consider them not necessary or not relevant. Chances that your power calculation is considered inappropriate are close to 100%. How to handle this? Important is not to give up and not to doubt your research questions. Ask for a short personal communication with some of the members and let them explain how a solution can be found. Follow their recommendation as much as possible.

3. Negative finding

Science is always described as the progress in knowledge and understanding. Yet, the gait is typically that of one step forward and two steps backwards. We tend to write and read a lot about that one step forward, but neglect the two backward steps. As negative findings outnumber positive findings, prepare for your first experiment (and potentially also the second and third) to have negative findings. This is valid science and indeed useful science. Still, journals are not keen on publishing them. Make sure you stress the importance of publishing negative findings in your accompanying letter to the editor. It helps if your sample is large enough, so that a negative finding can provide solid conclusions.



4. Manuscript rejected

Over the last decades researchers have multiplied their output and hence journals are overwhelmed by submissions. More journals have been founded, but these new (often commercial) journals are not necessarily the ones you want to publish in. Before you submit, look up the acceptance rate at the journal site. If this is low: prepare for disappointment. Instead of selecting one journal with your supervisor, select a list of 3-4 journals which you will try one after the other. Send emails to editors who have rejected your manuscript asking for a revision if the reviewer did not raise too many concerns. Sometimes such requests can give you a second chance. Like negative findings, rejections are part of academic life and you'd better get used to them ASAP.

5. Scooped

You just made that one positive finding you hoped for. Your hypothesis is nicely confirmed and your new insight is important for many other researchers. Before you have finished your manuscript, another group has published on the exact same finding. That is bad news, as the first paper reporting a new finding usually finds a better journal than the second and third. If the first report is in a good journal, you may want to consider presenting your findings in the same journal, stressing the importance of independent replication in your accompanying letter. In fact, independent replication is the cornerstone of science, so your manuscript is very important. Next time, finish up in time, so that you are the first.

6. Complaint

One of the participants of your experiments (could also be one of the bachelor students you work with) takes personal offence at something you said/did. He wrote an angry letter to your supervisor, cc to the dean. This is annoying and perhaps not justified at all. Nevertheless, you would better take this very serious as neglecting the complaint may make things worse. Make sure you have a face-to-face meeting with this person and ask your supervisor to join you in this meeting. Let the person who complained talk and listen well without a defensive attitude. Find a good solution for both him/her and you. Let the complainer make suggestions for such a solution.

ADDRESSING REVIEWER COMMENTS

BAD REVIEWS ON YOUR PAPER? FOLLOW THESE GUIDELINES AND YOU MAY YET GET IT PAST THE EDITOR:

Reviewer comment:

"The method/device/paradigm the authors propose is clearly wrong."

How NOT to respond:

✗ "Yes, we know. We thought we could still get a paper out of it. Sorry."

Correct response:

✓ "The reviewer raises an interesting concern. However, as the focus of this work is exploratory and not performance-based, validation was not found to be of critical importance to the contribution of the paper."

Reviewer comment:

"The authors fail to reference the work of Smith et al., who solved the same problem 20 years ago."

How NOT to respond:

✗ "Huh. We didn't think anybody had read that. Actually, their solution is better than ours."

Correct response:

✓ "The reviewer raises an interesting concern. However, our work is based on completely different first principles (we use different variable names), and has a much more attractive graphical user interface."

Reviewer comment:

"This paper is poorly written and scientifically unsound. I do not recommend it for publication."

How NOT to respond:

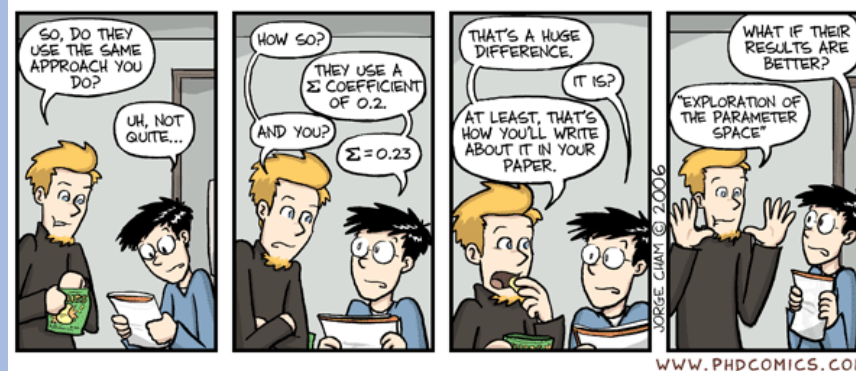
✗ "You #@% reviewer! I know who you are! I'm gonna get you when it's my turn to review!"

Correct response:

✓ "The reviewer raises an interesting concern. However, we feel the reviewer did not fully comprehend the scope of the work, and misjudged the results based on incorrect assumptions."

www.phdcomics.com

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7. Experiments not finished after four years

Things often go slower than anticipated. Ethics has taken more time, essential equipment was delayed, inclusion was slow. Nevermind! Start writing your PhD thesis in time and have your introduction, discussion and as many chapters as possible already finished in the third year. There is no need to have at least four publications for a PhD. Write a thesis with the data you do have and finish additional experiments as a postdoc.



So, these are the most common stressors you may encounter during your PhD travel. Some of you will encounter all seven. I am sure you will now handle them well. Meanwhile, I hope you don't forget to enjoy your travel, as this is a journey into curiosity that inspires you and offers you a dive into deep waters, to boldly go where no scientist has gone before. Writing a thesis (or an article) is an act of art. You are giving words to

your thoughts, creating a line of thoughts that no one has created before. Sharing ideas and findings with the world. You are not only a scientist, but an artist too. Be proud of your good work and don't be afraid to fail.

- BY IRIS SOMMER
- PHOTO BY MAXIM GIEL



> *"It is in terms of equally shared responsibility, and not expertise, that the relationship between scientists and the public may be egalitarian."*

Mindwise debates: Tired of experts!

Many of us no longer perceive science as extraordinary. Institutionalized, commodified, within a couple of clicks distance, one could argue that science is just another industry. Thrilling through its failures more often than through its successes, science is revealed as an enterprise prone to bias and fraud, often governed by personal interests and embedded in corporate power dynamics - profoundly human, according to some; profoundly flawed, according to others. Skepticism towards science, oversaturation with scientific produce, and the resulting growing confusion and exasperation of the public beg several captivating questions. First, are the aforementioned phenomena symptomatic of a downfall of the role of science in society? It may be the case, given the increasing number of people inhabiting "alternative" epistemological discourses, such as flat-earthers, anti-vaxxers, and climate change deniers.

Since a vocal and significant part of society is adopting a nihilistic and relativistic stance in their understanding of reality, claiming to be tired of experts and of being patronized under the aegis of scientific truth, what should the relationship between experts and the public be? Lastly, one may wonder whether the demystification of science is an opportunity to grow as a society rather than take refuge in alternative truths, and, if so, what that would entail. These are the questions we tried to unravel within the last mindwise.debates event, titled Tired of experts!, which brought together two teams composed of students and staff members from RUG, and a delightfully inquisitive audience.

Márton Iritz, Rebeka Béres, and Lucy Avraamidou emphasized the dangers of confining science to the lab, the university, and the academic circle, arguing for an egalitarian relationship between experts and the public. Keeping

the processes of science obscure from the general public may result in distrust and reactance; most often, however, it is disinterest that it generates. The mystified image of science, defined by jargon, status symbols, and de-contextualized facts, deters potentially interested and interesting members of the public from meaningfully engaging with and contributing to science. An egalitarian relationship would bring to the surface uncomfortable questions related to the limitations of research methods and the specificity of the reached conclusions, about moral responsibility, politics, and governmental interests related to various research agendas. Most importantly, the team argues, it would create a sense of shared responsibility and restore trust. Defining this relationship as egalitarian doesn't imply erasing the difference in expertise between scientists and the public. As argued by the team composed of Alin Rotaru-Segall, Marcela Frătescu, and Marteen Derksen, expertise is inherently hierarchical; we can't all be experts on everything. Activating within a scientific field doesn't only come with substantial explicit expertise, but also with a set of tacit skills that can't be acquired otherwise. Thus, it is in terms of equally shared responsibility, and not expertise, that the relationship

between scientists and the public may be egalitarian. This is where the issue of growing as a society comes in. What is the most wholesome way to distribute and exercise this responsibility? Expertise is dynamic and situation-bound; one may find oneself being an expert in the lab, and a member of the public in a museum. While acknowledging that taking responsibility for one's epistemic health is primarily an act of self-empowerment, discussing this question in the dichotomous context of experts and the public does prove enriching. In order to be in a position where epistemic growth is possible, those identifying as the public should be able to challenge and integrate the conclusions proposed by those identifying as experts. To that end, meta-expertise, knowledge about how science (or other endeavor, for that matter) works in practice, is necessary. The public should have basic knowledge of the empirical process and of the scientific method. Institutional accreditation of expertise should be more rigorous. Science should be more open and transparent, and access to its fruits - universal. Lastly, dialogue should be central - exciting, risky, engaged, and authentic dialogue not between experts and the public but between individuals searching for meaning.

The event series mindwise.debates comes as an acknowledgment of this titanic task we face as individuals and as a collective: reconciling and creating nuanced, complex narratives that would allow us to thrive. We invite you to join us.

> *"Since a vocal and significant part of society... claims to be tired of experts and of being patronized under the aegis of scientific truth, what should the relationship between experts and the public be?"*

■ BY VALERIA CERNEI

Originally published by Mindwise
<http://mindwise-groningen.nl/>



Mindwise debate:
Neuroscience can make the
diagnosis of mental disorders
objective

Call for participants

Are mental disorders brain disorders? Can neuroscience make their diagnosis objective? At the next Mindwise debate two teams composed of staff members (André Aleman and Markus Eronen) and students (we're looking at you...) will tackle the role and implications of neuroscientific findings in the diagnostic process of mental disorders. Join the conversation on the 20th of November at 20:00 in the Aula (Academy Building), and if you would like to be on one of the debating teams, contact Valeria Cernei, v.cernei@student.rug.nl. For a retrospective on the previous event and a reflection on the driving force behind these debates, we invite you to read Mindwise debate: Tired of Experts! 'published in the current issue of the BCN Newsletter'.

■ BY VALERIA CERNEI





The art of science: Music and the brain: are we a musical species by the click of a mouse?

I enjoy working after eight at night in my office. By that time no one is around. At that time I do most of my reading and with nobody around, I put on some music. I always wondered why reading and listening to music always worked for me. But the reason why I enjoy so much my reading soirées at the office is that I enjoy the tranquility of an almost empty faculty of medicine building and the pseudo-working environment that motivates me to get things done. I always wondered why music has allowed me to focus on certain monotonous tasks, from reading for hours to riding for over 100km my bike. One of those nights I found myself watching a documentary instead of reading. And with a click of a button, I found myself inadvertently learning how music, art, and neuroscience all intersect. The documentary titled “Brain beats – a journey into our sonic future” written and directed by Andrea Lamount allowed me to get a quick glimpse at some of the neuroscience behind sound and music.

This documentary presented by Deutsche Welle as “The future of sound, noise & music” presents an outlook on how the world of music is impacted by research in the field of neuroscience. Among the neuroscientists interviewed are Dr. Daniela Sammler and Dr. Thomas Fritz of the Max Planck Institute for Human Cognitive and Brain Sciences in Leipzig, as well as Dr. Mara Dierssen Sotos from the Centre for Genomic Regulation in Barcelona,

Spain. This documentary is directed towards the general public and in less than 45 minutes provides an appealing narrative that is understandable to the non-neuroscientist; however, it is pleasantly engaging to those of us that get paid to unveil how the brain works. The documentary presents a diverse range of theories and viewpoints related to the evolutionary meaning of sounds and music, the mechanisms behind music processing, the

synergy behind music and exercise, and the creation of music through emotions. The next time you find yourself in a pseudo-working environment and with 45 minutes to spare, an interesting documentary is only one click away. Available at <https://www.youtube.com/watch?v=8jOTHlbJVus>

■ BY JAIME MONDRAGÓN

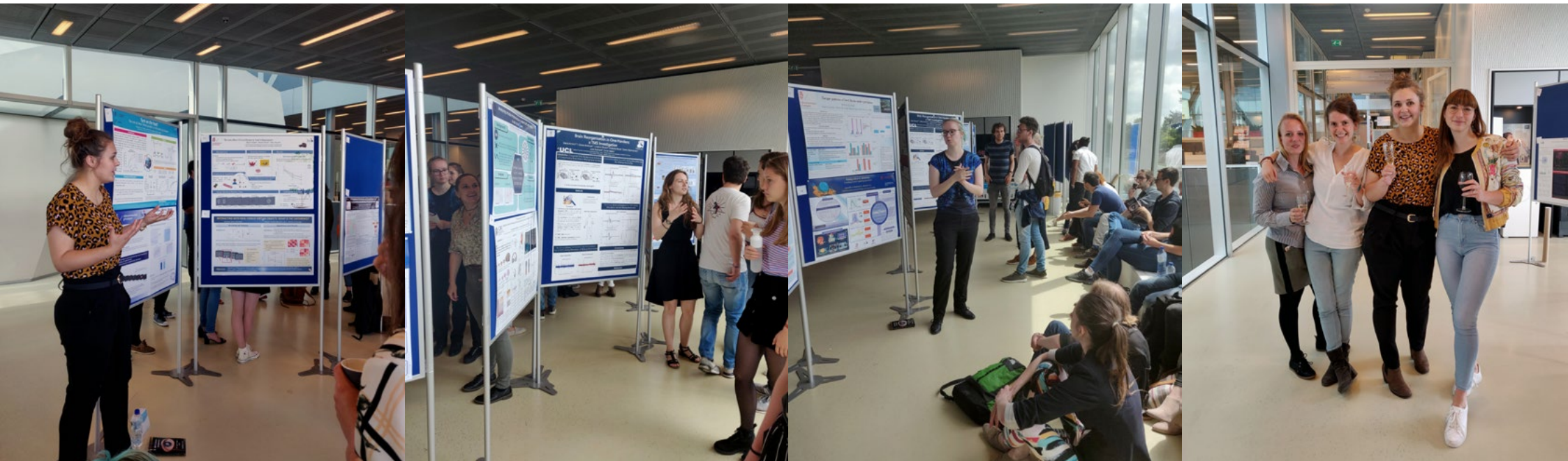


BCN Summer Symposium

> *'Perceptual distortions experienced inspired Lewis Carroll to let Alice grow larger, smaller and other bizarre experiences in his Alice in Wonderland book' <*

The BCN Summer Symposium was a two-day event where the master students of the Behavioural and Cognitive Neurosciences programme presented their research projects to the rest of the cohort. As part of the programme, students are expected to work on a research project for a period of 5-6 months. Many of them move to different parts of the world in pursuit of their academic interests. The aim of this symposium is to bring everyone back together and share their learnings and experiences from their projects with the rest of the class. The symposium took place on the 1st and 2nd of July at the Bernoulliborg of the Zernike Campus. Around seventy students attended the symposium. The two

keynote speakers were Professor Jan Dirk Blom and Dr. Ingo Willuhn. Prof. Jan Dirk Blom delivered a lecture on the 'Alice in Wonderland' Syndrome, which consists of perceptual distortions that are different from hallucinations. Patients with intact eyesight may not be able to perceive movement or may see a distorted image of themselves in the mirror. These bizarre experiences often occur in isolation of psychotic disorders. Research in this field is crucial for diagnosis, therapy and to differentiate between other disorders like schizophrenia. Some believe that the famous author of the book Alice in Wonderland, Lewis Carroll, suffered from symptoms similar to Alice in Wonderland Syndrome. In addition, the



perceptual distortions experienced in its context inspired him to let Alice grow larger, smaller and other bizarre experiences in the book.

On the second day, Dr. Ingo Willuhn presented his work on the 'Coordinated heterogeneity of dopamine signalling throughout the striatum.' Dopamine plays an integral role in the acquisition and execution of a variety of movement behaviours. However, the anatomical organization, connectivity of dopaminergic neurons in and its contribution to behavioural outputs in the striatum is not well understood. Dr. Willuhn attempted to resolve this discrepancy by outlining the functional domains of the striatum that receive dopamine signals

and how these signals are coordinated. Ultimately, these signals influence shape motivation, movement and reward learning.

Finally yet importantly, a selected number of students also presented their research findings in the form of a presentation followed by a short discussion. The remaining presented their work orally with the help of a poster. The Summer Symposium was perfectly placed towards the end of the academic year. Over the course of the symposium, students were exposed to a variety of research work from their fellow classmates and from experts in the field. They were thought provoking and inspiring. In addition, the symposium facilitated a social

gathering for everyone to catch up after being apart for several months. It was wonderfully organized and served as a perfect culmination to the academic year.

■ TEXT & PHOTOS BY
NAMRATA RAO MANGINA

> *'The Summer Symposium was perfectly placed towards the end of the academic year.'* <



> COLUMN: BITS & PIECES

Preaching to the choir

Red. This is the color of our university. It's also the color of my hair. And it's the universal color of protest. Therefore, during the opening of the academic year, the caps of many professors were colored red. This was unique, because although right winged politicians love to see academia as a leftist progressive bastion, professors usually don't stand on the barricades. But now they did. And it was necessary.

This subtle and respectful sign of protest was actually a sign of support. Support for more ambitious funding of academic research and education, and for a proper recognition of the importance of the breadth of academic disciplines represented at the University of Groningen. It was a reaction to the publication of the report of commission van Rijn about financing higher education and research in May 2019.

It was commissioned by the Minister of Education, Culture and Science and Scholarship, Ingrid van Engelshoven, to advise on how to deal with, amongst others, the shortage of funding for the natural sciences and technology sector. Though the report presents a proper analysis of the current problems in higher education, I believe that the commission should have stopped at that point. They shouldn't have accepted the part of proposing a solution. Why? The assignment came with one condition: no extra money was to be spent on higher education.

In their recommendations, pushed through Dutch Parliament in June this year, commission van Rijn argued that the technical sector and natural sciences should indeed get extra money and that this money would have to come from the medical and social sciences, and humanities. Because the money is distributed to the universities via a 'lump sum' - meaning the use is not specified in much detail - these reallocations imply that while technical universities receive more money, broad universities hosting also non-technical fields are to face major budget cuts. This also poses a devil's dilemma for the boards of broad universities, like the UG, on how to distribute their lump sum. They can

decide to soften the landing and divide the money as before, meaning a little less for all. However, this would disadvantage academics at the faculty of Science and Engineering who would receive relatively less than their colleagues at technical universities. Alternatively, if the UG decides to reallocate the money to the sole benefit of the faculty of Science and Engineering, other faculties will suffer and see a substantial increase in work pressure when the quality and output in education and research is to be maintained.

In other words, it will be bad no matter what the board decides. But from a more fundamental perspective, this development is more than unsettling. No field is more important than others. We know that all major societal challenges ask for exactly the multi-disciplinary approach that broad universities can offer. For example, the aging population poses many medical, economic, social, technical and ethical challenges. Digitalization and the energy transition sound very technical, but we know (especially here in Groningen) they have many economic, sociological, legal, and behavioural components that can hinder efficient transition. Google doesn't know how to get enough linguists to help them with advancing their technology,

so even they see the value of multi-disciplinarity....

To conclude: I think this is unfair, and wrong. Of course, making government policy is not easy given that society has many needs that all deserve to be financed. But if we want to have a truly knowledge-based economy it would be really wise to invest in higher education in a more ambitious manner in this time of economic growth. A manner that acknowledges the necessity of all academic disciplines for facing the challenges of the future.

I know, I know, I'm preaching to the choir of the interdisciplinary Behavioural, Cognitive and Neuroscience community that fully embraces the value of natural, medical and social sciences and the arts. Thank goodness.

- BY MARIE-JOSÉ VAN TOL
- PHOTO MARIE-JOSÉ BY SANDER MARTENS
- PHOTO CISCA WIJMENGA & MARIE-JOSÉ BY RTV NOORD / EVA HULSCHER



> *it would be really wise to invest in higher education* <

Dear fellow BCNers,

As your PhD council, we are constantly working to support our community. We promote educational events to improve our knowledge and also organize social activities so you can network with your fellow PhD students. We are always open to hear your opinion about which kind of events and/or activities you would be interested in. So, if you have suggestions and ideas, or want our support for events, symposiums, interesting speakers you want to attract, or you want to share your general concerns about current policy, please don't hesitate to send us an email to us (see below), we will be always trying our best to help and support you. Remember that you are always welcome to join our council and help us to broaden our capacity to improve PhD education and life. Contact us by email: bcnphdcouncil1@gmail.com

BCN PhD council news

- We sent around a survey about ethical approvals (METc and CCD) needed for research, and we detect some issues that we discussed with the BCN board. This has been addressed and if you are interested

on knowing more about this topic, you can join the MEET & GREET met de METc UMCG event on September 10th from 15.00 to 18.00 hrs in the Ronde Zaal. You can subscribe to this event by sending an email to metc@umcg.nl.

- As you may know, all BCN students have mandatory statistics training (BCN statistic course). If you think that there is another statistical course that for you will be more useful, you can always write Diana Koopmans (BCN coordinator) to ask about the possibility of doing your preferred course instead of the BCN statistics one.
- We are currently planning a statistics workshop and master class in statistics. We will keep you updated as soon as everything is ready!

BCN summer borrel

On Thursday 11th of July we organized the BCN summer borrel. With joy all PhD students could gather together and share a good moment with beers and snacks. Thank you very much for the attendance and we hope to see more friendly faces at our next events, so we can meet each other.

Existing members



Rodrigo Moraga Amaro (chair)
Nuclear Medicine and
Molecular Imaging,
UMCG



Sebastián Balart Sánchez
Neurology, UMCG



Hermine Berberyan
Bernoulli Institute,
FSE



Mayra Bittencourt Villalpando
Neurology, UMCG

New member



Emile D'Angremont
Cognitive
Neuroscience Center,
Department of
Biomedical Sciences
of Cells and Systems
(UMCG)

Hi!

My name is Emile d'Angremont and although that is a French name, I am as Dutch as you find them. I studied Technical Medicine in Enschede and since May of this year I started a PhD within the BCN in the beautiful city of Groningen! I decided to join the council to get to know the community and to do a little more than only minding my own business. My research is on Parkinson's disease, what about yours?

> PHD AND OTHER NEWS

BCN Orientation Course

The Orientation Course has started on September 6, a compulsory course for all BCN Research Master Students and for new BCN PhD students. Of course, those who did not attend yet, are welcome too. Other course data are: September 20, October 4 & 18, November 1 & 22, 2017.

BCN Symposium

Block off November 15 in your agenda! A committee is working hard to offer you an interesting BCN Symposium entitled: Connecting levels of neuroscience through computational modeling

These speakers already accepted the invitation:

- Sam Johnson, School of Mathematics University of Birmingham
- Herbert Jeager, CogniGron, Groningen Cognitive Systems and Materials Center
- Petra Ritter, Brain Simulation Section, Dept. Neurology, Berlin
- Demian Battaglia, Institut de Neurosciences des Systèmes, Marseille
- Andre Marquand, Radboud University, Nijmegen
- Fleur Zeldenrust, Donders Institute for Brain, Cognition and Behaviour, Radboud University, Nijmegen

More information will soon be available.

Reimbursement of external courses and conferences

BCN gives you the possibility to take external courses and to present your work on conferences. If you would like to receive a reimbursement, please download the application form, which you can find on the BCN website. Please send the form (signed!) by snail mail! to Diana and add:

- an outline of the costs
- receipts, invoices or proofs of payment (please circle the amount)
- a letter/email of invitation or accepted lecture or poster (conference)
- a short course description (course)

Agenda BCN Activities:

September 6, 2019:

start BCN Orientation Course

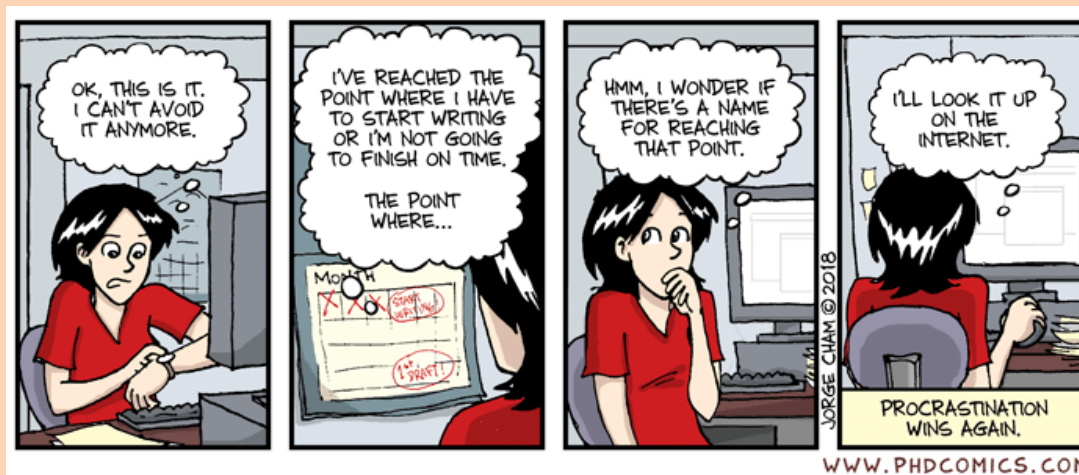
November 15, 2019

BCN Symposium "Connecting levels of neuroscience through computational modeling"

Course application: <https://cursus1.webhosting.rug.nl/gsms/courses/>

Please check the website for more detailed information.

■ BY DIANA KOOPMANS



> GRAND STUFF

Philosophical research in Groningen judged “excellent”

An international research assessment committee, which has evaluated philosophical research in the Netherlands, has judged the research conducted at the Faculty of Philosophy in Groningen as excellent, giving it the maximum score of 1 on all three categories: [1] quality of research; [2] relevance to society and [3] viability.

The committee also values the Kenniscentrum Filosofie (Knowledge Center Philosophy), which encourages and coordinates projects at the interface between philosophy and society. The committee concludes that the Groningen Faculty, as one of the last independent faculties of philosophy in the Netherlands, “is an exceptionally attractive place to work”.

<https://www.rug.nl/filosofie/organization/news-and-events/news/2019/philosophical-research-in-groningen-judged-excellent>

‘Impossible’ breakthrough in molecular photocontrol

A consortium of scientists from the Medical Imaging Center (University Medical Center Groningen), Van ‘t

Hoff Institute for Molecular Sciences (University of Amsterdam), Palacky University in Olomouc, the University of Nantes and the European Laboratory for Non-Linear Spectroscopy in Florence have developed an entirely new class of molecular photoswitches that meet many of the ‘holy grail’ requirements so far thought to be impossible to achieve. The results have been published in Nature Communications.

Wiktor Szymanski and Mark Hoorens are involved in this.

<https://www.rug.nl/news/2019/06/a-fast-all-visible-light-molecular-switch-with-100-nm-band-separation>

Funding for three new UG PhDs in the humanities

Research ranging from studies into online media fandom, the Landscape of the



■ PHOTO BY GERHARD TAAGTEN

Northern Netherlands as Critical Material and speech planning and monitoring in Parkinson’s disease: three talented emerging UG researchers will spend the next few years carrying out research projects, thanks to funding from the NWO PhDs in Humanities programme.

One of these projects is called “Speech planning and monitoring in Parkinson’s disease” by Martijn Wieling, with T. Rebernik as the candidate PhD student. <https://www.rug.nl/news/2019/06/funding-for-three-new-ug-phds-in-the-humanities>

Research into the approach of negative body image through ‘unconscious conditioning’ receives NWA Idea Generator Grant

A negative body image is a core symptom of a number of serious mental disorders. Irina Masselman, Klaske Glashouwer and Peter de Jong from the Department of Clinical Psychology and Experimental Psychopathology at the University of Groningen aim to investigate whether a negative body image can be treated with a new method of ‘unconscious evaluative conditioning’.

<https://www.rug.nl/gmw/psychology/news/onderzoek-naar-aanpak-negatief->

[lichaamsbeeld-door-onbewust-conditioneren](#)

Projects of Marie-José van Tol and Robert Havekes receive funding through the NWA Idea Generator Grant

The NWO has granted funding to 37 out-of-the-box research ideas. An important aspect of the projects is a possible societal impact. Each of the researchers will receive €50.000 to work with various parties in society to further develop their ideas on a small scale.

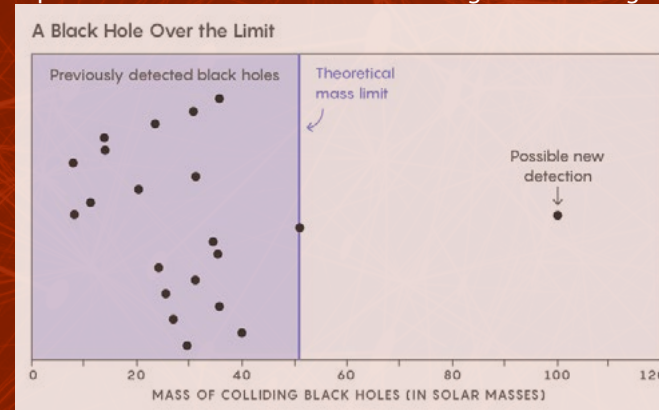
<https://www.rug.nl/news/2019/07/zeven-rug-projecten-krijgen-financiering-via-de-nwa-ideeengenerator>



■ PHOTO BY UMCG

Cool links

- > Researchers from Heriot-Watt University have successfully welded together glass and metal, using an ultrafast laser system where the laser pulse lasts only a few picoseconds; a picosecond to a second is like a second compared to 30,000 years. <https://phys.org/news/2019-03-welding-breakthrough.html>
- > Physicists at the LIGO and Virgo gravitational-wave detectors have been discussing reports of a black hole with a mass so large it was thought to be physically impossible



Lucy Reading-Ikkanda/Quanta Magazine; Source: LIGO-P1800307-v7 Table III

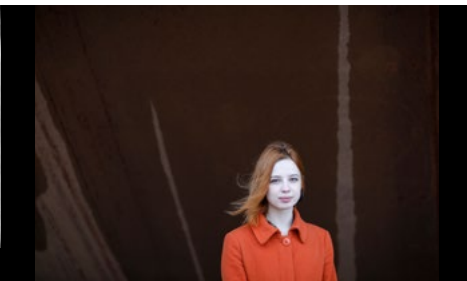
<https://www.quantamagazine.org/possible-detection-of-a-black-hole-so-big-it-should-not-exist-20190828/>

- > A rare genetic mutation has been identified that allows people to be fully rested with only 4-5 hours of sleep per night. [https://www.cell.com/neuron/fulltext/S0896-6273\(19\)30652-X](https://www.cell.com/neuron/fulltext/S0896-6273(19)30652-X)
- > Researchers suggest for people that are dating, frequent emoji use is associated with maintaining a connection beyond a first date as well as more romantic and sexual encounters. <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0221297>

■ BY ANNA NEUSTAETER



Anna Leonte



Valeria Cernei



Michiel Hooiveld



Abigail Toth



Evelyn Kuiper-Drenth



Sander Martens

New staff writers wanted!

Do you enjoy reading the Newsletter? If so, why not join our enthusiastic editorial team and make it even better? Regardless of whether you're a master student or PhD student, it's a great way to expand your network, improve your English writing skills, and be actively involved in BCN. Interested? Send an e-mail to Sander Martens, sander.martens@gmail.com!

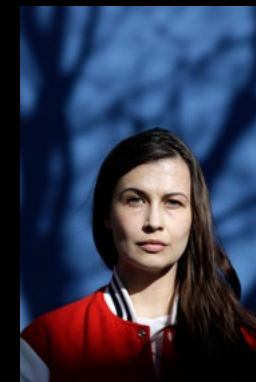
Elouise Koops



Jaime Mondragon



Anna Neustaeter



Floor Arts



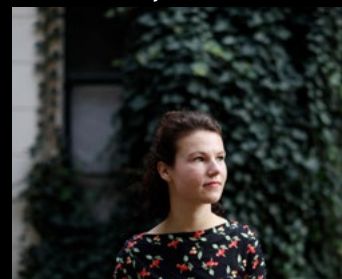
Sebastian Balart-Sanchez



Namrata Rao



Marlijn Besten



> PROMOTIONS

RECTIFICATION Edition 114

A move ahead: Research into the physical activity support of people with (severe or profound) intellectual disabilities

P H D S T U D E N T

L.W.M. Bossink

T H E S I S

A move ahead: Research into the physical activity support of people with (severe or profound) intellectual disabilities

P R O M O T O R S

Prof.dr. A.A.J. van der Putten

Prof.dr. C. Vlaskamp

F A C U L T Y

Behavioural and Social Sciences

Aandacht voor bewegen in de ondersteuning van personen met een (zeer) ernstige verstandelijke en meervoudige beperking van groot belang. Personen met een (zeer) ernstige verstandelijke en meervoudige beperking worden in de huidige ondersteuning slechts in geringe mate motorisch geactiveerd. Zij kunnen hierdoor onvoldoende profiteren van de positieve effecten die bewegen voor hen kan hebben. Dit blijkt uit het onderzoek van Leontien Bossink.

Om deze situatie te veranderen is het belangrijk om oog te hebben voor de rol en het gedrag van zorgprofessionals. In één van de studies beschreven in dit proefschrift gaf de meerderheid van de geïnterviewde zorgprofessionals gaf aan dat zij zich bewust zijn van het belang van bewegen en ook hun eigen ondersteunende rol daarbij. De specifieke kenmerken van de doelgroep werden veelal wel als een belemmering omschreven. Het is opmerkelijk dat Bossink ook aantoont dat het juist de kenmerken van de zorgprofessional zelf zijn die bijdragen aan de verschillen in het gedrag van de zorgprofessionals. Om de kwaliteit van de door zorgprofessionals geboden ondersteuning te vergroten is het van belang om een passend leertraject te gaan ontwikkelen.

Ten slotte anticipeert Bossink met haar onderzoek op een trend in de praktijk gericht op de ontwikkeling van diverse beweeginitiatieven voor personen met een (zeer) ernstige verstandelijke en meervoudige beperking. De effectiviteit van een interventie waarbij beweegbanken worden ingezet staat centraal. De resultaten laten zien dat de interventie uitvoerbaar is voor personen met een (zeer) ernstige verstandelijke en meervoudige beperking, maar

dat er geen effect is op de verwachte uitkomstmaten. De noodzaak om praktijkinitiatieven wetenschappelijk te (laten) onderbouwen wordt hiermee onderstreept.

Leontien Bossink deed haar promotie-onderzoek bij de afdeling Orthopedagogiek van de Faculteit Gedrags- en Maatschappijwetenschappen. Zij werkt momenteel als gedragswetenschapper bij de 's Heeren Loo zorggroep. Daarnaast zal zij vanaf 1 april werkzaam zijn als postdoctoraal onderzoeker binnen de Academische Werkplaats EMB.

Leontien Bossink (1989) did her doctoral research at the department of Orthopedagogy in the Faculty of Behavioural and Social Sciences. She now works as a behavioural scientist at 's Heeren Loo zorggroep'. Furthermore, as of April 1 she works as a postdoctoral researcher with the 'Academische Werkplaats EMB.' She was promoted cum laude on March 21, 2019.

Adaptive seating and adaptive riding in children with cerebral palsy: In children with cerebral palsy

P H D S T U D E N T

M. Angsupaisal

T H E S I S

Adaptive seating and adaptive riding in children with cerebral palsy: In children with cerebral palsy

P R O M O T O R

Prof.dr. M. Hadders-Algra

C O P R O M O T O R

Dr. S. la Bastide-van Gemert

F A C U L T Y

Medical Sciences

Physiotherapeutic interventions in children with cerebral palsy (CP) are generally focusing on the child's functioning and his/her ability to perform activities in daily life. Children with CP perform many daily activities in the sitting position, such as reaching while eating, playing, or during school tasks. This functional activity largely depends on the ability to control posture, balance, and arm and hand motor skills. Thus, many interventions aim to enhance the child's postural control and upper extremity function. The need of children with CP to improve mobility has led to

>> CONTINUATION PROMOTIONS

the development of seating interventions and the adaptive riding intervention. This thesis suggests that in children with spastic CP functioning at GMFCS levels I-III two forms of postural interventions, i.e., specific forms of adaptive seating and adaptive riding, may improve children's functioning, and enhance their postural control during sitting while performing arm reaching. - In children with US-CP, GMFCS levels I-III, FW-tilting with foot-support is associated with better reaching performance; in children with BS-CP, GMFCS levels I-III, a horizontal seat surface with foot-support is associated with better reaching. The feasibility study on TDAR intervention in children with BS-CP, GMFCS level III, suggested not only that TDAR intervention and the complex evaluation protocol were feasible, but also that 6 weeks of TDAR may be associated with improved gross motor function and postural adjustments. Our systematic review on the effect of AdSS in children with severe CP (GMFCS levels IV-V) revealed that the nine best studies available had a low level of evidence. Most promising seems to be AdSSs consisting of a combination of trunk and hip support which may be associated with better postural control and – in turn – better upper extremity

activity. This type of AdSS may also be provided as a special purpose AdSS, that may have the potential to improve children's activities and participation. It should be realized that the low level of evidence of the available studies precluded firm conclusions. This implies that additional research in this area is urgently needed.

Mattana Angsupaisal (1973) studied Physiotherapy at the Chiang Mai University in Northern Thailand and the University College in London. Furthermore, she worked as a Physiotherapy teacher at the Naresuan University in Northern Thailand. She did her doctoral research at the 'Instituut voor Ontwikkelingsneurologie' of the Beatrix Children Hospital of the University Medical Center Groningen. Now she works as assistant professor of Physiotherapy at the Naresuan University in Thailand. She was promoted on May 6, 2019.

Segmentation and quantitative analysis in whole-body PET imaging

PHD STUDENT

M. Zhuang

THESIS

Segmentation and quantitative analysis in whole-body PET imaging

PROMOTORS

Prof.dr. H. Zaidi

Prof.dr. R. Boellaard

Prof.dr. M. Koole

FACULTY

Medical Sciences

ET is widely adopted in clinical oncology to investigate the biochemical characteristics of malignant lesions. This thesis focused mainly on the quantitative analysis of PET data, which could be of value to clinical physicians and researchers. Chapter 1 briefly introduced the background and outlines of the studies conducted in this thesis. In Chapter 2, we focused on the development and evaluation of a novel and robust method for automatic segmentation using an active contour model (MASAC), providing a useful tool to delineate metabolically active tumor volume (MATV) in PET images.



■ COVER BY MINGZAN ZHUANG

Chapter 3 investigated the variability and repeatability of quantitative metrics as a function of segmentation method, user interaction, uptake interval and reconstruction protocol, to understand the potential relationships among these aspects. In Chapter 4, we developed a novel dynamic whole-body (WB) anthropomorphic PET simulation framework to assess the potential benefits of dynamic PET imaging. Chapter 5 investigated the impact of tissue classification in MRI-guided attenuation correction (AC) on WB Patlak PET/MRI. In summary, this thesis provided novel and useful tools for PET imaging. It also carried quantitative analyses on both conventional SUV and parametric Ki images. The proposed tools and results presented in this thesis may be used as a guide to quantify various types of oncological malignancies in PET imaging. Further studies are required to establish a benchmark with different imaging procedures on various PET scanners to evaluate their performance in different clinical scenarios.

Zhuang Mingzan (1983) studied Applied Physics at the Dalian University of Technology (China) and obtained his master degree in Radiation Medicine at

the University of Shantou (China). He did his doctoral research at the department Nuclear Medicine and Molecular Imaging at the University Medical Center Groningen. He was promoted on May 8, 2019.

VPS13A: shining light on its localization and function

P H D S T U D E N T

A.I.E. Faber

T H E S I S

VPS13A: shining light on its localization and function

P R O M O T O R

Prof.dr. O.C.M. Sibon

C O P R O M O T O R

dr. B.N.G. Giepmans

F A C U L T Y

Medical Sciences

The rare neurodegenerative disease Chorea-Acanthocytosis (ChAc) is caused by mutations in the VPS13A gene leading to absence of the VPS13A protein in patients. Lack of VPS13A causes neuronal cell death and patients develop movement disorders. Currently, no treatment is available and patients die prematurely. Knowledge about the underlying disease mechanisms of ChAc



■ PHOTO BY SONNY TIWOW

is limited and here we aimed to gain more insight in the localization and function of VPS13A. For this we used fruit flies in which we knocked out the Vps13 gene in several ways, including the gene editing technique CRISPR/Cas9. Those flies can therefore serve as a model organism for the disease. Mutated flies had a shortened life span, developed motor problems and showed disturbances in protein homeostasis. In addition, those flies showed vacuoles in the brain characteristic for neurodegeneration. Next to a role for Vps13 in the central nervous system, it is also important in the ovaries of fruit flies in which the protein is enriched and is surrounding nuclei that need to be removed. Here Vps13 is required for proper and timely removal

of those nuclei through the formation of a specific membrane structure. Using human cell lines we found that VPS13A binds to different cellular organelles and is important for establishing contact sites between different membranes. An increase in cellular lipid content caused relocation of the protein. This thesis provides insights in the localization and function of VPS13A and contributes to the body of knowledge about the cellular processes in which VPS13A plays a role.

Anita Faber (1988) studied Behavioural and Cognitive Neurosciences at the University of Groningen (RUG). Now she is a trainee Obstetrician at the 'Academie Verloskunde Amsterdam Groningen'. She was promoted on May 15, 2019.

>> CONTINUATION PROMOTIONS

Lipocalin 2 and the pathophysiology of Alzheimer's disease

P H D S T U D E N T

D.W. Dekens

T H E S I S

Lipocalin 2 and the pathophysiology of Alzheimer's disease

P R O M O T O R S

Prof.dr. P.P. de Deyn

Prof.dr. U.L.M. Eisel

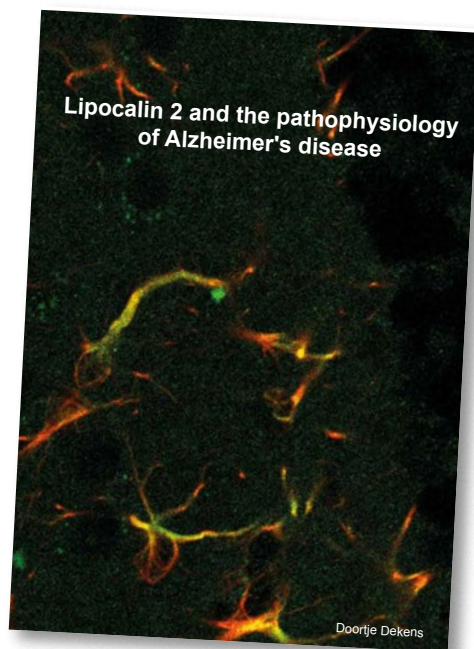
C O P R O M O T O R

dr. P.J.W. Naudé

F A C U L T Y

Medical Sciences

Alzheimer's disease (AD) is a devastating brain disease, causing progressive cognitive problems and behavioral changes. No therapies are available yet to efficiently slow down, prevent or cure this disease. This clearly indicates that our understanding of the pathophysiology of AD is still incomplete. However, it is becoming increasingly clear that chronic inflammation in the brain (termed 'neuroinflammation') plays an essential role in the development and progression of AD. As such, the cellular and molecular mechanisms involved in chronic neuroinflammation are



■ COVER BY DOORTJE DEKENS

being studied intensively, with the aim to obtain a better understanding of the pathophysiology of AD and to find efficient treatments for AD. Our group previously identified Lipocalin 2 (Lcn2) as an inflammatory factor that potentially contributes to AD pathology. In this thesis we aimed to gain more insight into the role of Lcn2 in AD. The results show that Lcn2 protein levels are increased in the human AD brain as well as a mouse model of AD. We also

report that Lcn2 does not affect major pathological characteristics (such as memory problems) in an AD mouse model, but does contribute to brain iron accumulation and lower body weight. Furthermore, we propose iron chelators as possible inhibitors of AD-related Lcn2 overproduction in the brain, and provide more insight into the potential suitability of Lcn2 (in cerebrospinal fluid) as a biomarker for AD diagnosis. Altogether, the results from this thesis indicate that Lcn2 affects certain pathological processes in AD, and may be a valuable therapeutic target and diagnostic marker for AD.

Doortje Dekens (1990) studied Behavioural Neurosciences at the University of Groningen. She did her research at the Alzheimer Center Groningen (department Neurology, University Medical Center Groningen) and the department Molecular Neurobiology (Groningen Institute for Evolutionary Life Sciences, University of Groningen). The research was financed by the Research School of Behavioral and Cognitive Neurosciences (BCN) and the 'Internationale Stichting Alzheimer Onderzoek (ISAO)' among others. She was promoted on May 15, 2019.

Listening difficulties in children: Auditory processing and beyond

P H D S T U D E N T

E. de Wit

T H E S I S

Listening difficulties in children: Auditory processing and beyond

P R O M O T O R S

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F A C U L T Y

Medical Sciences

There are children who seem to have difficulty in hearing and understanding speech despite normal peripheral hearing. After hearing the sound, something seems to go wrong with the processing of the auditory information. Such problems in listening are known as (unexplained) listening difficulties or auditory processing disorder (APD). Children with such problems have difficulties with understanding speech in complex listening situations, such as in a busy classroom with a lot of background noise. The overall aim of this thesis was to investigate which behavioral



■ PHOTO BY ERNSTJAN VAN DAM

characteristics are associated with listening difficulties and whether APD must be considered as distinct and unique construct. The aim was four-fold. Firstly, to investigate which behavioral characteristics are associated with (suspected) APD. Secondly, to investigate the relationship between APD and other

neurological developmental disorders. Thirdly, to explore the role of cognitive processes in children with unexplained listening difficulties. Finally, to achieve, in collaboration with professionals from Dutch audiological centers, a practice-oriented definition and method for children with listening difficulties.

Based on the results, it can be concluded that listening difficulties in children are multifactorial in nature and may be a consequence of cognitive (intelligence, attention, and working memory), language, and auditory capacities rather than being uniquely limited to the auditory system. APD cannot be considered as an isolated disorder that can be differentiated from other neurodevelopmental disorders, such as language development disorders, dyslexia and ADHD. The diagnostic label APD is therefore not suitable for classifying listening difficulties in children.

Ellen de Wit (1982) studied Speech therapy at the 'Hanzehogeschool Groningen' and Speech therapy sciences at the University of Utrecht. Since 2005 she works as a teacher at the education Speech therapy at the 'Hanzehogeschool Groningen'. Besides her work as a teacher she did her doctoral research part-time. She did her doctoral research at the department Otorhinolaryngology, Head & Neck Surgery of the University Medical Center Groningen and the lectorate Child, Language & Development of the 'Hanzehogeschool Groningen'. She was promoted on June 19, 2019.

Young-onset movement disorders: Genetic advances require a new clinical approach

P H D S T U D E N T

M.E. van Egmond

T H E S I S

Young-onset movement disorders:

Genetic advances require a new clinical approach

P R O M O T O R

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

C O P R O M O T O R

dr. T.J. de Koning

F A C U L T Y

Medical Sciences

This thesis provides new diagnostic strategies to young-onset movement disorders (YMDs) in light of the paradigm shift that has occurred in molecular genetics. The benefits of a multidisciplinary team approach to complex YMDs were described, and for dystonia and myoclonus new diagnostic algorithms were proposed, incorporating the use of new genetic techniques. With regard to dystonia, gene panel analysis proved to facilitate molecular diagnosis in complex cases of dystonia, with a quicker diagnostic workup and lower costs, representing a major improvement for

>> CONTINUATION PROMOTIONS



■ PHOTO BY MILA VAN EGMOND

patients and their families. Furthermore, the phenotypic spectrum and the effect of the modified Atkins diet was explored in North Sea Progressive Myoclonus Epilepsy, a rare disorder with young-onset myoclonus which is caused by a mutation in the GOSR2 gene. The mutation might originate from Friesland, as the prevalence of the GOSR2 mutation seems to be relatively high in this region. The findings described in this thesis are important for daily clinical practice and contribute to the discussion on how we can use our clinical expertise to let patients optimally benefit from the newest genetic techniques.

Martje van Egmond (1980) studied Medicine at the University of Groningen. After that she did her neurologist training at the University Medical Center Groningen (UMCG) in which the main focus was on child neurology. After finishing her education she did a one year fellowship Movement Disorders in the UMCG. Since 2014 she is working as a neurologist at the Ommelander Hospital Groningen and in the UMCG. She was promoted on July 3, 2019.

Poor old pores: The cell's challenge to make and maintain nuclear pore complexes in aging

P H D S T U D E N T

I.L. Rempel

T H E S I S

Poor old pores: The cell's challenge to make and maintain nuclear pore complexes in aging

P R O M O T O R S

Prof.dr. L.M. Veenhoff

Prof.dr.ir. E.A.A. Nollen

C O P R O M O T O R

dr. M. Chang

F A C U L T Y

Medical Sciences

Nuclear pore complexes (NPCs) are among the largest protein complexes in the eukaryotic cell and are evolutionary conserved. The key function of NPCs is to facilitate nucleocytoplasmic exchange, as the main gateways to the nucleus. In this thesis, we have studied NPCs, NPC assembly, NPC maintenance and nucleocytoplasmic transport in the context of aging in baker's yeast. We find, that mitotically aging cells show a decreased abundance of FG-Nups at the whole cell level and at the NE.

We further analyze the abundance of proteins that assist in NPC assembly in aging and find, that several proteins decrease in abundance in aging. This decrease in the NPC assembly machinery, and potentially the FG-Nups is probably sufficient to cause the signs of NPC assembly problems that we observe during mitotic aging. Subsequently, we analyzed nucleocytoplasmic transport in replicative aging cells and find that nucleocytoplasmic exchange is



■ PHOTO BY SARA MAVROVA

slowed down during replicative aging, suggesting, that misassembled NPCs are not able to facilitate nucleocytoplasmic exchange. We conclude that the NPC assembly machinery is particularly challenged in mitotically aging cells.

Irina Rempel (1988) studied Biology and Molecular Biology and Biotechnology at the University Marburg and the University of Groningen. She was promoted on July 9, 2019.

Neurophysiological signature(s) of visual hallucinations across neurological and perceptual disorders: And non-invasive treatment with physical exercise

P H D S T U D E N T

M. Dauwan

T H E S I S

Neurophysiological signature(s) of visual hallucinations across neurological and perceptual disorders: And non-invasive treatment with physical exercise

P R O M O T O R S

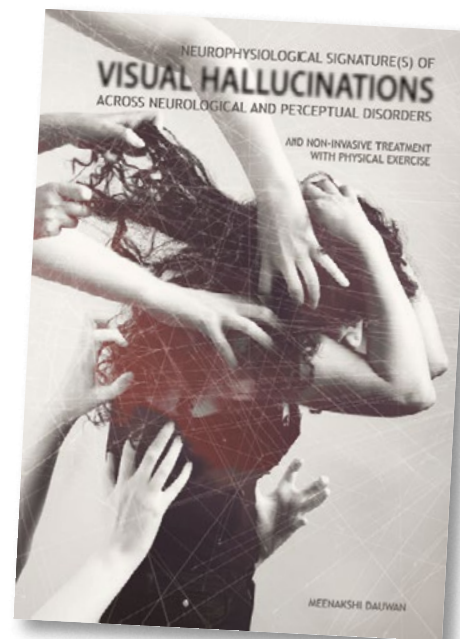
Prof.dr. I.E.C. Sommer

Prof.dr. C.J. Stam

F A C U L T Y

Medical Sciences

Hallucinations are common and stressful in many psychiatric, neurologic and perceptual disorders, disturbing daily life, and increasing mortality, while current treatment of hallucinations is far from optimal. In current clinical practice, treatment with medication is selected in accordance with guidelines for the underlying diagnostic entity, not on the underlying mechanism of hallucinations per se. Understanding the pathophysiological mechanism of (subtypes of) hallucinations may provide new opportunities for treatment and enable rational choice of pharmacotherapy in a personalized manner increasing treatment efficacy and safety. In part I of this dissertation, we found common neurophysiological mechanism(s) underlying visual hallucinations (VH) across disorders. Although the hypothesis of altered attention in VH is not new and has been proposed in several individual disorders, its neurophysiological signature(s) have never been investigated and compared as such across a variety of disorders. This dissertation shows that VH across disorders are quite similar with regard to an underlying neurophysiological mechanism. This finding may aid the discovery of treatment options that could



■ COVER BY MEENAKSHI DUAWAN

effectively alleviate these hallucinations across disorders, as it suggests that treatment effective for VH in one disorder may be beneficial for VH in another disorder too. In part II of this dissertation, we found evidence for the efficacy of physical exercise (PE) as an add-on treatment for clinical symptoms in schizophrenia spectrum disorder, but also for quality of life, depressive symptoms, and cognitive impairment in the chronic brain disorders including,

Alzheimer's disease, Huntington's disease, Multiple Sclerosis, Parkinson's disease, Schizophrenia, and Unipolar Depression

Meenakshi Dauwan (1987) studied Medicine at the University Medical Center (UMC) Utrecht. Afterwards she worked as ANIOS at the Diaconessenhuis Utrecht. She was promoted on July 9, 2019.

■ EVELYN KUIPER-DRENTH, ON BASIS OF PRESS REPORTS OF THE UNIVERSITY OF GRONINGEN

> CHEEKY PROPOSITIONS

The most frequently asked question when you work with fruit flies is 'how to get rid of them?'

> Anita Faber

There are many more people trying to meet the right person than to become the right person. - Gloria Steinem

> Mingzan Zhuang

A skillful commander manages to make the best use of the situation but does not make excessive demand on his subordinates. - Sun Wu in The Art of War

> Mingzan Zhuang

Er gaat niets boven top-down cognitieve verwerking (bewerking van de slogan Er gaat niets boven Groningen, 1989).

[Nothing tops top-down cognitive processing (adaptation of the slogan: Nothing tops Groningen, 1989)]

> Ellen de Wit

Post-its zijn een belangrijk redmiddel tijdens een promotietraject. [Post-its are an important tool during a PhD trajectory.]

> Meenakshi Dauwan

The most impressive adventures that we experience usually get us into situations that are difficult to solve and that require hard work. Life cannot be fulfilling if it is only easy and convenient.

> Irina Rempel



> COLOPHON

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