

Department of Psychiatry  
Amsterdam UMC, location VU University Medical Center  
Department of Research and Innovation GGZ inGeest

# Annual Scientific Report 2019





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## Preface

At the time of finalising this annual report for 2019, we are in the midst of the Corona crisis. Looking back at 2019 feels like looking back into a bygone era, where life was quite different from what it has become in this present day, early 2020 reality. Psychiatry is not at the forefront in the struggle with COVID-19. However, COVID-19 disrupts the lives of everyone and the health of many of us. In parallel with other large scale crises, after the initial shock, the mental health consequences of the Corona crisis will become more prominent over time and lead to changes in our care delivery. As we speak we are in the process of conducting a large scale survey among the participants of our larger cohort studies to study the effects of the COVID-19 crisis on their mental health.

2019 was a very fruitful and productive year for our research group. I hope you will find the time to browse through the work we do and to look at the projects that have been highlighted. We also encourage you to visit our website [psychiatryamsterdam.nl](https://psychiatryamsterdam.nl). This site was launched in 2019 and contains an overview of our research group and research projects. In addition, it provides information on legislation and research procedures.

We are proud to see that the output of our group has stabilised at a very high level over the past years. A first word of thanks is to all those involved in this work, both our researchers, the support staff and all patients and other respondents who take part in our research.

With a thorough network analysis of the output, we recently tested whether the real life output of our group is in line with the objectives that we have set for our research, and the level of cohesion and focus with the research lines. This network is displayed at the frontpage of this annual report. Network analysis is also a very useful tool to explore and visualise the collaborative networks, within and outside the Netherlands, of our group. The analyses show that the balance between our neuroscience oriented research and our clinical and public mental health oriented research has shifted towards a more even balance, which is something we planned to achieve over the past years. The analyses also show that the research lines are indeed focused and that there is a high degree of cohesion between the research lines. With the merge between the two University Medical Centers in Amsterdam, the collaboration among researchers of both contributing centers has grown over the years.





## Summary

The research group of **GGZ inGeest** and the department of psychiatry of **Amsterdam UMC, location VUmc** intensively collaborate in their conduct of scientific research of psychiatric disorders. In this annual scientific report, we provide an overview of our scientific accomplishments in 2019. As examples of our excellent research activities in 2019, we highlight some new and ongoing research projects and publications that illustrate the variety of research that we conduct. In addition, we highlight a PhD thesis defended in 2019 with great societal impact, and one of our academic workplaces that integrates science with clinical care.

Our research group has performed very well in 2019. This becomes visible through the consistent high number of international, peer reviewed scientific papers produced by our research group, our involvement in PhD degree training, and our success in obtaining new research funding for future projects.

- A total 307 papers were published in 2019, of which 38% in the top quartile journals of our research field.
- Twelve PhD-candidates, embedded in our department, successfully defended their thesis in 2019 and obtained their PhD-degree.
- We currently have 88 ongoing PhD-trajectories, which illustrates the vitality of our research group.
- In 2019, 6.3 million euros research funding was obtained for 25 new-to-start small to large-scale projects.

An overview of all our research activities and staff can be found on our website [psychiatryamsterdam.nl](http://psychiatryamsterdam.nl).



**Psychiatry  
Amsterdam**

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## Scientific research

The research group of **GGZ inGeest** and the department of psychiatry of **Amsterdam UMC, location VUmc**, intensively collaborate in their conduct of scientific research of psychiatric disorders. The central focus is on the most common psychiatric disorders: (unipolar and bipolar) depressive disorders and anxiety disorders. Key questions are: what are causes and consequences of depressive and anxiety disorders, and what are effective prevention and treatment options? When examining depressive and anxiety disorders, we also focus on old-age psychiatry, and on their interaction with somatic disorders, e.g. neurological or cardiometabolic diseases. Related clinical aspects such as stress and sleep are important overarching research topics.

We conduct research that ranges from examining the role of genetics or brain dysregulations in psychiatric disorders through studies examining the societal impact of psychiatric disorders. We also conduct clinical trials that examine the effects of (innovative) treatments in patients.

An overview of all our research projects and researchers can be found on our website [psychiatryamsterdam.nl](http://psychiatryamsterdam.nl).



## Embedding and collaboration

Our clinical research is embedded within five academic workplaces at GGZ inGeest: anxiety disorders, depressive disorders, bipolar disorders, old age psychiatry, and soma and psyche. In our academic workplaces clinicians and researchers closely collaborate in innovative research projects. This allows easy implementation of study findings in clinical practice. The workplaces anxiety disorders, depressive disorders and old age psychiatry have received the quality mark TOPGGz.

Our research projects are embedded in two research institutes in which Amsterdam UMC, Vrije Universiteit and University of Amsterdam collaborate: **Amsterdam Public Health (APH)** and **Amsterdam Neuroscience (AN)**. Our epidemiological and clinical research is embedded in Amsterdam Public Health where we collaborate with e.g. colleagues from epidemiology & biostatistics, biological and clinical psychology, and general practice departments. Our neurobiological and genetic research is embedded in Amsterdam Neuroscience where the focus is on fundamental and translational neuroscience research. Both research institutes have been evaluated as 'excellent' by recent external review committees, and provide interdisciplinary collaboration.

Our psychiatry research group has consistently grown over the last years, both in terms of quality as well as quantity of research output. A historically strong asset to our research group is the existence of large research infrastructures developed in collaboration with other national academic centers and surrounding networks of general practices and mental health institutions. This has led to a series of longitudinal, large-scale observational studies such as **NESDA**, **LASA**, **NOEDA** and

**NESDO.** These research infrastructures are also useful assets for starting novel intervention studies. Both our intervention and observational projects are supported through a strong data management and fieldwork team.

### Our research and research group

All our research results are the result of a strong research group, consisting of many persons with great expertise and enthusiasm, and strong collaboration, both national and international. For an up-to-date overview of our staff members, research projects and funding, we refer to [psychiatryamsterdam.nl](https://psychiatryamsterdam.nl).

For an overview of our research projects:  
[psychiatryamsterdam.nl/research-projects](https://psychiatryamsterdam.nl/research-projects)

For our complete staff:  
[psychiatryamsterdam.nl/about-us/our-research-group](https://psychiatryamsterdam.nl/about-us/our-research-group)



*Some of our PhD students*



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*Managers research infrastructure:  
Merijn Eikelenboom, Melany Horsfall, Bianca Lever, Tim Zandbelt and Gerard van Grootheest*



*Some of our research assistants*

## Highlights of 2019

### Highlight 1:

#### New research project

**OPERA: Netherlands Study of Optimal, Personal, Antidepressant use**

In the Netherlands, more than 150,000 people with depression use antidepressants for more than one year. Antidepressants are an effective treatment option for depression, but its efficacy varies greatly between people. Furthermore, long-term antidepressant use can result in feelings of reduced autonomy, and disturbing side effects like sexual dysfunctioning, emotional flattening, dry mouth, and head ache.

Currently, there are many uncertainties concerning the optimal antidepressant discontinuation policy. Although many patients and psychiatrists would like to know whether and when antidepressant use can be discontinued, high-quality research that can be translated to the Dutch health care system is lacking. Therefore, in 2019 we have formally started a new, large-scale national project on adequate use of antidepressants: the OPERA project [www.opera-project.nl](http://www.opera-project.nl).

In collaboration with University Medical Centers in Groningen, Nijmegen, Rotterdam and Leiden - both in primary care and psychiatry - we are recruiting depressed patients who started a new treatment with citalopram or sertraline. We will monitor patients and their depressed mood over time to investigate when and in whom remission takes place. Moreover, we will invite our patients who reached a stable remission to participate in a placebo-controlled randomized

**OPERA**  
Onderzoek naar optimaal  
antidepressivagebruik

trial to examine the effect of (timing of) antidepressant discontinuation.

OPERA is a unique, multidisciplinary project building a research network on optimal antidepressant use which fills in some important gaps in our scientific knowledge on antidepressant treatment response and treatment discontinuation. It will provide physicians and patients with tools to safely discontinue antidepressant medication, and enables personalized prediction of discontinuation success.

OPERA is financed by the Netherlands Organization for Health Research and Development (ZonMW) and will run between 2019-2025.



*The OPERA consortium members*

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## Highlight 2:

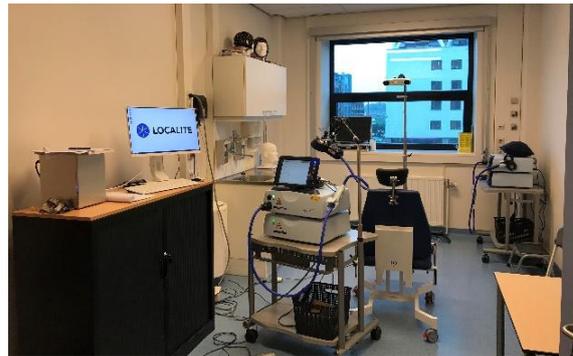
### Innovative research project

**TIPICCO: TMS-Induced Plasticity to Improve Cognitive Control in OCD**



Repetitive transcranial magnetic stimulation (rTMS) is a non-invasive technique to modulate brain activation and network function. Our idea is to fill the gap between the 1<sup>st</sup> line treatment options for obsessive-compulsive disorder (OCD) (i.e. exposure therapy with response prevention (ERP) and serotonergic antidepressants), that result in good clinical response in less than half of the patients, and end-stage invasive strategies (i.e. brain surgery/deep brain stimulation), that are reasonable options for less than 1% of the patients. We expect that rTMS can be of added value for patients with OCD who do not respond enough to ERP and/or serotonergic antidepressants.

In this proof-of-concept randomized clinical trial we study the effects and working mechanisms of adjuvant rTMS (randomized in 3 different conditions) to ERP in patients with OCD who did not respond to previous treatments. Pre- and post-treatment, patients undergo EEG and MRI assessments to determine the exact location of rTMS (using neuronavigation), to establish how network function changes in response to treatment and recovery and to predict treatment response and relapse. In total 75 patients with OCD will be enrolled in this study.



*Newly equipped TMS lab at Amsterdam UMC, VUmc, hosted in the Dep. of Clinical Neurophysiology, and financially supported by the innovation grant of VUmc.*

This project is financed by the VIDI grant 91717306 (O.A. van den Heuvel) by the Netherlands Organization for Health Research and Development (NWO/ZonMw)

#### Project team:

Prof. Odile A. van den Heuvel (PI), Prof. Ysbrand D. van der Werf, dr. Neeltje M. Batelaan, dr. Dilène van Campen, dr. Chris Vriend, Sophie Fitzsimmons (PhD student, see picture), Kim Veenman (research assistant), with help of a rotating team of ERP therapists (GGZ inGeest) and BSc/MSc students.

[www.tipicco.nl](http://www.tipicco.nl)

See also NTR program 'Kennis van Nu' (episode 'Gedachten de baas'), where both the project principal investigator and a participant talk about OCD and potential added value of rTMS.



**Highlight 3:**

**A paper of importance**

**Effect of Multinutrient Supplementation and Food-Related Behavioral Activation Therapy on Prevention of Major Depressive Disorder Among Overweight or Obese Adults With Subsyndromal Depressive Symptoms: The MoodFOOD Randomized Clinical Trial**

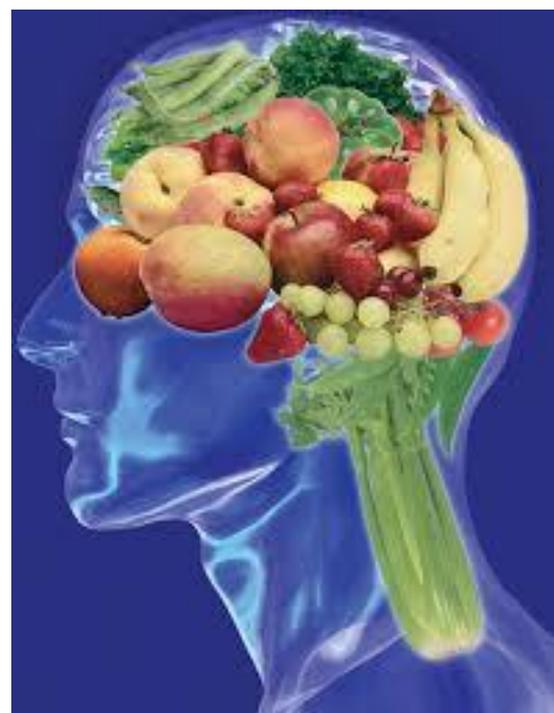
**Can we prevent depression through nutritional strategies? This was the main research question of the MoodFOOD depression prevention trial, a multi-country study with VUmc Psychiatry/GGZ inGeest as one of the four participating research centers. In 2019, the main trial results were published in JAMA.**

Prevention may offer an important opportunity to reduce the disease burden of psychiatric disorders such as depression. A promising prevention strategy for depression might be to modify diet. Currently, there are few controlled studies addressing the role of diet in the prevention of depression. Therefore, the MoodFOOD depression prevention trial investigated the effect of two nutritional strategies on preventing a new depressive episode in a high-risk group of overweight people with subsyndromal depressive symptoms.



This randomized controlled trial involved 1,025 adults (mean age 46.5 years, 75% female) from 4 European countries. People were eligible to participate when they were overweight and had depressive symptoms, but were not allowed to have a depression diagnosis in the past 6 months.

The two nutritional interventions were 1) daily dietary supplements (1412 mg omega-3 fatty acids, 30 µg selenium, 400 µg folic acid and 20 µg D-3 vitamin plus 100 mg calcium) versus placebo, and/or 2) a maximum of 21 sessions of behavioral activation aimed at improving dietary habits and promoting Mediterranean dietary patterns, versus no intervention. Both interventions lasted 1 year. Using a 2x2 factorial design, both the individual and joint effect of the interventions on the onset of a new depression episode were investigated.



During 1 year of follow-up, 105 participants (10%) developed depression. No significant effect on the onset of depressive episode was found for the multi-nutrient supplements and food-related behavioral activation or their combination. However, effects on some secondary outcomes were found. For example, use of supplements was found to be associated with less improvement in depressive and anxiety symptoms. The food-related behavioral activation had no effect on depressive symptoms, but did reduce anxiety symptoms. Also, the food-related behavioral intervention tended to be more effective in people who already experienced more depressive symptoms at the start of the study, and in those who attended more behavioral activation sessions.

Bot M, Brouwer IA, Roca M, Kohls E, Penninx BWJH et al (including van Grootheest G). [Effect of multinutrient supplementation and food-related behavioral activation therapy on prevention of Major Depressive Disorder among overweight or obese adults with subsyndromal depressive symptoms: The MoodFOOD randomized clinical trial.](#) *JAMA - Journal of the American Medical Association* 2019;321(9):858-868.

[moodfood-vu.eu](http://moodfood-vu.eu)

We conclude that the use of these multi-nutrient supplements and the food-related behavioral activation interventions for the prevention of depression are not indicated in this high-risk group of overweight individuals with subsyndromal depressive symptoms.



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## Highlight 4:

### PhD thesis of Jan Mokkenstorm, MD

**Dissertation of interest, with great societal impact**

**On the road to zero suicides:  
implementation studies  
Jan Mokkenstorm†**

Jan Mokkenstorm obtained his PhD on 8 March 2019 from the Psychiatry department of Amsterdam UMC / VUmc on a thesis entitled "On the road to zero suicides: implementation studies". It was a promotion with a great impact for many reasons.

First, from a scientific perspective, research into suicidal ideation and acute suicidal behavior and prevention strategies is needed, considering the rising rates of death from suicide worldwide. The dissertation includes a series of studies investigating the implementation of suicide prevention strategies in the Netherlands. It is known that about 40% of people who are suicidal are treated in mental health care - while about 60% are not known in mental health care. His dissertation therefore includes sound scientifically tested, hands-on prevention work, both within and outside mental health care.



and outcomes of two strategies and of the Zero Suicide approach that contributed to this. The first strategy that Mokkenstorm investigated is to increase the accessibility and patient-centeredness of mental health care. This is done by offering online help to suicidal people, 24/7, free of charge and anonymously via [www.113.nl](http://www.113.nl). Research now shows a positive effect of 113. The second strategy is the implementation of scientifically based suicide prevention policy within specialist mental healthcare institutions in the Netherlands. The findings from this study indicate that an important first step has been taken, but also that there is still a lot of room for improvement. Mokkenstorm also sees a significant variation between different practices, which results in clear differences in the quality of care for suicidal people. Finally, Jan Mokkenstorm examines a new prevention approach, so called 'Zero Suicide'. Zero Suicide is a new approach that seeks to accelerate the implementation of prevention strategies by broadly pursuing organizations that patients do not die lonely or distraught by suicide. Based on a literature study, this thesis argues that it is rational to pursue a Zero Suicide target in healthcare. It is conditional that this goal is considered an inspiring dot on the horizon, and that "the journey" is undertaken in a way that health care professionals feel supported and protected from inappropriate reproaches if a patient dies by suicide.

The idea that suicides cannot be prevented has long stood in the way of improving suicide prevention. Jan Mokkenstorm demonstrates in his research that this has changed modestly in the past ten years. He describes the process



Second, from a societal perspective, this dissertation greatly impacted on national health care strategies for suicide prevention. The findings from this thesis were directly put into practice, with great results. Mokkenstorm was the founder and chairman of 113 suicide prevention and in many ways the face of suicide prevention in the Netherlands and abroad. Mokkenstorm: “There is a tipping point in thinking about suicide prevention in the Netherlands. The mentality of resigned acceptance of suicide seems to be turning into active suicide prevention. Since 2018, it has been a spearhead in government and mental health policy.”

Societal impact was great, which was also evident from the appreciation he received from our



government, the Royal Family and from all kinds of social groups. In 2018 he was decorated in the ‘Orde van de Nederlandse Leeuw’ for his work on suicide prevention.

Finally, from a personal perspective, 2019 was a year of great impact for all close relatives of Jan Mokkenstorm. Although Jan Mokkenstorm knew from the end of 2018 onwards that he was ill, he continued his work on prevention of suicides with great passion. During his promotion in March 2019, the auditorium of the VU was packed. The meeting was so impressive because it was known that Jan was terminally ill and would not live long. He passed away on July 8, 2019.



Thesis defended on March 8, 2020.

**On the road to zero suicides: Implementation studies**

Supervisors: prof. J.H. Smit, PhD; prof. A. Kerkhof, PhD; prof. A.T.F. Beekman, MD, PhD.

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## Highlight 5:

### Academic workplace Bipolar Disorders

#### Academic workplace Bipolar Disorder: the power of networking

The Academic Workplace Bipolar Disorder (AWBD) is one of the workplaces rooted in the outpatient clinics of GGZ inGeest on the one hand, and the department of Psychiatry of the Amsterdam University Medical Center, location VUmc, on the other. This 'bipolarity' is one of the strengths of all of our Academic workplaces: firmly based in the daily clinical practice of a large mental health institution, with all the facilities of academia nearby. It combines the three pillars of academic medicine: patient care, education, and research. The AWBD includes two outpatient clinics, and closely collaborates with the outpatient bipolar clinic of the Academic Workplace for Old Age Psychiatry in Amsterdam to expand our insights to a full adult lifespan perspective, and with the specialized outpatient clinic for bipolar disorder of Altrecht, a large mental health institution in Utrecht.

The AWBD is part of a strong nationwide network under the heading of the Dutch Foundation of Bipolar Disorders (Kenniscentrum Bipolaire Stoornissen; KenBiS), closely linked to the patient association Plusminus. KenBiS is in turn a chapter of the International Society for Bipolar Disorders (ISBD). In 2019, the AWBD was proud to host the yearly 3-day conference of the International Group for the Study of Lithium (IGSLi) of which many pioneers in mood disorders research of the last decades are member. There is a long tradition of research collaboration and exchange of knowledge within the Dutch bipolar network. In addition, professionals from the AWBD had a significant input in the formulation of current Dutch

Multidisciplinary Guidelines and Care Standards for Bipolar Disorder.



Image from: <https://www.kcl.ac.uk/news/better-care-needed-for-people-displaying-first-symptoms-of-bipolar-disorder-3>

At any time, the AWBD treats about 800 adult outpatients with bipolar disorder on a short-term or long-term basis. In addition, yearly about 50 second opinions for complex clinical cases are referred from all over the country.

Dissemination of specialized knowledge and skills is a main focus of all academic workplaces. Staff of the AWBD are actively involved in the training of psychiatric residents on an institutional and also national level. The AWBD site Spaarnepoort was repeatedly chosen by residents of GGZ inGeest as best trainee post of the year. Residents are encouraged to do small research projects during the 6 month at AWBD. The head of AWBD (R. Kupka) is professor of Bipolar Disorders at Amsterdam UMC/VUmc, and chairman of KenBiS. The nursing staff of AWBD participates in educational activities on bipolar disorder for neighboring mental health institutions, and medical staff contributes to the bachelor program of medical students of VU Medical School.

Current research projects are focusing upon psychotherapeutic group interventions tailored for bipolar disorder, an internet-based

self-monitoring tool, the efficacy of collaborative care, effects of long-term lithium treatment on renal function, the implication of guideline concordance on treatment outcome and so on. The predictive nature of sleep disturbance during pregnancy on post-partum psychopathology in bipolar women, also a nationwide network study, is studied in collaboration with Dimence.

From GGZ inGeest, currently three PhD students are working within the framework of the AWBD, in part overlapping with the Academic Workplace of Old Age Psychiatry.

In collaboration with the department of Psychiatry of Amsterdam UMC, location VUmc, GGZ inGeest has established 5 academic workplaces (AW):

- AW Anxiety Disorders
- AW Bipolar Disorders
- AW Depression
- AW Old Age Psychiatry
- AW Soma & Psyche

In our academic workplaces clinicians and researchers closely collaborate. Because of this, our scientific results can be easily implemented in clinical care.



*Members Academic workplace Bipolar Disorder:*

*Ralph Kupka, MD, PhD; Ursula Klumpers, MD, PhD; Hetty Visser, MD; Annemieke Dols, MD, PhD; Sigfried Schouws, PhD; Max Stek, MD, PhD;*

*Aartjan Beekman, MD, PhD; Stasja Draisma, PhD; Wendela ter Meulen, MD, PhD student; Afra van der Markt, MD, PhD student; Alexandra Beunders, MD, PhD student*

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## Scientific output and acquisition 2019

In 2019, 306 international papers have been published by our department. We had a total number of 100 PhD-students working on their theses in 2019, of which 12 PhD-candidates have successfully defended their thesis, and our researchers additionally supervised the dissertation of 6 PhD-candidates from other departments and universities.

In collaboration with (international) partners, 6.3 million euros of research funding have been obtained. In the upcoming years, the combination of research funding, our dedicated staff and PhD students, and our

well-organized research infrastructure will facilitate the continuation of the success of the department of Psychiatry.

The quantity of our scientific output is illustrated below in several tables and figures. Table 1 shows the number of publications published in 2019. Please see [psychiatryamsterdam.nl/results/publications](https://psychiatryamsterdam.nl/results/publications) for full references of all published work.

Figure 1 displays the number of publications from 2010-2019. In Table 2, research funding obtained in 2019 is displayed. Finally, Figure 2 shows the acquisition in the past eight years.



*Management team department of psychiatry*

*Neeltje Batelaan, MD, PhD; Annete Boenink, MD; prof. Ton van Balkom, MD, PhD; Rianne Hoogewoning Prof. Aartjan Beekman, MD, PhD; Carla Philippus; prof. Brenda Penninx, PhD; Merijn Eikelenboom (not in this picture).*

**Table 1. Number of publications in 2019**

International papers refereed (peer-reviewed)	306*
Publications in Dutch	22
Book chapters	19

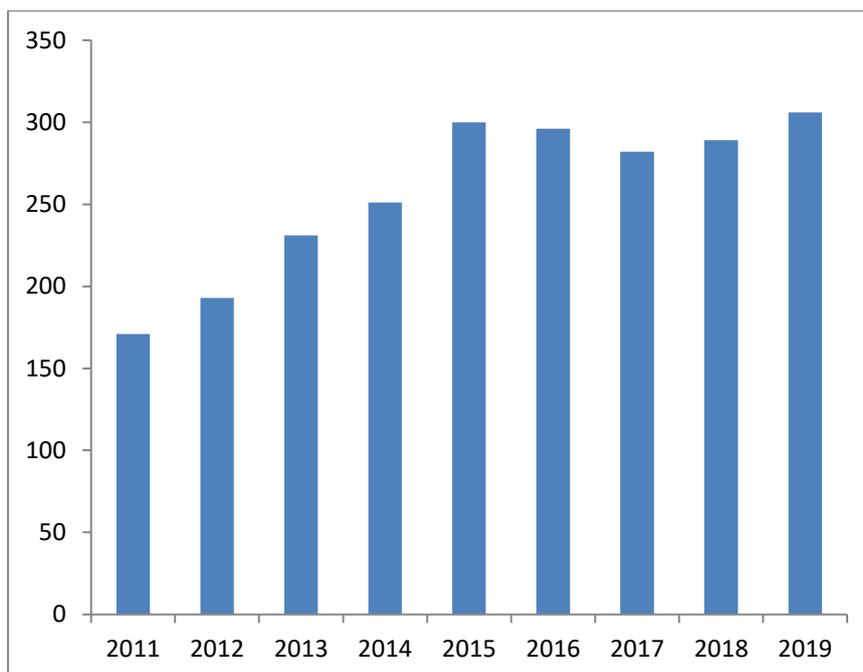
\* Including 11 consortium papers

**Table 2. Number of PhD trajectories and dissertations 2011-2019**

Year	2012	2013	2014	2015	2016	2017	2018	2019
PhD trajectories (including dissertations)	63	77	81	90	91	95	94	100
<b>Dissertations department of psychiatry</b>	<b>5</b>	<b>13</b>	<b>2</b>	<b>11</b>	<b>12</b>	<b>15</b>	<b>9</b>	<b>12</b>
Dissertations at VUmc or VU*	6	2	4	6	3	8	7	5
External dissertations*	8	7	2	6	8	6	4	1

\* researcher department of Psychiatry involved as (co-)supervisor

**Figure 1. Number of international, refereed publications 2011-2019**



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Highlighted publications in 2019

*Psychological Medicine*  
[cambridge.org/psm](https://www.cambridge.org/psm)

**A 6-year longitudinal study of predictors for suicide attempts in major depressive disorder**

Merijn Eikelenboom, Aartjan T. F. Beekman, Brenda W. J. H. Penninx and Johannes H. Smit

Original Article

**Bright light therapy for depression in Parkinson disease**  
 A randomized controlled trial

Sonja Rutten, MD, PhD, Chris Vriend, PhD, Jan H. Smit, PhD, Henk W. Berendse, MD, PhD, Eus J.W. van Someren, PhD, Adriaan W. Hoogendoorn, PhD, Jos W. R. Twisk, PhD, Ysbrand D. van der Werf, PhD,\* and Odile A. van den Heuvel, MD, PhD\*

*Neurology* 2019;92:e1145-e1156. doi:10.1212/WNL.0000000000007090

*Biological Psychiatry*  
 Volume 85, Issue 10, 15 May 2019, Pages 829-837

**Longitudinal Association Between Depression and Inflammatory Markers: Results From the Netherlands Study of Depression and Anxiety**

Femke Lamers, Yuri Milaneschi, Johannes H. Smit, Robert A. Schoevers, Gayle Wittenberg, and Brenda W.J.H. Penninx

Contents lists available at ScienceDirect  
**Journal of Affective Disorders**  
 journal homepage: [www.elsevier.com/locate/jad](http://www.elsevier.com/locate/jad)

Research paper

**Prevalence and course of subthreshold anxiety disorder in the general population: A three-year follow-up study**

Renske C Bosman<sup>a,b,\*</sup>, Margreet ten Have<sup>c</sup>, Ron de Graaf<sup>c</sup>, Anna DT Muntingh<sup>a,b</sup>, Anton JLM van Balkom<sup>a,b</sup>, Neeltje M Batelaan<sup>a,b</sup>

*Molecular Psychiatry* (2019) 24:18–33  
<https://doi.org/10.1038/s41380-018-0017-5>

EXPERT REVIEW

**Depression and obesity: evidence of shared biological mechanisms**

Yuri Milaneschi<sup>1</sup> · W. Kyle Simmons<sup>2,3</sup> · Elisabeth F. C. van Rossum<sup>4</sup> · Brenda WJH Penninx<sup>1</sup>

van Zutphen et al. *Translational Psychiatry* (2019)  
<https://doi.org/10.1038/s41398-019-0491-9>

Translational Psychiatry

ARTICLE Open Access

**Brain-derived neurotrophic factor as a possible predictor of electroconvulsive therapy outcome**

Elisabeth Maria van Zutphen<sup>1,2,3</sup>, Didi Rhebergen<sup>1,2,4</sup>, Eric van Exel<sup>1,2,4</sup>, Mardien Leoniek Oudega<sup>1,2,4</sup>, Filip Bouckaert<sup>5,6</sup>, Pascal Sienaert<sup>5</sup>, Matthieu Vandenbulcke<sup>7</sup>, Max Stek<sup>1,2,4</sup> and Annemieke Dols<sup>1,2,4</sup>

*Molecular Psychiatry*  
<https://doi.org/10.1038/s41380-019-0549-3>

ARTICLE

**Successful treatment of post-traumatic stress disorder reverses DNA methylation marks**

Christiaan H. Vinkers<sup>1,2</sup> · Elbert Geuze<sup>3,4</sup> · Sanne J. H. van Rooij<sup>5</sup> · Mitzy Kennis<sup>6</sup> · Rimmelt R. Schür<sup>3</sup> · Danny M. Nispeling<sup>3</sup> · Alicia K. Smith<sup>5,7</sup> · Caroline M. Nievergelt<sup>8,9</sup> · Monica Uddin<sup>10</sup> · Bart P. F. Rutten<sup>3</sup> · Eric Vermetten<sup>4,11</sup> · Marco P. Boks<sup>3</sup>

BJPsych *The British Journal of Psychiatry* (2019)  
 215, 468–475. doi: 10.1192/bjp.2019.100

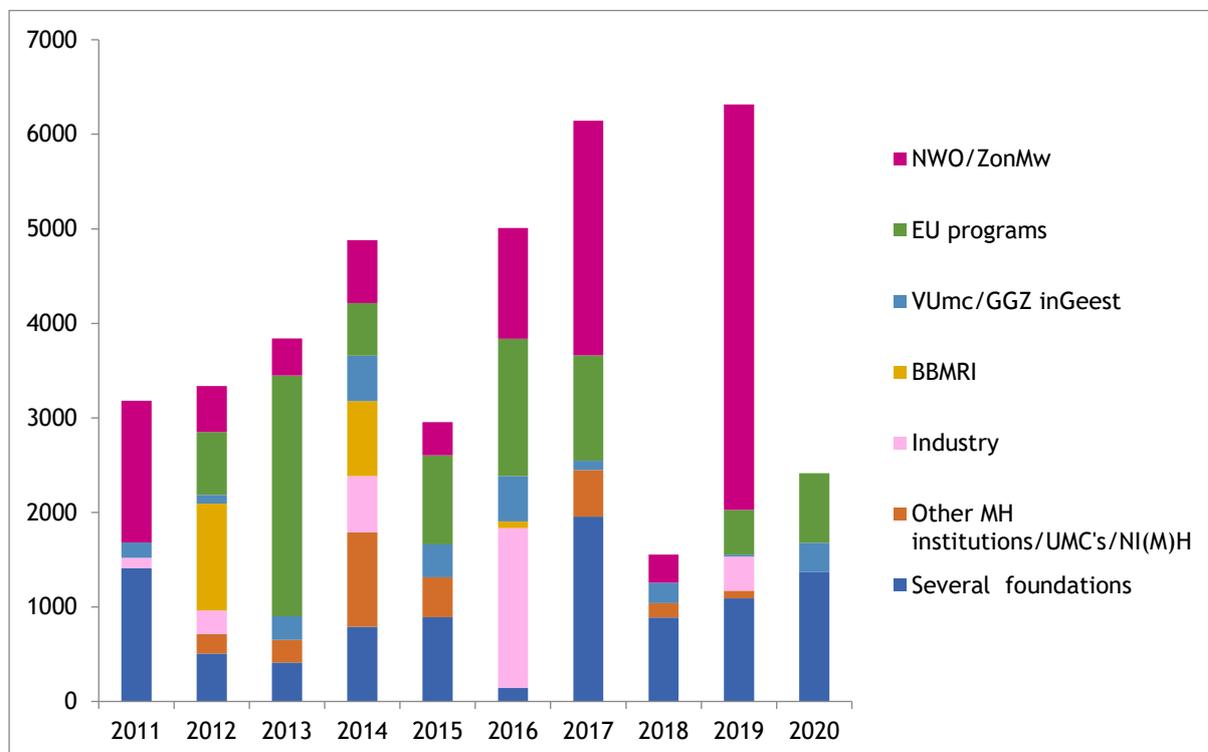
**Neighbourhood characteristics and prevalence and severity of depression: pooled analysis of eight Dutch cohort studies**

Ellen Generaal, Emiel O. Hoogendijk, Mariska Starn, Celina E. Henke, Femke Rutters, Mirjam Oosterman, Martijn Huisman, Sophia E. Kramer, Petra J. M. Elders, Erik J. Timmermans, Jeroen Lakerveld, Eric Koormer, Margreet ten Have, Ron de Graaf, Marieke B. Snijder, Karien Stronks, Gonneke Willemssen, Dorret I. Boomsma, Johannes H. Smit and Brenda W. J. H. Penninx

Table 3. Acquisition in 2019

Funding	Amount in €
EU programs	474.840
ZonMw/NWO	4.288.941
KWF	447.112
Industry (Boehringer Ingelheim)	359.505
ZIN! Zorginstituut Nederland	242.333
Several other funds (Saxion, NARSAD, Melbourne)	81.875
Several smaller foundations	401.494
VUmc / GGZ inGeest (Soma & Psyche, APH, Neuroscience)	20.000
<b>Total</b>	<b>6.316.099</b>

Figure 2. Acquisition department of psychiatry 2011-2019 (2020 preliminary)\*



Amount in 1000 euro

\* From 2018 onwards the starting date of a funded project was leading in this graph instead of the date of approval, hence the large decrease in acquisition in 2018

## Funding 2019 department of Psychiatry VUmc / GGZ inGeest

Name	Project	Funding	Amount €	Department
Batelaan N	Voorspellen en tijdig signaleren van terugval na afbouw van antidepressiva	Stichting tot Steun VCVGZ	100.000	GGZ inGeest
Boenink A Metz M and others	Samen beslissen met ROM, op maat en in de keten (Verlenging SynQuest)	ZIN! Zorginstituut Nederland, Transparantie over de kwaliteit van zorg Total 911.632	127.670	VUmc
Boeschoten R	Boosting transdiagnostic research within Soma & Psyche through EMA	APH Mental Health alliance fund Amsterdam UMC	10.000	GGZ inGeest
Bosmans J, Schaik A van, Dozeman E, and others	Effectiveness and cost-effectiveness of internet-based treatment of insomnia in depressed patients treated at a mental health care institution	ZonMw Doelmatigheid Naar GiG: 368.913	462.745	GGZ inGeest
Broekman B	Ik heb een droom: seksegevoelige zorg in slaap en depressie	VENI NWO	250.000	VUmc
Dekker J Lamers F Beekman A and others	Adaptive and maladaptive emotions in patients with cancer: identification of indicators (EMOCA Study)	Dutch Cancer Society KWF Naar Vumc: 399.559	447.112	VUmc
Dols A Oudega ML	Brain Gymmer, cognitive training for older people with a mood disorder	Stichting tot Steun VCVGZ	87.646	GGZ inGeest
Draisma S	Samen Beslissen project via OMEGA (Verlenging SynQuest)	ZIN! Zorginstituut Nederland, Transparantie over de kwaliteit van zorg Total 911.632	114.663	GGZ inGeest
Dröes RM Meiland FMJ	DISTINCT Technologie voor mensen met dementie	Marie Sklodowska Curie Total 4.547.588 Euro	474.840	VUmc
Dröes RM	Cursusmodule Ontmoetingscentra 3.0	Stichting Hofje C&vB	9.150	VUmc
Dröes RM	Ontwikkeling Native App voor FindMyApps	Stichting Hofje C&vB	12.000	VUmc
Dröes RM	Helpdesk EUmedianet FindMyApps	Bavostichting	9.711	VUmc
Dröes RM	Ontwikkeling Native App voor FindMyApps	Saxion Hogeschool	12.500	VUmc
Heuvel, OA van den Balkom AJLM Oppen P van	arrIBA: Towards personalized care and reduction of chronicity in patients with Obsessive-Compulsive Disorders	ZonMw	130.691	VUmc
Jansen R Lamers F	Personalized Care for Depression: Bringing Immuno-Metabolic Depression from Bench to Bedside	ZonMw Onderzoeksprogramma GGZ	500.000	VUmc
Marle H van	Sleep as a window of traumatic memories	NARSAD Young Investigators Grant Brain & Behavior Research Foundation 70.000 US dollar	60.000	VUmc
Marle H van	Slapend van je trauma af: Wordt het effect van EMDR vergroot door geheugen reactivatie tijdens slaap?	Vereniging EMDR Nederland	4.740	VUmc DII
Meijel B van, Krijnen E	GET READY terugval bij angst en depressie voorkomen	Stichting Stoffels-Hornstra	45.011	GGZ inGeest
Penninx BW	Plasma biomarkers in patients of the NESDA cohort	Boehringer Ingelheim	359.505	VUmc
Penninx BW Beekman A and others	Netherlands study of Optimal, PERsonalized Antidepressant use (OPERA)	ZonMw/NOW Goed Gebruik Geneesmiddelen Eigen instelling: 444.983	2.945.115	VUmc

## Acquisition

Rhebergen D	Veerkracht na depressie bij ouderen	Stichting tot Steun VCVGZ	83.626	GGZ inGeest
Rutten S	ParkSpectief: een kwalitatieve studie naar de beleving van de ziekte van Parkinson vanuit het perspectief van de mensen met Parkinson	Parkinson Vereniging	39.999	VUmc
Veltman D	NIH R01 Enigma	The University of Melbourne	9.375	GGZ inGeest
Verhoeven J Lok AW Penninx B Stronks K	Low-grade inflammation and neuroticism in young adults with depression	APH Mental Health alliance fund Amsterdam UMC	10.000	GGZ inGeest
Vinkers CH	Opgebrand? Een multidisciplinaire verkenning van burn-out	De Jonge Akademie Projectbeurs, KNAW	10.000	VUmc
<b>Total</b>			<b>6.316.099</b>	

## Travel awards and prizes

Name	Project	Funding	Amount €	Department
Aghajani M	ECNP Travel Award - in kader van PRISM	European College of Neuropsychopharmacology	1.500	VUmc DII
Brouwer A	Best paper prize	Best paper award APH Mental Health, Amsterdam UMC	500	
Han L	Collaborator travel and lodging	VCU Richmond	1.000	VUmc
Juurlink T	Work visit Australia	Travel grant APH Personalized Medicine, Amsterdam UMC	2.000	GGZ inGeest
Verhoeven J	Travel grant San Francisco	Catharine van Tussenbroek fonds	1.000	GGZ inGeest
Zutphen L van Schipper E	Work visit abroad/congresses, both 1.000	Travel grant APH Mental Health, Amsterdam UMC	2.000	GGZ inGeest
<b>Total</b>			<b>8.000</b>	

## In the media



*Psychiater Christiaan Vinkers about stress and burn outs. Psychologie Magazine, december 2019*

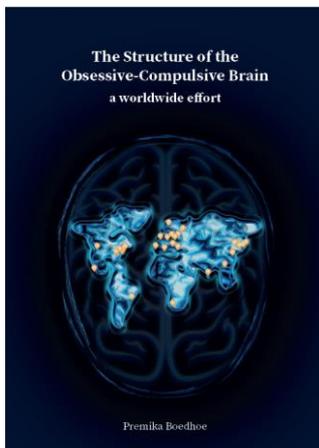
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# Dissertations in 2019

## Department of Psychiatry Amsterdam UMC, location VUmc / Department of Research and Innovation GGZ inGeest

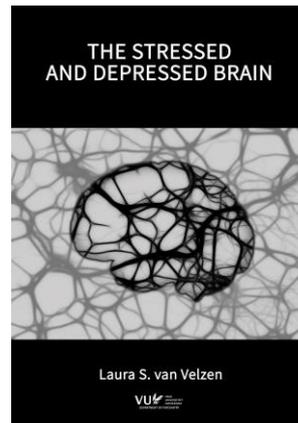
### Cat. A: Dissertation at Amsterdam UMC/VUmc Department of Psychiatry

1. Premika Boedhoe – June 5, 2019  
**The structure of the obsessive-compulsive brain - a worldwide effort**  
Supervisor: prof. O.A. van den Heuvel, MD, PhD  
Co-supervisor: L. Schmaal, PhD  
VU University Amsterdam VUmc, Dep. of Psychiatry



2. Deborah Gibson-Smith – February 12, 2019  
**The weight of depression. Epidemiological studies into obesity, dietary intake and mental health (NESDA/ MoodFOOD)**  
Supervisors: prof. B.W.J.H. Penninx, PhD ; prof. M. Visser, PhD ; prof. I. Brouwer, PhD  
Co-supervisor: M. Bot, PhD  
VU University Amsterdam, VUmc Dep. of Psychiatry
3. Mandy Hu – March 11, 2019  
**Cardiac autonomic activity in depression and anxiety. Heartfelt afflictions of the mind (NESDA)**  
Supervisors: prof. B.W.J.H. Penninx, PhD; prof. E.J. de Geus, PhD  
Co-supervisor: F. Lamers, PhD  
VU University Amsterdam, VUmc Dep. of Psychiatry
4. Hans Jeurig, MD – April 12, 2019  
**Time trends and long-term outcome of late-life depression: an epidemiological perspective.** (LASA/NESDO)  
Supervisors: prof. A.T.F. Beekman, MD, PhD; prof. M.L. Stek, MD, PhD  
Co-supervisors: H.C. Comijs, PhD, M. Huisman, PhD  
VU University Amsterdam, VUmc Dep. of Psychiatry
5. Ruth Klaming Miller – May 28, 2019  
**Vulnerability of memory function and the hippocampus: Risk and protective factors from neuropsychological and neuroimaging perspectives**  
Supervisor: prof. D.J. Veltman, MD, PhD  
Co-supervisors: H.C. Comijs, PhD; J. Annese, PhD
6. Jan Mokkenstorm – March 8, 2019  
**On the road to zero suicides. Implementation studies.**  
Supervisors: prof. J.H. Smit, PhD; prof. A.J.F.M. Kerkhof, PhD; prof. A.T.F. Beekman, MD, PhD  
VU University Amsterdam, VUmc Dep. of Psychiatry
7. Nadine Paans – February 11, 2019  
**When you carry the weight of the world not only on your shoulders. Factors associating depression and obesity. (NESDA/MoodFOOD)**  
Supervisors: prof. B.W.J.H. Penninx, PhD; prof. M. Visser, PhD; prof. I. Brouwer, PhD  
Co-supervisor : M. Bot, PhD  
VU University Amsterdam, VUmc Dep. of Psychiatry
8. Sonja Rutten – February 1, 2019  
**Shedding light on depressive, anxiety and sleep disorders in Parkinson's disease.**  
Supervisors: prof. O.A. van den Heuvel, MD, PhD; prof. Y.D. van der Werf, PhD  
Co-supervisors: prof. H.W. Berendse, MD, PhD; C. Vriend, PhD  
VU University Amsterdam, VUmc Dep. of Psychiatry
9. Charlotte Schmidt – September 4, 2019  
**Collaborative care for diabetes patients with depressive and anxiety symptoms and diabetes-distress.**  
Supervisors: prof. A. Honig, MD, PhD, prof. F.J. Snoek, PhD  
Co-supervisor: B.J. Potter-van Loon, PhD  
Amsterdam UMC, VUmc Dep. of Psychiatry
10. Claudia Schuurhuizen – March 1, 2019  
**Optimizing psychosocial support and symptom management for patients with advanced cancer: the TES cluster randomized trial.**  
Supervisors: prof. J. Dekker, PhD; prof. H. Verheul, MD, PhD  
Co-supervisors: I. Konings, PhD; A. Braamse, PhD  
VU University Amsterdam, VUmc Dep. of Psychiatry/ Soma and Psyche
11. Sacha Struijs – April 2, 2019  
**Psychological vulnerability in depressive and anxiety disorders. (NESDA)**  
Supervisor: prof. B.W.J.H. Penninx, PhD; prof. Ph. Spinhoven, PhD  
Co-supervisor: F. Lamers, PhD  
VU University Amsterdam, VUmc Dep. of Psychiatry

12. Laura Blok- van Velzen – January 11, 2019  
**The stressed and depressed brain.**  
 Supervisors: prof. B.W.J.H. Penninx, PhD; prof. D.J. Veltman, MD, PhD  
 Co-supervisor: L. Schmaal, PhD  
 VU University Amsterdam, VUmc Dep. of Psychiatry



#### Cat. B: Dissertation at VUmc Medical Sciences

##### Involvement of a senior advisor of our department as (co-)promotor

1. Judith Huis in het Veld – July 4, 2019  
**Taking care together. Nurses' selfmanagement support in dementia care.**  
 Supervisors: prof. A. Francke, PhD; prof. B. van Meijel, PhD  
 Co-supervisor: R. Verkaik, PhD  
 Amsterdam UMC, VUmc Dep. of Public and Occupational Health

#### Cat. C: Dissertation at VU University

##### Involvement of a senior advisor of our department as (co-)promotor

1. Liset Elstgeest – July 4, 2019  
**Nutrition and depressive symptoms: a longitudinal perspective.** (MooDFOOD)  
 Supervisors: prof. M. Visser, PhD ; prof. I. Brouwer, PhD; prof. B.W.J.H. Penninx, PhD  
 VU University Amsterdam, Dep. of Health Sciences
2. Rick Wassing – May 23, 2019  
**Restless REM sleep in insomnia disorder and its detrimental effects on regulation of emotional distress.**  
 Supervisor: prof. E.J. van Someren, PhD  
 Co-supervisor: F. Schalkwijk, PhD  
 VU University Amsterdam, Dep. of Integrative Neurophysiology (Neth. Institute for Neuroscience)
3. Bart te Lindert – December 10, 2019  
**Objective: reducing subjectivity in Insomnia Disorder.**  
 Supervisor: prof. E.J. van Someren, PhD  
 Co-supervisor: J. Ramautar, PhD  
 VU University Amsterdam, Dep. of Integrative Neurophysiology (Neth. Institute for Neuroscience)
4. Marije Vermeulen – December 12, 2019  
**Sleep and cognitive and behavioral functioning in children and adolescents.**  
 Supervisors: prof. E.J. van Someren, PhD, prof. H. Swaab, PhD  
 Co-supervisors: K. van der Heijden, PhD, prof. M. Bartels, PhD  
 VU University Amsterdam, Dep. of Integrative Neurophysiology (Neth. Institute for Neuroscience)

#### Cat. D: External dissertation

##### Involvement of a senior advisor of our department as (co-)promotor

1. Anders Lillevik Thorsen – November 19, 2019  
**The emotional brain in obsessive-compulsive disorder.**  
 Supervisors: prof. O.A. van den Heuvel, MD PhD; prof. G. Kvale; dr. B. Hansen  
 University of Bergen, Bergen, Norway, Dept of Psychology

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## Contact

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Christiaan Vinkers, MD, PhD, chair 2020

Mariska Bot, PhD

Merijn Eikelenboom

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Camille ten Velden, lay-out

Brigitte Bélanger, photography team members