



CONTACT

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SKILLS

Programming:

Python, C, Javascript, HTML, PHP, SQL, Matlab, bash

Statistical Analysis:

SPSS, R studio

MRI Analysis:

FSL, SPM, FreeSurfer, ANTs

Project Management

Clinical Trial Management

Protocol Development

Scientific Writing

AWARDS

◆ **ZonMw Neuropsychanalyse Fonds** (co-investigator): Esketamine-geïnduceerde psychoanalytische processen en neurofysiologische hersendynamiek (2026; €444,137)

◆ **KNAW Ter Meulen Beurs:** The Heterogeneous Brain in Youth Psychiatry: A Normative Modeling Perspective (2026; KNAWWF/2644/TMF500)

◆ **Academy van Leersum Grant:** Pathways to precision psychiatry: big data analytics for juvenile mood disorders (2024; KNAWWF/1247/VLB2419)

◆ **KNAW Van der Gaag Grant:** Research on juvenile mood disorders (2023; AWWF/2471-6)

◆ **Selected Early Career Scientist:** ECNP Workshop on Neuropsychopharmacology, Nice, France (2019)

◆ **SOBP Travel Grant:** Society of Biological Psychiatry 74th Annual Meeting, Chicago (2019)

Willem Bruin

PROFESSIONAL SUMMARY

Dedicated researcher with a strong background in neuroscience and experience in both clinical and academic settings. Proven ability to lead research projects, collaborate with international consortia and publish works in high-impact journals. Specializing in predictive psychiatry using machine learning, with expertise in MRI data processing and analysis. Passionate about solving complex problems and communicating findings to a wider audience.

WORK HISTORY

Post-Doc Researcher - Amsterdam UMC

09/2025 -

Team Neuropsychiatry at the VUmc, in collaboration with Prof. dr. Odile van den Heuvel

- Researching how the brain develops from childhood into young adulthood and how deviations from typical trajectories relate to OCD symptomatology
- Using normative modelling across repeated MRI assessments to understand how early deviations shape later brain development
- Investigate how these patterns link to the emergence or persistence of symptoms, and whether we can begin to disentangle how the brain influences behaviour and how behaviour influences the brain
- Daily supervisor and co-promotor of PhD candidate Leonardo Nacci ("Biotype-based personalized rTMS treatment in OCD"), providing hands-on guidance on biotyping, neuroimaging and machine learning analyses, weekly supervision, and methodological oversight

Post-Doc Researcher - Leiden University

01/2023 -

Institute of Education & Child Studies, program Forensic Family & Youth Care, in collaboration with Dr. Moji Aghajani

- Applying machine learning techniques and big data in the context of predictive and biological psychiatry
- Collaborating with global consortia to leverage large-scale neuroimaging datasets
- Researching the developing brain and how it may deviate in clinically anxious youth
- Developing innovative predictive models to aid decision-making in mental healthcare by providing individual-level inferences

Post-Doc Researcher - Amsterdam UMC

09/2021 - 09/2022

Post-Doc researcher at the Psychiatry department of the VUmc, collaborating with Dr. Moji Aghajani.

- Investigated brain morphology in juvenile anxiety disorders
- Assessed (trans)diagnostic anxiety disorder classification using neuroimaging data and machine learning

PhD Researcher - Amsterdam UMC

Awarded 04/2024

PhD researcher at the Psychiatry department of the AMC, under supervision of Prof. dr. G.A. van Wingen and Prof dr. Damiaan Denys.

- Evaluated machine learning techniques to automatically classify neuroimaging scans and aid treatment selection in obsessive compulsive disorder
- Developed a biomarker for predicting treatment response to electroconvulsive therapy in patients suffering from depression
- Advanced skills in MRI analysis, operating 3T-MRI scanner, psychological assessment, developing and validating machine learning models, supervising interns and overseeing all aspects of clinical trial preparation, data collection and development

LANGUAGES

English

Fluent

Dutch

Native

French

Intermediate

German

Intermediate

TEACHING & SUPERVISION

PhD candidate (daily supervisor & co-promotor): Leonardo Nacci, Biotype-based personalized rTMS treatment in OCD, Amsterdam UMC (2025–present)

MSc research theses supervised: Laurens van de Mortel (Biomedical Sciences, UvA, 2018); Hidde Wassenaar (Biomedical Sciences, UvA, 2018); Jeroen Dijkmans (Biomedical Sciences, UvA, 2020); Anna Zheng (Clinical Neuropsychology, VU, 2020)

Guest lecturer: Leiden University, MSc Education and Child Studies, "Machine Learning for Precision Psychiatry" (2024 & 2025)

EDUCATION

Master of Science: Biomedical Sciences - Psychopharmacology & Pathophysiology, 09/2014 - 09/2017

University of Amsterdam - Amsterdam, North Holland

Disease etiology and mechanisms of action of brain disorders; using current available animal models to study disease mechanisms; the effects of specific pharmacological agents developed for brain disorders; and conducting related research into drug development, modeling, selection and testing.

Minor: Programming Specialization, 09/2015 - 09/2016

University of Amsterdam - Amsterdam, North Holland

Includes learning programming fundamentals e.g. solving complex problem sets and designing algorithms. Program structured using Harvard’s CS50 and CS171 course material.

Bachelor of Science: Psychobiology, 09/2011 - 09/2014

University of Amsterdam - Amsterdam, North Holland

Broad program where students are trained to investigate links between biological background & psychological processes. Students are familiarized with different tools/techniques used to study the brain and behavior through rigorous practical exercises.

CERTIFICATIONS

Basisopleiding Bedrijfshulpverlener - Trainingscentrum Bedrijfshulpverlening AMC Amsterdam (2019)

Practical Biostatistics, Project Management, Scientific Writing in English - AMC Graduateschool (2017-2018)

London Computational Psychiatry Course - University College London (2017)

MRI Operator, MRI Safety Exam Certification - Spinoza Centre for Neuroimaging (2017)

Basiscursus Regelgeving en Organisatie voor Klinisch Onderzoekers (BROK) certification - NFU, Amsterdam AMC (2017)

Laboratory Animals Course (Art. 9) - University of Amsterdam (2016)

PUBLICATIONS

1. **Shared first author:** Han, L. K. M., **Bruin, W. B.**, et al. (2026). Structural brain differences associated with panic disorder: an ENIGMA-Anxiety Working Group mega-analysis of 4924 individuals worldwide. *Molecular Psychiatry*, 1-16.
2. **Co-Author:** Ruan, H., et al. (2026). Disrupted higher-order topology in OCD brain networks revealed by Hodge Laplacian – an ENIGMA study. *bioRxiv*, 2026-03.
3. **Co-Author:** van de Mortel, L. A., Bruin, W. B., et al. (2025). Development and validation of a machine learning model to predict cognitive behavioral therapy outcome in obsessive-compulsive disorder using clinical and neuroimaging data. *Journal of Affective Disorders*, 389, 119729.
4. **Co-Author:** Richier, C., et al. (2025). Brain age prediction in generalized anxiety disorder using a convolutional neural network. *Research Square*, rs-3.
5. **Co-Author:** Townend, S., et al. (2025). Shared and distinct alterations in brain structure of youth with internalizing or externalizing disorders: findings from the ENIGMA Antisocial Behavior, ADHD, Major Depressive Disorder, and Anxiety Working Groups. *Biological Psychiatry*.
6. **Co-Author:** Džinalija, N., et al. (2025). Inhibitory control and error processing in obsessive-compulsive disorder: a mega-analysis of task-based fMRI data by the ENIGMA-OCD consortium. *bioRxiv*, 2025-10.
7. **Co-Author:** Kim, B. G., et al. (2024). White matter diffusion estimates in obsessive-compulsive disorder across 1653 individuals: machine learning findings from the ENIGMA OCD Working Group. *Molecular Psychiatry*, 29, 1063-1074.
8. **Co-Author:** Van Bennekom, M. J., et al. (2024). Brain activation during virtual reality symptom provocation in obsessive-compulsive disorder: proof-of-concept study. *JMIR XR and Spatial Computing*, 1(1), e47468.
9. **Author:** Bruin, W. B., et al. (2024). Brain-based classification of youth with anxiety disorders: an ENIGMA-ANXIETY transdiagnostic examination using machine learning. *Nature Mental Health*, 2, 104-118.
10. **Co-Author:** Verdijk, J. P., et al. (2024). Longitudinal resting-state network connectivity changes in electroconvulsive therapy patients compared to healthy controls. *Brain Stimulation*, 17(1), 140-147.
11. **Co-Author:** van der Straten, A., et al. (2024). Pharmacological and psychological treatment have common and specific effects on brain activity in obsessive-compulsive disorder. *Depression and Anxiety*, 2024(1), 6687657.
12. **Author:** Bruin, W. B., et al. (2023). The functional connectome in obsessive-compulsive disorder: resting-state mega-analysis and machine learning classification for the ENIGMA-OCD consortium. *Molecular Psychiatry*, 1-13.
13. **Author:** Bruin, W. B., et al. (2023). Development and validation of a multimodal neuroimaging biomarker for electroconvulsive therapy outcome in depression: a multicenter machine learning analysis. *Psychological Medicine*, 54(3), 495-506.
14. **Co-Author:** Ten Doesschate, F., et al. (2023). Effective resting-state connectivity in severe unipolar depression before and after electroconvulsive therapy. *Brain Stimulation*, 16(4), 1128-1134.
15. **Co-Author:** van de Mortel, L., et al. (2023). Electroconvulsive therapy induced large-scale grey matter increases do not lead to significant functional brain changes. *Brain Stimulation: Basic, Translational & Clinical Research in Neuromodulation*, 16(1), 129.

PUBLICATIONS (continued)

16. **Co-Author:** van De Mortel, L., et al. (2022). Multimodal multi-center analysis of electroconvulsive therapy effects in depression: brainwide gray matter increase without functional changes. *Brain Stimulation*, 15(5), 1065–1072.
 17. **Co-Author:** Takamiya, A., et al. (2022). Neural substrates of psychotic depression: findings from the global ECT-MRI research collaboration. *Schizophrenia Bulletin*, 48(2), 514–523.
 18. **Co-Author:** van den Heuvel, O. A., et al. (2022). An overview of the first 5 years of the ENIGMA obsessive-compulsive disorder working group: the power of worldwide collaboration. *Human Brain Mapping*.
 19. **Author:** Bruin, W. B., et al. (2020). Structural neuroimaging biomarkers for obsessive-compulsive disorder in the ENIGMA-OCD consortium: medication matters. *Translational Psychiatry*, 10(1), 1–12.
 20. **Co-Author:** Thompson, P. M., et al. (2020). ENIGMA: a decade of large-scale studies of the brain in health and disease across more than 40 countries. *Translational Psychiatry*, 10(1), 1–28.
 21. **Co-Author:** Thomas, R. M., et al. (2020). Dealing with missing data, small sample sizes, and heterogeneity in machine learning studies of brain disorders. *Machine Learning* (Elsevier), 249–266.
 22. **Author:** Bruin, W. B., et al. (2019). Diagnostic neuroimaging markers of obsessive-compulsive disorder: initial evidence from structural and functional MRI studies. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, 91, 49–59.
 23. **Co-Author:** Zhutovsky, P., et al. (2019). Individual prediction of behavioral variant frontotemporal dementia development using multivariate pattern analysis of magnetic resonance imaging data. *Journal of Alzheimer's Disease*, 68(3), 1229–1241.
 24. **Co-Author:** Schranter, A., et al. (2019). Dose-dependent effects of the selective serotonin reuptake inhibitor citalopram: a combined SPECT and pHMRI study. *Journal of Psychopharmacology*, 33(6), 660–669.
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APPEARANCES

- Invited speaker:** Imaging Genetics Center, Mark & Mary Stevens Neuroimaging & Informatics Institute, Keck School of Medicine, University of Southern California (2024 and 2025).
- Invited speaker:** Guest lecturer at Leiden University, MSc Education and Child Studies: “Machine Learning for Precision Psychiatry – opportunities and challenges” (2024 & 2025).
- Interview:** KNAW Onderzoekers uitgelicht: “Research on juvenile mood disorders”, 2024.
- Interview:** Universiteit Leiden: “Zoektocht naar biomarkers voor psychische aandoeningen”, 2024.
- Interview:** NEDKAD “Een gesprek over biomarkers en machine learning in de psychiatrie”, 2024.
- Invited speaker:** Society of Biological Psychiatry – Annual Meeting 2019, ENIGMA Symposium, Chicago.
- Presenter:** ECNP Workshop for Early Scientists in Europe, March 2019, Nice, France.
- Presenter:** 3rd Bi-Annual Meeting of the Dutch, German and Belgian ECT workgroups, March 2019, University Psychiatric Center KU Leuven, campus Kortenberg, Belgium.
- Presenter:** Amsterdam Neuroscience – Annual Meeting 2018, Poster presentation titled: ENIGMA-OCD classification, Johan Cruijff Arena Amsterdam.
- Presenter:** Amsterdam Neuroscience – Annual Meeting 2018, Pecha Kucha presentation on ENIGMA-OCD working group, Johan Cruijff Arena Amsterdam.
- Presenter:** 2nd Bergen workshop of the Global ECT-MRI Collaboration, September 2018, Bergen.
- Presenter:** Society of Biological Psychiatry – Annual Meeting 2018, Poster presentation titled: Machine Learning Classification of Obsessive-Compulsive Disorder Using Structural Neuroimaging data: A Benchmark for ENIGMA, 2018, New York.