OLGA DOBRUSHINA

M.D., Ph.D., M.S. in Psychology

As a medical doctor, psychologist, and neuroscientist, I have a background in neurology, counselling psychology and neuropsychology, leadership experience and a wide range of research skills. I am passionate about integrating psychotherapy and brain science.

As a clinician, I founded and led a psychosocial rehabilitation unit for neurodivergent people, the Russian pioneer group in holistic patient-centered care. I also extensively worked with psychosomatic and affective disorders, both as a treating physician and as a counselling psychologist. I founded and supervised a neurophysiological group implementing neurotechnologies for cognitive and emotional wellbeing.

As a neuroscientist, I led an integrative project on the age-related changes in emotional and interoceptive processing. We clarified the neural networks supporting interoception and demonstrated the role of aberrant emotional regulation and allostasis in brain vascular injury. Currently I am developing psychological and technological methods to target these processes with the goal of preventing and treating mental disorders.

KEY SKILLS

CBT, schema therapy, neurorehabilitation, biofeedback, neurofeedback, cognitive assessment, psychophysiology, data analysis, scientific writing, QEEG, fMRI, Python, R Project, Matlab

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LANGUAGES

English (full professional proficiency), Russian (native), Hebrew (basic)

BASIC EDUCATION

M.V. Lomonosov Moscow State University, Faculty of Basic Medicine
2002 — 2008
Medical Doctor

Moscow State University of Psychology and Education, Faculty of Consulting and Clinical Psychology
2019 — 2021
M.S. in Psychology

General Reanimatology Research Institute named after V.A. Negovsky
2010 — 2012
Ph.D. in Medicine

First Moscow Medical State University
2011 — 2012
Specialization in Neurology

General Reanimatology Research Institute named after V.A. Negovsky
2008 — 2010
Specialization in Intensive Care

ADDITIONAL TRAINING

Individual Schema Therapy, ISST accredited course (Moscow Institute of Schema Therapy)

Couple Schema Therapy, ISST accredited course (Institut für Schematherapie-Frankfurt)

Child and Adolescent Schema Therapy, ISST accredited course (Sankt-Petersburg Institute of Schema Therapy)

Contextual Schema Therapy (Institut für Schematherapie-Frankfurt)

Integrating Schema Therapy with DBT (Schema Therapy Training Online)

Schema Therapy for Eating Disorders (Schema Therapy Training Online)

ACT Immersion (S. Hayes)

Essentials in CBT. CBT in depression (Beck Institute)

Posttraumatic stress disorder. Basic knowledge and CBT-based therapy (Moscow Institute of Schema Therapy)

Mentalization-Based Treatment: Basic Training (Anna Freud Center)

Introduction to Neuropsychiatry (Burdenko Neurosurgery Institute)

Holistic Neuropsychological Rehabilitation (Jill Winegardner)

SCERTS model (Social Communication, Emotional Regulation and Transactional Support) (B. Prizant, A. Wetherby, E. Rubin)

Pediatric Neuropshychology (Lomonosov Moscow State University)

Neuropsychological Correction: Methos of Substitutive Ontogenesis

Basic Course in Neurofeedback (EEG Institute, Los Angeles)

PROFESSIONAL EXPERIENCE

Reichman University (IDC; Israel, Herzliya), Baruch Ivcher Institute for Brain, Cognition & Technology, Postdoctoral Researcher and Lecturer

September 2022 — to date

Currently I implement my research skills and clinical knowledge for the development of therapeutic applications in the field of mental health. I created a naturalistic feedback system for sensory supplementation of interoception, i.e. perception of the body's internal state. With a special vibration device fixed on the anterior chest, we provide sensations similar to the ones originating from the beating heart; the vibrations are synchronised with ECG R peaks. I developed the concept, designed the study, wrote the code in Python, analysed the data, and presented the results on an international conference (publication is in preparation).

We have proven that interoceptive training with the use of our technology results in improved interoceptive accuracy and confidence, and in a shift of attention toward the inner sensations. Our research is motivated by the multiple studies showing an association between altered interoception and mental health disorders such as anxiety, depression, PTSD, eating disorders, somatic symptom disorder, autism, BPD. We propose that our technologically augmented interoceptive training can serve for the enhancement of mental well-being.

I share my skill and knowledge, providing a creative workshop "Overcoming scriptophobia with graduated exposure. Basics of Python and Psychopy" for researchers with different backgrounds and teaching fMRI to master's degree students.

Private Practice, Psychotherapist (Israel, Russia)

July 2021 — to date

As a psychotherapist, I work with neurodivergent adults and adolescents, including autism, ADHD, cPTSD, and acquired brain injury, as well as patients with cluster B and C personality disorders, anxiety, and depression, and individuals looking to enhance their emotional regulation and interpersonal efficacy. I use an integrative CBT approach that encompasses schema therapy, ACT, DBT skills training, and classical CBT techniques. I'm also trained in co-experiencing psychotherapy (an experiential approach developed by Fyodor Vasilyuk) and mentalization-based treatment. I combine relational, experiential, metacognitive, and skill-based approaches, tailoring them to the client's goals and challenges. With training in both couple and child and adolescent schema therapy, I place emphasis on family dynamics and offer couple and family sessions, as well as consultations on parenting.

I work under supervision and have an experience of long-term personal therapy.

Research Center of Neurology (Moscow, Russia), Senior Researcher

2017 — to date (currently remotely)

I led an interdisciplinary project on age-related changes in emotional and interoceptive processing aimed at the prevention of cognitive decline associated with small vessel disease (SVD) through enhancement of emotional regulation. We hypothesized that aberrant allostasis — predictive regulation of emotional and bodily states in the context of social interactions — can serve as a risk factor for vascular diseases. This bears particular significance for cerebral SVD, as vascular injury might compromise the allostatic neural networks, thereby potentially creating a vicious cycle. We investigated the emotional and bodily regulation in ageing people, including neural processing (fMRI, EEG), emotional intelligence, alexithymia, anxiety and depression, and the role of cognitive factors. At the same time, we showed the potential of neurofeedback to restore the neural circuits of allostasis.

My responsibilities included:

- Designing interdisciplinary studies utilising fMRI experiments, EEG, computerised tests, psychometric scales, cognitive tests.
- Adaptation of psychometric scales and cognitive experiments with translation to Russian.
- Scripting in Matlab for stimuli presentation and responses collection. Data analysis in Matlab, Python and R, including fMRI activation and connectivity (SPM, Conn, fMRIprep).
- Scientific writing and illustration. I published articles as first author in Cortex, Psychophysiology, Frontiers in Human Neuroscience journals as the first author.
- Supervision of a team including 5 co-researchers, 1 Ph.D. student and 4 M.S. students.

Our studies highlighted the links between emotional dysfunction, including alexithymia, interoceptive decline, ageing and SVD on the behavioral and neural levels. We demonstrated the potential of neurofeedback in correction of the underlying brain networks abnormalities. Currently, I am developing a CBT-based program targeting the revealed aspects of emotional regulation which contribute to the cardiovascular health.

International Institute of Psychosomatic Health (Moscow, Russia), Chief of the Department of Psychosocial Rehabilitation, Neurologist, Psychologist

2012 — July 2022

In a private outpatient clinic, I combined direct work with patients and responsibilities related to leadership. As a clinician, I offered outpatient interdisciplinary care for neurodivergent adults and children (ADHD, autism, dyslexia, dysgraphia, traumatic brain injury and brain tumours), people with affective and psychosomatic disorders (anxiety, depression, somatic symptom disorder, chronic pain). I also worked with healthy people of all ages providing psychological counselling and peak cognitive performance training. I used the following methods.

• Rational pharmacotherapy. I prescribed antidepressants, low-dose antipsychotics, tranquilisers, and psychostimulants to treat anxiety, depression, chronic pain, movement disorders and behavioural problems in neurotypical and neurodivergent patients.

• Psychotherapy: schema therapy, CBT, acceptance and commitment therapy (ACT), mindfulness. As a psychologist I worked with depression, anxiety, personality disorders, PTSD, autism, ADHD, brain injury, and mental consequences of somatic diseases. I worked as a part of a medical and psychological team providing holistic care.

• Social and emotional skills groups for adults with brain injury. I adapted CBT, DBT and interpersonal efficacy training approaches for the patients with pronounced cognitive difficulties and ran a long-term semi-closed weekly group for 2 years. I also developed and implemented a short (10 sessions) emotional skills group for the same population.

• Neurofeedback and biofeedback. I was a Russian opinion leader in the field of neurofeedback and biofeedback and combined direct clinical work with teaching and supervision.

• Cognitive assessment and training. I performed neuropsychological assessment and provided cognitive rehabilitation for people with brain injury and neurodevelopmental disorders using Luria's restorative approach and support in real-life tasks with compensatory strategies.

• Mind-body techniques. I used mindfulness approaches and Semenovich's methos of substitute ontogenesis, which is a system of physical exersises targeted at supporting cognivite functions and emotional balance.

• Routine and quantitative EEG analysis (QEEG). QEEG is a sophisticated computerised method of EEG analysis including comparison with a normative database; it allows mapping of the brain functional state, which is highly relevant for the field of mental health. I used this approach to enrich my understanding of the cases on the basis of an integration of clinical and neurophysiological data.

As a team leader, I served as a clinical director of a holistic care programme for adults and children with mental problems related to neurodivergence: autism, ADHD, brain tumours, TBI, neurodevelopmental disorders. I organised the department in a start-up clinic, assembled the team (25 professionals), and established the practices. I supported the development of a cohesive professional team with traditions of mutual support. The team has worked with more than a thousand clients, including projects conducted in collaboration with the Moscow City Department of Social Protection and Konstantin Khabenskiy's Charity Fund, a leading Russian non-profit organisation in neuro-oncology. The contracts with the founding organisations were regularly renewed over the last 5 years due to the high clients' satisfaction and the ability of the team to achieve results even in a setting limited by time and funding.

In the same clinic I founded a cross-department neurophysiological group consisting of eleven professionals I have trained and supervised. We implemented neurotechnologies, including QEEG, neurofeedback and biofeedback for integrative understanding and treatment of mental and neurological diseases. We completed a research project on the use of the infra-low frequency neurofeedback in tension-type headache (sham-controlled cross-over study). Twice a year I provided workshops "From neuroscience to neurotherapy" focused on the clinical application of quantitative EEG, neurofeedback, biofeedback, neuroscientific foundations of psychotherapy. I also shared my clinical experience in lectures and practical courses for the students of the Psychological Faculty of the Lomonosov Moscow State University on the topics of neuropsychological rehabilitation and integrative treatment of psychosomatic disorders.

Treatment and Rehabilitation Center of the Ministry of Health (Moscow, Russia)
2012 — 2015 **Neurologist**

Treatment and Rehabilitation Center of the Ministry of Health is a large multidisciplinary hospital providing planned and emergency medical care. I worked in an inpatient setting as a neurologist responsible for diagnostics, pharmacological treatment, and rehabilitation. My responsibilities included clinical management of patients with cerebrovascular diseases, affective disorders, somatoform disorders, chronic pain, traumatic brain injury, brain tumours, and spinal trauma. As a treating physician, I was responsible for all the diagnostic and therapeutic processes, including the treatment of concomitant somatic diseases. I also managed the rehabilitation programs, including medical and psychological diagnostics, identification of the goals, and the optimal methods to be used for their achievement.

My major personal interest was in the field of the mental consequences of brain injury. I used psychological methods of assessment as well as functional MRI to diagnose changes in cognition and personality and developed neuromodulation approaches for restoration of these functions. I developed a navigated fMRI-guided TMS technique for the treatment of frontal lobe syndrome. After my training at the EEG Institute in Los Angeles, I started using infra-low frequency neurofeedback in neurorehabilitation of patients with cognitive and emotional consequences of brain injury, chronic pain, and functional neurological disorders. I pioneered the use of this method in the hospital and taught other professionals. In collaboration with the neuroimaging group, I completed a research project on the neural mechanisms of infra-low frequency neurofeedback: a randomised sham-controlled study utilising resting-state functional MRI. This study became famous in the neurofeedback community, and the article, which was published in Frontiers in Neuroscience in 2020, was one of the top 10% most cited in the Neuroscience & Behaviour category.

2010 — 2012 **Intensive Care Physician**

I worked as an intensive care physician in the neurointensive care unit with patients with stroke, TBI, neurooncological diseases, spinal cord injury, sepsis, ARDS, venous thromboembolism and concomitant conditions. My responsibilities included pharmacological management and intensive care procedures: artificial lung ventilation, tracheostomy, catheterization of central and peripheral veins, arterial catheterization, venous and arterial blood sampling, lumbar puncture, epidural catheterization, cardiopulmonary resuscitation, defibrillation. While working in the ICU, I developed an interest in the long-term mental consequences of brain injury and critical disease. I participated in the implementation of a very early rehabilitation program: mobilisation starting at the early stages of brain injury.

SELECTED PUBLICATIONS

ORCID: 0000-0002-9493-4212, Scopus Author ID: 56955629300, WoS Researcher ID: E-7182-2019

h-index=5 (Scopus)
Publications selected out of a total of 28 articles, 5 books and 39 conference presentations.

Dobrushina, Olga R., Galina A. Arina, Larisa A. Dobrynina, et al. 2020. "The Ability to Understand Emotions Is Associated with Interoception-related Insular Activation and White Matter Integrity during Ageing.'' *Psychophysiology* 57 (3): e13537. https://doi.org/10.1111/psyp.13537

Dobrushina, Olga R., Galina A. Arina, Larisa A. Dobrynina, et al. 2021. "Sensory Integration in Interoception: Interplay between Top-down and Bottom-up Processing." *Cortex* 144 (November): 185–97. https://doi.org/10.1016/j.cortex.2021.08.009

Dobrushina, Olga R., Roza M. Vlasova, Alena D. Rumshiskaya, et al. 2020. "Modulation of Intrinsic Brain Connectivity by Implicit Electroencephalographic Neurofeedback." *Frontiers in Human Neuroscience* 14: 192. https://doi.org/10.3389/fnhum.2020.00192

Dobrushina, Olga R., Larisa A. Dobrynina, Galina A. Arina, et al. 2022. "Enhancing Brain Connectivity with Infra-Low Frequency Neurofeedback during Ageing: A Pilot Study." *Frontiers in Human Neuroscience*. https://doi.org/10.3389/fnhum.2022.891547

Arina, Galina A., Olga R. Dobrushina, Elizaveta T. Shvetsova, et al. 2022. "Infra-Low Frequency Neurofeedback in Tension-Type Headache: A Cross-Over Sham-Controlled Study." *Frontiers in Human Neuroscience* 16 (May). https://doi.org/10.3389/fnhum.2022.891323

Dobrushina, O. R., L. A. Dobrynina, G. A. Arina, et al. 2020. "Interaction of Interoceptive Perception and Emotional Intelligence: A Functional Neuroimageing Study." *Neuroscience and Behavioral Physiology 2020 50:8* 50 (8): 1043–50. https://doi.org/10.1007/S11055-020-01003-Z

Panikratova, Yana, Olga Dobrushina, Alexander Tomyshev, et al. 2020. "Context-Dependency in the Cognitive Bias Task and Resting-State Functional Connectivity of the Dorsolateral Prefrontal Cortex." *Journal of the International Neuropsychological Society*, 1–14. https://doi.org/10.1017/S1355617720000302

Sidyakina, I.V., O.R. Dobrushina, K.V. Lyadov, et al. 2015. "The Role of Evidence-Based Medicine in Neurorehabilitation: Innovative Technologies." *Voprosy Kurortologii, Fizioterapii, i Lechebnoĭ Fizicheskoĭ Kultury* 92 (3).

Dobrushina, Olga R., Irina V Sidyakina, Konstantin V Lyadov, et al. 2014. "Navigated Transcranial Magnetic Stimulation in Rehabilitation of Traumatic Frontal Lobe Injury." *Annaly Nevrologii* 8: 49–56.

Tsarenko, S. V. and Dobrushina, O. R. (2008) “Cognitive and Emotional Consequences of a Critical Condition”, *Anesteziologiia i reanimatologiia* 2, 57-60.