Peter Kirsch

Narrative CV
(a) Academic profile

The basic motivation to study psychology was my interest in mental illness and its treatment, which had developed especially during my civilian service in a psychiatric hospital. But already during my undergraduate studies I came into contact with biopsychology during scientific internships. Since then, I have been fascinated by the question of the biological basis but also the biological correlates of psychological phenomena. While I was doing basic research on learning theory during my PhD, I got the opportunity to combine my interests in biological and clinical psychology during my postdoctoral position at the Central Institute of Mental Health. Since then, I have been primarily interested in the relationship between the neurobiological basis of mental processes and their alterations in individuals with mental disorders.
After my postdoc at the Central Institute of Mental Health, I moved to the Department of Psychology at the University of Giessen, where I had the unique opportunity to help build up and establish the first research MRI in psychology in Germany at the Bender Institute for Neuroimaging (BION). Since then, it is especially functional magnetic resonance imaging that I use as a research method. In Giessen, in addition to my scientific work, I was able to complete my psychotherapy training and in 2004 achieved both my license to practice as a psychotherapist and my habilitation in psychology. After completing my habilitation, I was offered the opportunity to establish and head the cognitive neuroscience lab at the Department of Psychiatry at the University of Giessen, where I also established functional MRI as a new method. While during my time at the BION research on learning processes, both in the area of fear conditioning and reward learning, was still in the focus of my research, my research interests at the Psychiatric University Hospital expanded to the area of social and affective neuroscience. In particular, that I had met Andreas Meyer-Lindenberg during this time, who had moved from the Giessen Clinic to the NIMH even before I started there, had a significant impact on my further research, as we had jointly conducted a study on the effect of intranasal oxytocin during the processing of anxiety-provoking images in 2005, which has since been cited almost 2000 times. At the same time, I had started a collaboration in Giessen with Martin Reuter, who in the meantime had been appointed the chair of Differential and Biological Psychology at the University of Bonn, and with whom I was introduced to molecular genetic research. Together with him, I was then also able to conduct a DFG-funded study on the relationship between genetic variants of the oxytocin system and the intranasal challenge with regard to neurobiological correlates of the processing of social fear and attachment signals.
These two research foci, social neuroscience and molecular genetic basis of mental disorders together with my expertise in fMRI methodology, were an excellent fit for the requirements to lead the newly established Imaging in Psychiatry research group, which Andreas Meyer-Lindenberg offered me when he was appointed to the CIMH. Although I was already involved in the appointment process for the professorship of Clinical Psychology at CIMH at that time, I moved to Mannheim in 2007. After a very successful collaboration with Andreas Meyer-Lindenberg in the new research group, I then received the call to the professorship for clinical psychology in 2009 and then moved within the institute to the Department of Clinical Psychology in 2010, which I have headed ever since. During this time, a successful

collaboration with Falk Kiefer developed in the context of the Collaborative Research Center 656 led to my increased interest in research on alcohol dependence, especially because my former research in the context of reward processes was excellently connectable here. Our joint CRC project also initiated the first study on the development of real-time fMRI neurofeedback, which sparked my interest in developing neurobiologically based psychotherapeutic treatment approaches. In this area, I was also able to conduct a six-year DFG-funded study on the neurobiological basis of rumination and its treatment using mindfulness-based interventions together with Christine Kühner from CIMH. My current research interest has therefore shifted from pure basic research to the translation of neuroscientific foundations into psychotherapeutic interventions. This has brought me back to the point that motivated me to become a psychologist in the first place.
In addition to my scientific and psychotherapeutic work, I have also been very active in science policy in recent years. For 8 years, I was a member of the board of directors of the biological psychology section of the German Psychological Society (DGPs), four years as its spokesperson. One focus of my work there was in particular the promotion of early career researcher, which I also consider an important part of my work at CIMH. I was therefore also very pleased to be awarded the prize as best PhD supervisor of the division and the German Association for Psychophysiology and its Application (DGPA) in 2015.
This work has also increased my awareness of unacceptable behavior in the scientific context, both in terms of fraudulent and unethical research practices and in terms of unacceptable treatment of junior scientists. Therefore, on my initiative, the Ombudsman Board of the DGPs was established in 2019, and I have been its chair since then.
In addition, I have also been active in scientific self-governance since 2020 as an elected member of the DFG's Review Board in Psychology.
At CIMH, I have had very good experiences with interdisciplinary collaboration within the life sciences in recent years. However, it is not only since the pandemic that it has become clear to me that interdisciplinary collaboration with other disciplines in the social sciences and humanities is also necessary for social responsibility as a researcher. in this respect, I am extremely pleased that I have had the opportunity to work with colleagues from different disciplines twice, from 2017 to 2018 and from 2020 to 2021, as a Fellow of the Marsilius-Kolleg at Heidelberg University. In particular, the second fellowship, in which I could work on a project on social self-empowerment together with Hanno Kube from law and Reimut Zohlnhöfer from political science, had developed enormous social relevance as a result of the pamdemic. In the coming years, it is my intention to focus my scientific work even more strongly on the question of its societal impact in an interdisciplinary way. I am glad to have an excellent environment for this research work at the CIMH and the University of Heidelberg.
(b) description of key output of the years 2020-now

Here, I would like to present the outcome of our work, which correspond to my scientific goals of translating (neuro)biological principles into different forms of therapeutic intervention on the one hand and the societal impact of my research work on the other hand.
In recent years, as part of a European research network which I initiated, we have been investigating the extent to which our diet has an impact on mental health and related mental functions. Building on the finding that serotonin plays an important role both in depression and in the context of social cognition, we have investigated the extent to which the administration of tryptophan, either as a single dose or as a food supplement, has the effect

of altering mental functions and their neurobiological basis. To this end, in a publication published in 2020, together with our collaborative partner Martin Reuter in Bonn, Germany, and Ana Beatriz Rodriguez in Badajoz, Spain, we were able to show that the amount of tryptophan ingested with the normal diet is negatively associated with depressivity and positively associated with social cognitions. Furthermore, in another experimental study from this research consortium conducted at my department and published in 2021, we were able to show that this effect of a tryptophan-rich diet on social cognitions was also associated with a change in brain activation patterns in regions attributed to the so-called "social brain". Moreover, in this study it was particularly interesting that an area of social cognition, the recognition of positive emotional states, which is subject to decline with age, could not generally be influenced by tryptophan-rich diet, but the age-related decline in performance was compensated. I consider these two studies significant because they show that, building on basic neurobiological research, one can initiate lifestyle changes that can lead to the prevention of mental illness and age-related performance decline.

The translation of neuroscience findings into interventions is also evident in another outcome. In 2020, we published a paper showing that modulation of respiration patterns, a biomarker that we have shown in previous studies can predict the severity of depressive symptomatology up to 2 years later, leads, through a mindfulness-based intervention, to a reduction in depressive and anxiety-based symptoms. This outcome was also important because it led to the development of specific respiration training, which we are currently evaluating as part of a DFG-funded clinical trial. As part of this development, we have also developed a smartphone app that will support therapeutic interventions in people with depression or anxiety disorders in the future.

In the context of therapy development, last year I published a workbook for psychotherapists on the treatment of ADHD in adulthood with a former doctoral student from my time in Giessen, which has already sold more than 2100 copies within the first six months after publication. Thus, we succeeded in making our scientific work directly useful for treatment programs for those affected.

Another book publication, which is currently in print, is also an important outcome of my scientific work, as it is of high societal relevance. In this book, we report on the results of two population-representative surveys, which emerged in the context of the above-mentioned interdisciplinary Marsilius project. Although the book itself, which is aimed at the interested public, has not yet been published, the results reported in it, which we have already presented in press releases, an article in the university journal of Heidelberg University, and the annual volume of the Marsilius-Kolleg in short form, have attracted astonishing attention, leading to several press appearanddes in newspapers, radio, and television. In addition, we were invited to present the results as the closing event of the university's general lecture series in a panel discussion in the auditorium of the old university.

Public attention has also been generated by my work as Chair of the DGPs Ombudsman Panel. With this committee, we conducted a survey at the psychological institutes in Germany on unethical scientific behavior, the results of which were also reported in various media and most recently led to an interview of me in one of the largest German daily newspapers. It is of great concern to me to raise awareness of the importance of ethical behavior in science and I think that such press coverage can make an important contribution here.