

Why people reward themselves with hunger

New professor came from Harvard to Dresden. Stefan Ehrlich employs MRI for the research of neuronal processes by patients with anorexia.



The University Hospital Carl Gustav Carus Dresden enlisted Prof. Stefan Ehrlich, a renowned brain scientist. The doctor and scientist changed from the American university Harvard to the Clinic for Child and Adolescent Psychiatry. Beside fundamental research for brain development of children and adolescents, he is responsible for the treatment of patients with eating disorders. These are children and adolescents, who suffer from Anorexia nervosa. A main focus of his research is the brain process of the patients.

Obviously, Anorexia patients process emotions differently from healthy people. Responsible, highly complex neuronal nets in the brain are under scrutiny of the research team of the newly appointed professor, who wants to make use of the 3-Tesla MRT. In the coming three years, they will examine about one hundred young people – acutely ill, successfully treated and also healthy people. With the appointment of Prof. Ehrlich, the clinic was able to sharpen its scientific focus. Prof. Veit Roessner, director of this clinic appointed in 2009 pronounces natural scientific approaches to find the sources of psychic disorders to develop and enhance therapy

As an example, how different anorexia patients process emotions, Prof. Ehrlich names the typical behaviour to reward and motivate oneself by eating, e.g. a piece of chocolate. Anorexia patients have it the other way around. The positive feeling comes with the abstinence to food. The normal and the changed system of reward can be followed by the brain activities. With the anticipation of something positive, brain regions become active.

The complex interaction of different brain regions could be a key to describe and interpret the changed emotion processing. To localize and measure these activities, the scientists use a 3 Tesla MRI scanner. The images taken during a certain period of time are evaluated by high-end computers, to define place, duration and intensity of activated brain regions. Prof. Ehrlich brings comprehensive know-how to Dresden: During the past three years he did research on similar subjects at Harvard medical School in Boston.

Connection between Treatment and Science

With his appointment in October 2010, Professor Ehrlich leads the out and in-patient treatment facilities for patients with eating disorders. This is an excellent base for successful research. “The interface between treatment and research allows us to develop hypotheses out the practical experience und check them scientifically.” The are still uncharted spots regarding the triggers and reasons of psychic diseases with children and adolescents. Eating disorders are a good example. It is disproved that these are diseases of civilisation as it was discussed in the 80s and 90s. It

shows, that eating disorders are genetically depending to a high degree. The heredity of eating disorders is the same as Multiple Sclerosis, declares Prof. Ehrlich. But of course environmental factors, as the conditions of modern industrial society play a role. They may contribute to evolve a disease from disposition.

To learn more about the development and eating disorders and other psychic diseases the doctors and scientists use natural scientific procedures. There are scientific projects in regard to Tic-disorder, Attention Deficit Hyperactivity Syndrome, obsessive-compulsive disorder and bipolar disorder. Beside the 3 Tesla-MRI scanner, the scientists make use of endocrinological analysis. Information about metabolism and hormone levels hints about type and course of mental diseases. The MRI puts the scientists in front of great challenges. The reward induced stimulation of the brain is quite low, so it is hard to distinguish from the background noise of the general brain activity. To further refine measurement methods, Prof. Ehrlich will use the technical and scientific expertise of the University of Technology Dresden. "I want to make use of the vast experience for our projects and create synergies between engineers, information scientists, physicists and medical doctors." We also need to involve the Center for Information Services and High-Performance Computers at the TU Dresden to evaluate the data we found.

Furthermore the "scientific atmosphere" in Dresden tipped the scales of Prof. Ehrlich's decision to come to Dresden. "At the TU Dresden, I can collaborate with people from different fields of work, who are not only good scientists but also good and creative managers, who are happy to support me and encourage me for new approaches". This is the atmosphere, where young scientist like himself can develop a pioneer spirit and can further develop projects.