

Visions, needs and requirements for (future) research environments: An exploration with Marie Curie Fellow Isabel Krug

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Science is a global endeavor: regional initiatives such as the EOSC are coordinating with similar initiatives on a global scale to ensure that scientists can cooperate globally, within academia as well as with industry. Thus, the perspective of researchers outside Europe is particularly relevant, to learn about expectations, needs and visions on the future of research and international research collaboration. Let's see what Isabel Krug has to say.

“Facilitating global collaborations as well as collaborations of inter and multi-disciplinary teams”

TU Wien: What does your work currently focus on?

IK: My research is in clinical psychology and focuses on eating disorder populations, but I am also looking at disordered eating and body dissatisfaction amongst normal populations. My research covers the severity spectrum from normal eating / body image to clinical disordered eating behaviours / body dissatisfaction.

TU Wien: Why are you doing the work that you are doing?

IK: I am interested in eating disorders because I feel that it is something that everyone encounters. Everyone is confronted with eating all the time. It is not like other problems that you can say I am just taking a break from it. We do have to eat to survive. And I am intrigued by the fact of why people have abnormal eating behaviours. I also think that the eating disorder area is a lot less researched than other mental health problems. Anorexia has the highest suicide rate of all mental illnesses. If you look at abnormal eating patterns within the community, prevalence can vary enormously. Being dissatisfied with one's body

has become a norm that people don't question anymore. I am intrigued to find out why people develop eating disorders and how we can improve prevention and treatment for those people affected by this illness that robs the life of so many people.

TU Wien: What data are you working with and how do you collect it to answer your research questions?

IK: I work with different data sets and they vary a lot. For instance, when I was doing my PhD and my postdoc in Spain, I worked at an eating disorder unit and had access to clinical data. Each patient who was coming to the unit was asked to fill in a survey to be part of a standardized assessment. Throughout the years, the unit has been able to establish a large database of clinical eating disorder cases, which we have used to answer questions about the best classification of eating disorders, risk and protective factors for eating disorders as well as treatment outcome studies. In the last couple of years in Melbourne, it has been a little bit harder for me to access clinical data. This is mainly because I am now based at a university setting and not a clinical hospital anymore. We

now do a lot of community-based surveys to assess women at risk for eating disorders and body dissatisfaction. For various of our studies, we use ecological momentary assessment, which entails data collection through a smartphone app on certain eating disorder behaviours and cognitions various times a day for approximately a week.

TU Wien: Are there any (data) challenges that you are facing?

“It is essential to collaborate with people who are experts in different fields to be able to move the eating disorder research field forward”

IK: A lot of things in the research I do could be automated! I do spend a lot of time on bureaucracy. For instance, ethics is very time consuming. This is especially the case when I want to access a clinical eating disorder population at a local hospital. It is also very challenging to establish research relationships with clinical units, because the clinical staff is often overburdened and doesn't want to take on any extra work related to the research we would like to do. Hence, it is very difficult to establish a research-practice integration momentum. However, I feel fortunate that I still have ongoing collaborations with my work colleagues in Europe, who have large clinical datasets, which I am allowed to use.

TU Wien: In an ideal (future) research environment, what kind of services would you want? What would you want to be able to do?

IK: I would be delighted to be able to combine clinical datasets on eating disorders from different countries. A lot of times researchers use similar measures, which would allow to harmonize datasets to answer exciting research questions using advanced statistical techniques (e.g. network analyses, machine learning).

Furthermore, large datasets would also allow to assess differences across a range of eating disorder subtypes (e.g. Anorexia, Bulimia, Binge Eating Disorder, Otherwise Specified Feeding and Eating Disorders (OSSFED)). I'm particularly intrigued by OSFED, which is the main category of eating disorders that does not fall into the established eating disorders of anorexia and bulimia. We currently know very little about this eating disorder category, mainly due to its heterogeneity.

I would also like to see more integration of different biological, psychological and environmental risk factors to be able to develop and test a multi-factorial risk factor model for eating disorders. Until the present moment, most risk factor studies have been assessed mainly in isolation. Genome-wide association studies (GWAS) on Anorexia, have a range of biological, psychological and environmental data available to assess, but until the current moment these collaborations have mainly focused on the genetic risk factors for Anorexia Nervosa. The datasets shared in initiatives such as GWAS, do allow however to combine other psychological (e.g. comorbidity, eating disorder and general psychopathology as well as personality risk factors that are available to analyse. It would be interesting to combine all these different risk factors into the same analyses to see which factor(s) has/have the highest predictive power for eating disorders as well as the different subtypes of eating disorders.

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TU Wien: You mentioned the need of combining biological, environmental, social and clinical data before. How does your field benefit from interdisciplinary research?

IK: In my area an inter- and multidisciplinary approach is very important. For instance, for the machine learning methods that are currently used to predict risk you need statistical and engineering knowledge. For the genetic analyses, you need the biological know-how and for the GWAS you need to be very good at processing very large datasets, which is only manageable with extensive bioinformatics expertise. However, it is of course essential to always be able to relate these findings back into a clinical context. I guess that's where my clinical skillsets are being asked for. It is impossible to acquire all these skillsets as one individual person. It is therefore essential to collaborate with people who are experts in these different fields to be able to move the eating disorder research field forward, with the hope of improving prevention / treatment programs for those affected by the illness.

TU Wien: Now, getting back to all the things you said concerning the challenges that you are facing in research and interdisciplinary research. What would you need the EOSC to be or to offer to support your research endeavours?

IK: As European, living in Australia, I would really like to maintain and start new collaborations in Europe. I mainly know people working in the eating disorder field, but research on cross-disorders and other disciplines is becoming more and more important. Hence, facilitating collaborations from an inter- and multidisciplinary team, would certainly allow to address exciting and timely research questions, that won't be able to be answered in silo. Finding ways to automate administrative burdens to facilitate

collaborations amongst different countries, especially within a clinical setting, would also be vital to progress research. Finally, being far away, I would also like to find out more about funding opportunities that are targeting research exchanges between Europe and other parts of the world, e.g. Australasian countries.



Dr. Krug is a Senior Lecturer in Clinical Psychology at the University of Melbourne. Before her current appointment, she worked at King's College London in the UK and the University of Barcelona in Spain. Her research focuses on the genetic, neurocognitive, environmental, and psychological underpinnings of all types of eating disorders (EDs), with a specific focus on Other Specified Feeding or Eating Disorder (OSFED). Dr. Krug implements new statistical techniques (e.g. machine learning, network analyses) to improve the classification and aetiological knowledge for EDs. Her team also uses numerous data collection procedures, including Ecological Momentary Assessment (EMA), passive data, experimental studies and online interventions. A specific strength of Dr. Krug's research team is the integration of extensive research and clinical expertise, with the ultimate aim to improve the clinical care of patients and carers living with EDs.