

Mental health in mathematics research: challenges and paths to change

Exploring how systemic pressures affect researchers, and the growing efforts to support well-being across academia

EMYA column regularly presented by Vesna Iršič

Anita Waltho

Mental health has become an area of growing attention in academia. Researchers face a range of stressors, including excessive workload, intense competition, and imposter syndrome. Over the past decade, an increasing number of studies have shed light on this issue. A 2021 meta-analysis of 32 studies estimated that 24% of PhD students experience symptoms of depression and 17% anxiety [2].

These findings have served as a wake-up call, prompting many institutions and individuals to take action. Initiatives have emerged that aim to raise awareness and provide support for mental health within academia. In mathematics, where research is often solitary and intensely cerebral, and where the field has long cultivated the myth of the lone genius, more voices from the community are speaking out, and concrete steps are being taken to support researchers' mental health.

A research culture at odds with mental well-being

Across disciplines, academic culture is shaped by structural and social conditions that often undermine well-being. One serious concern is power abuse. "The structure of the academic system lends itself to power abuse, as it follows a hierarchical structure with multi-faceted dependencies of staff and students on their superiors," says Hendrik Huthoff, former researcher, and now a workshop facilitator as well as advocate for mental health and systemic changes in academia. He sees power-relationships as a key factor in many of the mental health challenges faced by early-career researchers.

Power abuse may arise in situations where supervisors exert undue influence over the academic lives of early-career researchers. Several recent investigations and exposés,¹ particularly in high-profile research institutions, have brought systemic abuse to public attention.

As researchers compete globally to publish in high-impact journals and secure prestigious limited positions, hard work and personal

sacrifice often become the expectation. Mikael Vejdemo-Johansson, associate professor of mathematics, computer science and data science at College of Staten Island, part of The City University of New York, recounts a telling conversation he had at a conference early in his career,

"I was talking to one of the leaders in my field and at some point, I mentioned that I was going to spend the weekend with my wife and try to avoid doing too much work, so I could focus on her, and get some rest and relaxation. His immediate reaction was: 'But I thought you wanted a career in academia'."

Mikael's story also highlights how the pressure to prioritise work above all else can strain relationships outside academia. The demands of a research career can create additional challenges to personal relationships, particularly due to instability. As Barbara Betti, PhD student and former PhD representative at the Max Planck Institute for Mathematics in the Sciences, explained: "Finding permanent positions is very hard..., and you might have to move to another city or another country many times before stabilizing. If you want to have a family or be stable with your partner, that's challenging."

Mental health perspectives within mathematics

Mathematics research comes with its own set of challenges that can be detrimental to mental well-being. The nature of the work – often solitary, abstract and mentally taxing – can intensify feelings of isolation, imposter syndrome and mental fatigue.

"Mathematics is much more of an individual sport," says Mikael. "A lot of research boils down to sitting and staring at a blank sheet of paper. Everything happens inside your head. And unless you actively seek it out, you're unlikely to find yourself in much collaborative work. This isolation ends up being a huge problem in mathematics."

Additionally, mathematics has a culture that often glorifies brilliance and downplays the value of asking questions. The cult of the mathematical genius [1] puts a pressure on students and researchers that encourages competition and where struggle is seen as weakness.

¹ <https://www.dw.com/en/abuse-elite-scientists-germany-max-planck-society-v2/a-71897800>

"[In a seminar or lecture] it's very common that people would say 'we don't need to present this proof. It's trivial'. And then no one dares to say, 'but I don't understand it'," recounts a master's student in numerical mathematics, who wished to remain anonymous, "It can very easily make you feel like you're actually too dumb for maths."

This imposter syndrome compounded by working in isolation can lead to individuals suffering in silence. "I heard stories of friends of friends who were puttering away as graduate students, utterly convinced they were the only one to struggle, and curled up under their desk crying on a weekly basis," said Mikael.

Whether stuck on a maths problem or struggling with your mental health, the first step towards a solution is the same: asking for help. But if people do not feel safe or empowered to speak up about their academic struggles, encouraging them to seek support for personal mental health issues becomes even more difficult.

The wave of mental health awareness

In the mathematics research world, as across Western society in general, the tides are changing and mental health is becoming a bigger topic of conversation. "What has changed in the last decade is that it's much more accepted to talk about [mental health struggles]," says Volker Mehrmann, professor at the Institute for Mathematics in the Technical University Berlin, and former president of the European Mathematical Society.

Mikael has worked in mathematics research in Sweden, Germany and the USA, and has been an advocate for mental health in research for nearly a decade. "My motivation for starting out my advocacy work was that I was watching one of my major life communities utterly fail everyone in the community. There was a complete silence and a complete lack of support structures," he recalls.

Mikael has contributed to raising awareness by sharing his mental health story in two articles for the American Mathematical Society's magazine [3, 4], and facilitating open conversation on the topic at panel discussions at the Joint Mathematics Meeting and his blog 'Depressed academics' cofounded with his former colleague Ian Gent.

Workshops are another way the conversation is expanding. Hendrik facilitates workshops on academic mental health and power abuse, and is the former mental health project lead at UniWIND/GUAT (German University Association of Advanced Graduate Training). He explains how workshops can act as an information provider and a discussion forum, "I have done workshops that really focus on what mental health is – that we all have mental health, and it fluctuates across our lives, even within a single week... [for the UniWIND mental health project] workshops were incredibly helpful for us to hear the voices of those on the ground

– be it the doctoral researchers, coordinators of graduate programs or supervisors – to guide the direction where we should go."

Above all, maintaining momentum on mental health awareness is crucial. As researchers frequently change institutions during their career and new cohorts of early career researchers and students come in, *mental health awareness and advocacy is a continuous mission, not a one-time solution.*

"You can't just say 'OK, we had a mental health event in 2020. Subject closed'," says Hendrik. "It's something that needs to be continually talked about because you always have new generations of people coming in. It needs to remain at the forefront of the people's minds to create a culture where people feel safe to speak openly about it."

Supervisors must accommodate their students' mental health needs

Whether leading a research team or mentoring as a junior researcher, supervisors play a crucial role in supporting students' and researchers' mental health. This includes building trust, making accommodations, and directing students to appropriate support services.

Mikael has found that being open about his own experiences with mental health encourages his students to approach him for support. "I found it really useful in my teaching, so I usually end up using some sort of excuse within the first couple of weeks of a class to mention my struggles. This has the concrete effect that my students have a much lower threshold to seeking me out when they need accommodations or when they are struggling."

Volker also believes supervisors should offer the same support for mental health challenges as they would for other access needs. "In my opinion, it is like any other serious challenge a person might face, and one has to be accommodating. If I have a blind person in my lecture, I must ensure they have every chance to succeed. If I have a master's or PhD student dealing with depression, I should do everything I can to support them in continuing their research while managing their mental health."

Mental health accommodations will vary case to case and should be developed in consultation with the individual. They might include flexibility for therapy appointments, sick days, longer absences, or deadline extensions. Crucially, supervisors should also be ready to help students access institutional or local mental health services, by having the information on hand.

The power of grassroots action

Grassroots action, community-driven, bottom-up initiatives led by student and researcher representatives, plays a vital role in spread-

ing mental health support, offering peer assistance, and advocating for positive change within or across academic institutions.

Former PhD representative Barbara describes some of these responsibilities, “Our role as representatives was, first and foremost, to listen and offer support when a PhD student came to us with a complaint or something they were struggling with. After that, we would direct them to the appropriate people with more expertise or authority to help. Whenever a new PhD student joined, we sent them an email with all the relevant contact information for reporting supervisor misconduct or seeking mental health support.”

Hendrik, who worked as a graduate coordinator for many years, comments: “What helped me enormously in driving forward my initiatives was the grassroots involvement from PhD and Postdoc representative organisations.”

Critical grassroots-led mental health advocacy also comes from initiatives that are independent of specific institutions and made up of advocates from several countries and career stages. One example is the former EU-funded ReMO (Researcher Mental Health Observatory) COST Action,² which brought together over 100 researchers and stakeholders from across Europe to map and improve mental health support for researchers. ReMO developed best practices, organised training events, and created a policy brief on mental health in academic settings.

Another is Dragonfly Mental Health,³ a non-profit organisation run by academics that provides tailored workshops, consulting, and advocacy aimed at improving mental health in research environments. Dragonfly works globally, with a team representing multiple continents and disciplines, and partners with universities, funding bodies, and postdoc representative organisations.

Institutional support in accessing services

Long waiting times and overloaded mental health facilities are challenges that affect many people, not just researchers. For academics, these difficulties are often compounded by frequent relocations across cities and countries, requiring them to repeatedly adapt to new healthcare systems. This constant upheaval can disrupt ongoing treatment and add significant stress.

Mikael shares his personal experience of such disruption: “By the time I talked to a psychiatrist, it was three weeks before my moving date. When I arrived in Sweden, I had to start from scratch again – trying to build up and find someone to talk to. After about half a year, I was back in treatment.”

His experience at The City University of New York, however, was markedly more supportive thanks to their work-life balance service: “They had therapists, and various systems and mechanisms

in place just to make things a little bit easier. I reached out with my needs and information, and I received back names and phone numbers of places that they had verified were actually accepting new patients and took my insurance,” Mikael recalls.

Institutional support in accessing local mental health services, or even on-site counselling, can be crucial in helping researchers maintain continuity of care and reduce the stress associated with relocation.

The benefits of mental health first-aiders

Hendrik recounts his first experience with mental health first aid whilst working in King’s College London: “One day we found a master student hyperventilating on the floor of the lab. Fortunately, he was seen within hours, if not minutes, by the mental health first-aiders that we had at the university.”

Mental health first-aiders can be likened to conventional first-aiders – they are voluntary first responders to mental health-related incidents or reports, who offer support and referral to appropriate services. Mental Health First Aid International⁴ is the not-for-profit organisation that oversees and supports the official Mental Health First Aid Program worldwide. Currently, this program is available in 11 European countries: Austria, Denmark, Finland, France, Germany, Ireland, the Netherlands, Slovakia, Sweden, Switzerland and the UK.

Whilst working as a graduate coordinator, Hendrik set up the first mental health first aid programme at a German university, at the University of Jena. “It was a success in the sense that, on the one hand, staff were very keen, even on a voluntary basis, to participate and get their Mental Health First Aid qualifications. And on the other hand, we immediately had a lot of requests for consultations,” says Hendrik.

Mental health support facilities also benefit from mental health first-aiders. “We reduced waiting times for counselling, because we could filter out those in urgent need for a therapy referral from those that would benefit from other support, like conflict resolution with an ombudsperson, grants for financial hardship or simply assistance with overcoming cultural barriers,” explains Hendrik.

Looking ahead: support across career stages and addressing root causes

While mental health support for students is growing, postdoctoral researchers and faculty often remain overlooked. As Mikael recalls, “I can’t think of any university that doesn’t have mental health support for undergraduates – it feels old and well established. It’s

² <https://www.cost.eu/remo-building-a-healthier-research-culture>

³ <https://dragonflymentalhealth.org>

⁴ <https://mhfainternational.org>

newer, but widely accepted that graduate students may also need help. Postdocs, at least when I started out, had almost no support, and faculty even less. Once you got your PhD, you were basically on your own."

This highlights a pressing need to extend mental health resources and support systems to all career stages within academia, ensuring that no one navigating its unique challenges feels unsupported.

While mental health support is essential, it often addresses only the symptoms of deeper systemic challenges within academia. The current structure, with its hierarchical power dynamics, heavy emphasis on publication metrics, and limited tenure positions, can foster stress, unhealthy competition, and, at times, abuse. Of course, mental health struggles are complex and not always caused by the research environment, so there will always be a need for accessible, well-resourced support services. However, many of the widespread mental health challenges in academia are rooted in systemic issues that can and should be addressed.

Moving forward, efforts must focus on challenging and reforming these underlying conditions. Reforms, guided by robust data and shaped by voices from across all academic levels, can help build a healthier, more supportive environment for everyone in research.

References

- [1] G. Karaali, [On genius, prizes, and the mathematical celebrity culture](#). *Math. Intelligencer* **37**, 61–65 (2015)
- [2] E. N. Satinsky, T. Kimura, M. V. Kiang, R. Abebe, S. Cunningham, H. Lee, X. Lin, C. H. Liu, I. Rudan, S. Sen, M. Tomlinson, M. Yaver and A. C. Tsai, [Systematic review and meta-analysis of depression, anxiety, and suicidal ideation among Ph.D. students](#). *Sci. Rep.* **11**, article no. 14370 (2021)
- [3] M. Vejdemo-Johansson, [Invisible struggles: when the mask stays on at work](#). *Notices Amer. Math. Soc.* **71**, 890–892 (2024)
- [4] M. Vejdemo-Johansson, J. Curry and J. Corrigan, [Mental health in the mathematics community](#). *Notices Amer. Math. Soc.* **66**, 1079–1084 (2019)

Anita Waltho is a science communicator and writer, with a PhD in molecular biology. She has worked in scientific research in both London and Berlin, where she currently lives. She is a local organiser of science outreach and women* in science advocacy platform Soapbox Science, and combines her love of improvised comedy and science in the SciComedy show Laughing Matter. She is open to new projects and collaborations in the areas of science communication and academic culture change.

aswaltho@hotmail.com



Call for Proposals

RIMS Joint Research Activities 2026-2027

Application deadline : November 28, 2025, 23:59 (JST)

Types of Joint Research Activities

***RIMS Workshops(Type A)/Symposia 2026**

***RIMS Workshops(Type B) 2026**

More Information : RIMS Int.JU/RC Website
<https://www.kurims.kyoto-u.ac.jp/kyoten/en/>



京都大学
KYOTO UNIVERSITY



Research Institute for
Mathematical Sciences