Navigating mental health challenges in graduate school

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Many graduate students experience mental health struggles that lead them to question their place in academia. Two scientists who experienced extreme lows in graduate school reflect on what helped them during their low points, and suggest strategies for everyone to contribute to mentally healthier workplaces in academia.

We — Elvis and Zack — are two scientists who navigated mental health challenges during graduate school. Elvis is currently a postdoctoral researcher at MIT, and Zack is a mental health advocate and Stanford research affiliate still figuring out what his path as a scientist may look like.

With this piece, we hope to empower students who are facing similar struggles to understand they are not alone, and to call for more support at the institutional level. While we both ended up deciding to complete our PhDs, we want to emphasize that this is not the right choice for everyone — we each have numerous friends and former colleagues who are now leading healthier, happier lives after deciding to leave their graduate programmes. There are many ways to achieve a fulfilling career in and outside of academia, and, most importantly, there are many ways to achieve a fulfilling life.

Elvis’s experience

In November 2016, 3 months into my PhD in Mechanical Engineering at Cornell University, I planned to quit, even though I had wanted to pursue an academic career since my early childhood in China. I struggled to catch up with two advanced-level courses, could not fit into my first lab rotation, lost interest in my research project, and felt isolated as an international student in the small town of Ithaca. Daily frustrations added up to depression. That November, it started snowing in Ithaca, and I felt I had also entered a ‘snow season’ in my life. At that time, I thought pursuing a PhD at Cornell was the worst decision I had ever made and that I could not do it anymore.

Many international students share a similar experience. We choose to hide our struggles from our family and pretend everything is fine during video calls. We simply do not want to make our loved ones over-worried on the other side of the planet. In addition to the isolation from our families, job uncertainty and, for some of us, visa restrictions escalate our anxieties.

I held on. I reached out to old friends back home to rebuild my positivity and confidence. I also spoke to the other international students in my PhD cohort to seek their support. We initially formed a group to support each other during the qualification exam preparation. When I spoke about my mental health challenges, I was surprised to find they resonated a lot with them, and we started openly discussing our issues to get advice from each other.

With the help of the Director of Graduate Studies in my field and the Graduate Field Assistant at Cornell, I switched to another research group within the department. I built connections with new colleagues and became passionate about my new project with the encouragement of my new PhD advisor. An immigrant himself, he provided substantial support: he was always there to help, from guiding my research project to supporting my professional development (for example, he wrote some 20 reference letters for me). After settling into my new research group, I landed on the Forbes 30 Under 30 list for my thesis project, and my side project was featured on the National Institute for Biomedical Imaging’s website. In 2021, I received two postdoctoral fellowships from the MIT Climate & Sustainability Consortium and the Alexander von Humboldt Foundation. Pursuing a PhD at Cornell turned out to be the right decision for me.

Looking back, my international peers in the support group helped me navigate the initial struggles in graduate school as I tried to fit into the new environment. The help I received from my department eased the pressure a lot, especially during the lab switch process. The support from my advisor and colleagues in the research group made my pursuit of science in a foreign country an enjoyable experience. As international students and scholars, we will inevitably face many additional challenges in the future, and knowing I have someone to count on greatly relieves my anxiety. I have not seen my family since 2019 owing to COVID, but the friendship and mentorship I received during graduate school made me call Ithaca my new home. More graduate students (especially international students) should be encouraged to form their own support groups and seek institutional support when problems arise. Research groups should...
**Fig. 1 | Improving mental health for graduate students.** Strategies graduate students and faculty can use for themselves (inner circle) and for others (middle circle), and strategies for institutions to support mentally healthier graduate student experiences (outer circle).

be supportive, help lessen feelings of isolation and help students identify solutions for the problems they face.

**Zack’s experience**

In May 2017, 2 years into my PhD in Geological and Environmental Sciences at Stanford University, I was suicidal. I was hospitalized the morning of my doctoral qualifying exams. For months after, I felt like a failure — I was ashamed, my confidence was destroyed, and I did not think I belonged in academia.

I spent 11 days in the hospital, 6 weeks in all-day group therapy, and 5 months away from my dissertation. But, looking back, taking that time away from academia ended up being the best decision I could have made for my life as a scientist. My mental health crisis taught me the power of unplugging: to take that 2-week vacation; to check in with myself, friends and family rather than checking emails late at night; to actually treat weekends as ‘weekends’.

I also sought support from my California-based family and friends, and — critically — from my PhD advisor. He told me he would continue to fund me, and to take all the time I needed to care for myself. He shared encouraging stories of brilliant scientists he knew with mental health challenges.

Five months after my hospitalization, I passed my qualifying exams.

Since then, I’ve worked for the US Department of Energy and NASA, my research has appeared in *Popular Science* and CNN, and, in December 2020, I defended my PhD. Beyond the professional opportunities that arose after my lowest point in 2017, I have found purpose in giving back: I share openly about my mental health challenges to foster healthier and more inclusive spaces. I co-created The Manic Monologues (a play showcasing diverse true stories of mental health, made accessible to thousands worldwide), and I have spoken for Amazon’s diversity and inclusion series, NPR and — most meaningfully — for university students and hospital patients like I was.

I still struggle with my mental health. I have many good days, and I also have horrible days. But I am not alone. I take medication and I seek help from health-care professionals when needed, and I have built a wonderful support network of friends, family and colleagues: we all support each other, because we are all in this together.

**Mental health issues among graduate students**

Even before the COVID-19 pandemic, poor mental health was pervasive among graduate students and in academia. In a 2019 global survey of 6,320 PhD students, 36% of respondents reported seeking help for anxiety or depression caused by their studies. A synthesis of articles published through 2019 yielded a pooled estimate of “clinically significant symptoms of depression” in 24% of PhD students (across 16 studies covering 23,469 students) and of anxiety in 17% of PhD students (across 9 studies covering 15,626 students) — notably higher rates than among young adults in the general population.

The pandemic has exacerbated this already dire situation. A 2020 survey of more than 15,000 graduate students at nine US research universities found that anxiety symptoms rose 50% compared with 2019. The survey found that 32% of graduate students screened positive for symptoms of depression, and 39% screened positive for anxiety. Among faculty, similarly worrying trends are observed. A poll of 1,122 US faculty members found that 70% felt stressed in 2020 versus 32% in 2019 and that more than 50% were seriously considering a career change or early retirement. Another study found moderate to severe signs of mental distress in 78% of UK research staff during the pandemic.

In the USA, international students make up nearly half of all students entering science and engineering graduate programmes. Being an international student comes with many additional mental health challenges, including isolation and separation from family, visa and job prospect uncertainty, acculturation and potential subjection to racism and anti-immigrant rhetoric. To make matters worse, mental health impacts may be magnified for groups already most marginalized in STEM and academia, including low-income, first-generation, LGBTQ+, Black, Latinx, Asian, Indigenous, women and non-binary students, as well as students with disabilities and intersecting identities.

**Reflections and strategies for mentally healthier graduate experiences**

We navigated our mental health struggles through a combination of reaching out for help (for example, from family, friends, colleagues and supervisors, therapists...
and mental health professionals), building support groups and finding solidarity among peers, and achieving a better work–life balance by re-organizing priorities and values (Fig. 1). Meanwhile, we think it is essential to speak openly about what we went through so that others facing similar challenges know they are not alone. Alongside speaking openly, regular check-ins to see how colleagues are doing and speaking out against injustice are ways we can all help foster mentally healthier environments.

Institutions must also help (Fig. 1). In addition to expanding and guaranteeing access to professional mental health services and improving both services and mental health-related policies, institutions must ensure that students are not disadvantaged or implicitly punished for making use of them (for example, via potentially harmful implementation of leave of absence policies).

Institutions should acknowledge and reward service towards improving mental health. For example, institutions should encourage faculty, staff and students to share vulnerably about their own experiences to create healthier environments and should recognize those who advocate for improved mental health support at the department and university level. Institutions should support and provide resources to graduate students to implement critical social support measures such as peer support groups. Faculty should always strive to foster supportive and positive mentoring relationships with their graduate students, and institutions must support them in doing so. Institutions and graduate advisors alike should support and encourage students in taking healthy breaks when students are feeling stuck, burnt out or overwhelmed (and should explicitly highlight options and examples for taking such breaks). Institutions and faculty should also foster career optimism and remind students that many pathways (both inside and outside of academia and the sciences) can lead to fulfilling careers and lives. Above all, institutions must strive to create an inclusive and supportive culture.

Conclusion

As academics and scientists who faced mental health challenges during graduate school, we are asking individuals and institutions to pay attention to the mental health of students. We must support students — particularly those already under-represented in STEM — to create better workplaces, communities and science for all of us.

If you are struggling right now, you are not alone. We have both been at the lowest of lows. We did not think there was a place for us in academia or in the sciences. But, thankfully, we were wrong. Our lives and careers have never been as fulfilling as they are now.

Finally, we wish to acknowledge that this article is a product of our own experiences and reflections and those of others close to us and, therefore, may not resonate with everyone. Our suggestions similarly cannot be comprehensive in scope, but hopefully may nonetheless further this critical conversation and play some part in bringing about meaningful change to improve mental health support for all.

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Competing interests

The authors declare no competing interests.

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