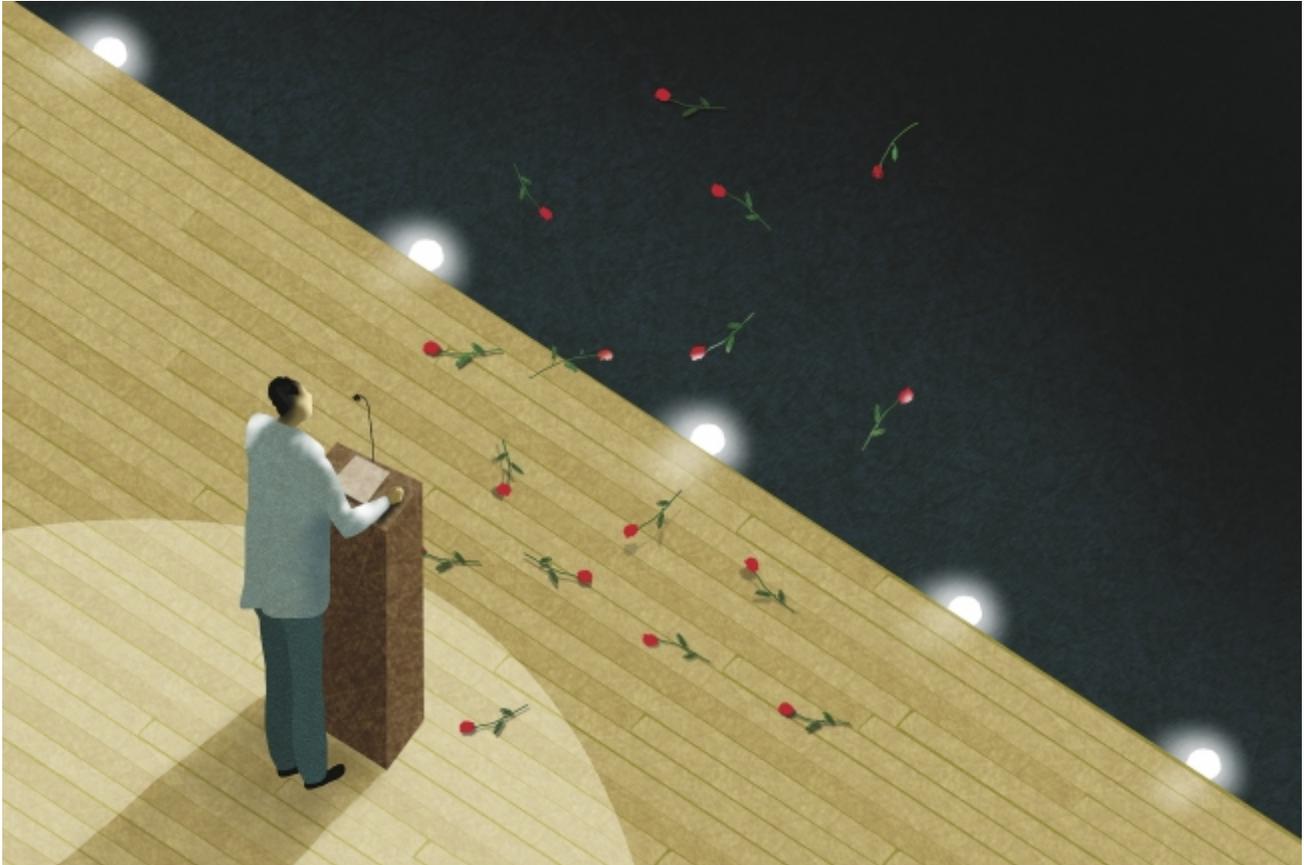


Grad School Is Hard on Mental Health. Here's an Antidote.

 [chronicle.com/article/Grad-School-Is-Hard-on-Mental/240626](https://www.chronicle.com/article/Grad-School-Is-Hard-on-Mental/240626)

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[Commentary](#)



David Cutler for The Chronicle

By Ardon Shorr July 17, 2017

I knew grad school would be difficult, but I was surprised to find one way in which I wanted to work harder: learning how to talk about science. I grew up seeing science misrepresented or misunderstood in the news and pop culture. I thought the relationship between science and society needed repair, and I saw scientists' isolation as part of the problem. So I couldn't believe that my Ph.D. program was willing to release me into the world without teaching me how to talk to people outside academe.

That's why, when I joined Carnegie Mellon University as a graduate student in biology, I started a group called Public Communication for Researchers. My fellow graduate students Adona Iosif and Jesse Dunietz and I created the workshops we wanted to take. Over the past five years we've worked with more than 500 graduate students across STEM fields, hosted numerous speakers, and created a dozen workshops on science communication. Our initial goal was to learn how to explain our work, but I'm now convinced that this training has unexpected benefits for another challenge in higher education: our own mental health.

Grad students take a [psychological beating](#). In a [2014 study](#), the University of California at Berkeley found that 47 percent of its Ph.D. students showed signs of depression. One of the main reasons cited was academic

disengagement. Humans can be resilient through a great deal of stress, but it's harder when working on abstract problems without clear indicators of progress — we lose perspective on why our work matters.

Science communication was my antidote because it reconnected me to motivation. The first thing we practiced was how to talk passionately about why we love research, what inspired us, what problem we're obsessed with. The practicalities of biology sometimes look like drudgery, moving around a thousand drops of clear liquid. Seeing the big picture infused my day with magic: I was working on unsolved problems!

We found external validation, too. Telling stories onstage let us hear gasps and applause from an audience. Writing a group blog let us celebrate when our articles were shared thousands of times. I saw my work through new eyes when it was illustrated by live music, improvised dance, chalk art, and poetry. When I shared what I work on, I felt part of something bigger because I saw my role in society as a creator of knowledge. I felt a new responsibility, too: The public funds our work; we owe people an explanation of what we've found.

Besides disengagement, grad school is demoralizing because the arduous journey ends in lukewarm career prospects. Among recent Ph.D. graduates in the life sciences, fewer than 10 percent hold a tenure-track faculty position, according to National Science Foundation statistics. That figure has been [declining](#) over the last 20 years. Strong messages from advisers and other faculty members that an academic position is the only legitimate form of success set students up for disappointment. So it was a breath of fresh air to talk to journalists, policy advisers, and entrepreneurs — we found new passions and developed a healthier perspective on the wide range of meaningful careers we can choose.

At the same time, we improved our academic abilities by learning how to convey the importance of our work. This turns out to be useful for writing grants and abstracts. I felt we were getting a competitive advantage for future occasions when we would be judged by our ability to persuasively communicate complex ideas: in posters, when recruiting collaborators, at job talks, and in manuscripts. Even talking to the media helps us academically: Articles covered in the mainstream press were far more likely to be cited than articles that didn't get beyond a specialized audience. So whether we choose academe or another career, we would graduate better prepared, and our choice became more thoughtful.

Some students choose not to graduate at all. At least two members of our group dropped out of their Ph.D. program when they realized they didn't care about their research question. They went on to pursue work with more direct humanitarian impact. I see this as a success: They found work that's right for them, and they found it earlier.

My personal struggle with research was about living with ambiguity. Research in the life sciences often means working hard without knowing if you're right, with little feedback, and without seeing your work improve anybody's life. Depending on results, the same research could be commended as persistent or dismissed as foolish. Science communication was cathartic because I learned to talk about this tension. I started to see research questions as strategic risks that might not pay off for decades. I felt more intentional about choosing ambiguous work — hard problems are hard precisely because it's unclear how to approach them. One student put it this way: "In a master's program, you spend two years answering a question. In a Ph.D. program, you spend two years figuring out what your question is."

Grad school also spreads a subtle and pervasive psychological virus: impostor syndrome. Many academics develop a persistent belief that no matter how much we accomplish, we're actually incompetent frauds who have managed to deceive everyone, and will soon be exposed.

Science communication has a unique role in dismantling impostor syndrome in several ways. First, we become more confident in our abilities. Second, we normalize challenges by seeing that smart students struggle, too. Third, when we formally study communication, we understand why it goes wrong. That provides a new perspective when we get lost in a seminar: Maybe it's not because we're incompetent frauds who don't deserve to be in grad school — sometimes the speaker omitted the most important information.

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Lastly, impostor syndrome taught me that sometimes scientists are hard to understand because we're afraid of being understood. If we can be analyzed, we can be criticized. One student confessed, "I hope the audience gets lost because then they won't ask me hard questions." Talking clearly about our work is an act of vulnerability — people see our real selves, and they also see our real work, with all its limitations.

There are additional psychological costs for those with less privilege. I grew up surrounded by role models in the sciences; I could afford to work unpaid lab internships; and I had a social network of family friends who prepared me for the difficulties of grad school. But many people feel out of place because of their race, gender, or accent. Earning a Ph.D. is much harder for my friends who didn't have those tailwinds, who are sexually harassed, or told they don't belong. Even when talented students win prestigious fellowships, they can be nagged by layers of self-doubt that I will never experience: "Did I win this because I'm black?" Impostor syndrome is harder for women and students of color, so addressing the psychological hardship of higher education isn't just an issue of mental health; it's an issue of social justice.

Over the last decade, science-communication programs have blossomed across the United States. Many of them were started by grad students just like us who felt their education was missing something essential. We never intended to find benefits for mental health — our programs touched on these topics by accident. With a modicum of intention, we could do much more.

As their founders graduate, these student programs are now at a crossroads. I believe the only way to make science communication training sustainable is for grass-roots groups to become institutionalized. These programs deserve top-down support with full-time positions for program directors. We must teach science communication for the sake of our research, because an experiment that's never understood is as useless as an experiment that's never completed. We must teach this for our society, because we are graduating into a world that cannot agree on what we know. But we must also teach this for our own sanity.

When we explain what we do, we learn who we are.

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