



Scientists who leave research to pursue other careers in science are still scientists

Shane M. Hanlon^{a,1}

In their study, Milojević et al. (1) set out to examine the relationships between number of publications by (primarily academic) research scientists, whether those scientists were lead or supporting authors, and how long they remained in their research career. The authors found trends between how productive (measured by number of publications) researchers were early in their career and how long they remained researchers. Additionally, they found that a growing number of researchers never transition from supporting authors to lead authors, although no relationship exists between being a supporting author and time spent as a researcher. The authors argue that this change in authorship structure (from lead to supporting, from single to teams) is a net positive and “critical to the production of contemporary science.” They also make the point that while universities and institutions do not necessarily reward supporting authors as much as lead authors, universities should.

These are all salient points and valuable insights to move the needle on what has previously been accepted as the “correct” way(s) to conduct research. Unfortunately, the language used in the paper potentially prevents readers from discovering these points.

The issues begin with the title: “Changing demographics of scientific careers: The rise of the temporary workforce.” The authors define “temporary” as, essentially, anyone who leaves an academic/research career. (The authors do not make a distinction and use the 2 paths interchangeably. For purposes here, I will use “research.”) More troubling, per the language in the paper, “temporary workforce” is analogous to

“temporary scientists.” Other problematic language exists throughout, starting in the abstract by referring to “careers of scientists” as only researchers, “scientific career survivability” as only careers in research, and scientists with “full careers” as those who have authored multiple papers over a 20-y period. Possibly most egregious is the use of “dropout” to define those who leave academia and “transient” for authors with a single publication.

“Dropout” is not an appropriate language choice. “Transient” may be acceptable when paired with “authors,” but even then nonresearch scientists still publish, especially those in science communication and journalism. In some cases, they publish more than researchers.

When a scientist stops their research career, that does not mean that they are no longer a scientist—they just change how they contribute to science. Sometimes this shift in contribution is not completely voluntary. Parenthood can influence the role of scientists, especially women who may be forced to change how they contribute to science (2) or from a career in science altogether (3). Gender of one’s advisor can also have an effect on the productivity of graduate students, potentially shaping their trajectory (4).

I am no longer a researcher; however, I still contribute to science. I changed how I contribute to science, as have many of my peers and colleagues who are not active researchers. To say that all of us who pursued science, no matter if we have bachelor’s or master’s degrees, PhDs, or more, have dropped out of science does not reflect the facts.

- 1 S. Milojević, F. Radicchi, J. P. Walsh, Changing demographics of scientific careers: The rise of the temporary workforce. *Proc. Natl. Acad. Sci. U.S.A.* **115**, 12616–12623 (2018).
- 2 E. A. Cech, M. Blair-Loy, The changing career trajectories of new parents in STEM. *Proc. Natl. Acad. Sci. U.S.A.* **116**, 4182–4187 (2019).
- 3 M. A. Mason, N. H. Wolfinger, M. Goulden, *Do Babies Matter?: Gender and Family in the Ivory Tower* (Rutgers University Press, 2013).
- 4 P. Gaule, M. Piacentini, An advisor like me? Advisor gender and post-graduate careers in science. *Res. Policy* **47**, 805–813 (2018).

^aSharing Science Program, American Geophysical Union, Washington, DC 20009

Author contributions: S.M.H. wrote the paper.

The author declares no conflict of interest.

Published under the [PNAS license](#).

¹Email: shane.michael.hanlon@gmail.com.

Published online August 15, 2019.