THE CONVERSATION

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Predicting who will publish or perish as career academics

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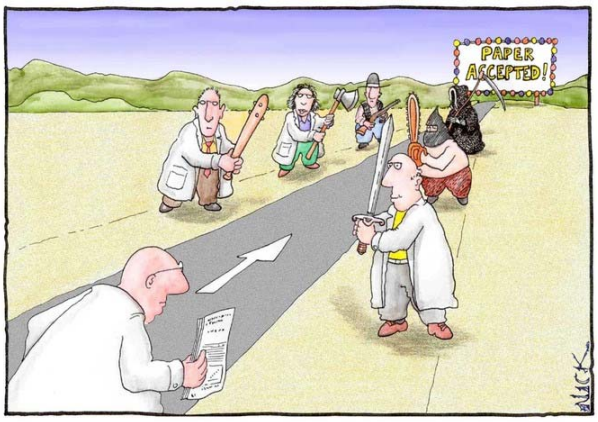

Most scientists regarded the new streamlined peer-review process as "quite an improvement."

Publishing a peer-reviewed paper isn't easy, but new research confirms it's worth the fight. Cartoon by Nick Kim, Massey University, Wellington

It doesn't matter whether or not you think it's fair: if you're an academic, your publishing record

will have a crucial impact on your career.

It can profoundly affect your prospects for employment, for winning research grants, for climbing the academic ladder, for having a teaching load that doesn't absorb all your time, for winning academic prizes and fellowships, and for gaining the respect of your peers.

And as our new research published online in the journal BioScience this month shows, if you're a woman, if English is not your first language or if you're still a student, you should be particularly aware of the value of publishing sooner than later.

It's not called "publish or perish" for nothing.

Picking winners and losers

For a young academic, can we predict whether he or she will ultimately be successful? This is clearly important, both for those trying to identify and recruit future academic stars, and for those striving to train the successful academics of tomorrow.

Of course, "success" is a loaded word. We're not suggesting that the publication rate of scientists is the only metric of their academic, societal or political influence.

Nonetheless, the number of peer-reviewed articles a scientist publishes, and the number of times those works are cited by others, are generally a good reflection of their academic reach.

We attempted to predict the publishing winners and losers, focusing on biologists and environmental scientists on four continents, using five easily measured variables. Our findings seem surprisingly unequivocal but are already provoking strong reactions of agreement and disdain.

Here's what we concluded.

It doesn't matter whether you got your PhD at glittering Harvard University or a humble regional institution like the University of Ballarat. The supposed prestige of the academic institution has almost no bearing on your long-term success, once other key variables are accounted for.

Secondly, if you're a woman, or if English isn't your first language, you're going to face some minor disadvantages in publishing. The differences are not huge, on average, and there's enormous variability among different individuals, but men who are native English speakers do tend to have half a leg up in the publishing game.

Finally, by far the best predictor of long-term publication success is your early publication record - in other words, the number of papers you've published by the time you receive your PhD. It really is first in, best dressed: those students who start publishing sooner usually have more papers by the time they finish their PhD than do those who start publishing later.

The take-home message: publish early, publish often.

A hidden gender gap

But we have to admit a big caveat: because of limitations in the data available to us, our findings apply only to those who have remained in academia over their careers. Many hopeful academics don't achieve this milestone, either dropping out at some stage or failing to secure an academic job.

Had we been able to surmount this limitation — perhaps by following a large cohort of individuals from their youth through their entire academic careers — our conclusions would

probably have differed somewhat.

For one thing, the impact of gender on success would almost certainly have been greater.

Academia is a notoriously “leaky pipeline” for women. As one moves up the academic ladder, the proportion of women falls off from 40-77% at the time of PhD conferral to around 10% at the level of full professor.

Several explanations have been forwarded for this, including the heavy demands of motherhood in the early stages of a woman’s career, potential gender bias, and the fact that women tend not to promote themselves as aggressively as do some men.

We believe the ruthless Darwinian process that hinders women in academia also applies to those for whom English is a second or third language, given that nearly nine-tenths of all academic journals are published in English. For such people, there is great variation in English proficiency, and those with better skills are clearly more likely to succeed.

Start early

Despite these limitations, our study still flags early publication success as being vital. For whatever reason, some individuals evidently “get” the publishing game earlier than do others. Relative to their peers, they might be better motivated or better writers, or work in better lab environments with better mentoring.

Publishing scientific papers is a complex and challenging skill, and once a young scientist begins mastering this process, their path gets less rocky. It becomes easier to get other papers accepted, to win grants and fellowships, and to gain more research opportunities.

Small differences early in a career can snowball into much greater differences over time. For the biologists and environmental scientists we studied, the number of papers they published over their careers varied hugely, by over a hundred-fold.

Most of all, our study suggests that early training of PhD students is crucial, and that we must strongly encourage them to publish early and often. To gain real traction, we suggest, this should also be a criterion for evaluating the success of their PhD supervisors.

Furthermore, for those involved in hiring academics, we suggest that one of the best ways to identify prospective science stars is simply to compare their research output at an early stage of their career (such as the year they received their PhD, or a few years afterwards to account for postdoctoral productivity).

We’re well aware, of course, that hiring decisions are influenced by a range of personal and professional attributes. But all else being equal, early scientific productivity seems to be a simple and surprisingly effective predictor of long-term publishing success.