

GLOBAL: Seven recipes to become a top researcher

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13 June 2010

Issue: 128



Young people entertain the illusion they will live forever and therefore time has no particular value to them. But success in scientific research presupposes the ability to travel in time. Unlike a dilettante, the professional scientist needs to think about how his or her ideas will be received in 10 years' time.

For example, to be in the top 1% of researchers most cited in the field of psychiatry and psychology today, articles you have published in the last 11 years need to have received at least 533 citations, according to **ISI Essential Science Indicators**.

At present there are only 15 scientists in Estonia who have crossed the 1% mark in their respective fields of research, two of them psychologists **Risto Näätänen** and **Jüri Allik**. There is also Estonian-born professor emeritus at the University of Toronto **Endel Tulving**, a pioneer in memory research, but credit for his work goes to Canada.

So achieving success is not that difficult. The fundamental rule has been nicely worded by Malcolm Gladwell in his book **Outliers** (2008). The key to success in any field is a matter of practising a specific task for a total of around 10,000 hours (The Ten-Thousand-Hours Rule). This rule, as Gladwell convincingly demonstrates, holds true both for Mozart and for Bill Gates.

It is easy to see that it therefore requires you to focus on your favourite activity for approximately three hours a day, including all Saturdays and Sundays, for 10 continuous years.

When applied to the discipline of psychology, this rule means that during these 10,000 hours you need to write and publish as many articles as possible that are good enough for other researchers to find it necessary to cite them nearly 600 times.

I have a couple of very good recipes *à la* 'Nigella Express' on how to achieve at least 600 citations in 10 years. Actually, I have even more recipes, but as a psychologist I am aware of **the magical number 7**, which represents the limit of human capacity to process information. This is why in the following passages I will confine myself to seven of them.

Recipe no. 1

You must publish five to 10 articles a year and continue to do so for 10 years in a row. Very few geniuses can get away with publishing only a couple of articles which happen to be so important that no-one can help but cite them. The rest of us, however, need a sufficient number of 'milk cows' to yield the required number of citations.

For instance, the average article published in the field of psychiatry and psychology in the last 10 years is cited approximately 10 times. So one needs to publish about 60 articles of at least average quality, i.e. six articles a year.

Recipe no. 2

Always collaborate with people who are better than you. One of the firmest rules of bibliometrics is that one-man or one-woman articles are becoming increasingly rare. The average number of authors who collaborate in writing an article increases steadily, which means that co-authors need to be selected all the more carefully.

The wise researcher chooses (to collaborate with) those who are better than him/her primarily because it is a lot more interesting that way, although it is certainly not easier. I have been lucky to have been in the right place at the right time, for I have published articles with Robert McCrae, Risto Näätänen and Endel Tulving, whose works are cited tens of thousands of times.

Recipe no. 3

You need to publish in several different fields and especially on topics where research is intensive. Of course, the best guide in selecting a research problem is intellectual curiosity: always choose the subject that seems the most interesting to you, no matter what your colleagues think.

But sometimes - especially when considering a change in your research focus - it would be useful to look up in a database how many papers have actually been published under this or that keyword. For instance, if an aspiring psychologist is tempted to delve into research on emotional intelligence, or EI, a search in the Web of Science database might have a sobering effect.

On 19 March 2010 my search turned up 1,217 articles published since 1999, when the term 'EI' was first used in a scientific paper. Articles mentioning this term have been cited a total of 9,294 times. If these numbers seem large, it may be useful to compare them with some other recent hot topic, for example the theory of mind, or ToM, which entered the stage a little earlier - in 1982.

Because it has been around longer, the number of articles containing this term is about twice as high - 2,553 works. But what really sets these two topics apart is the number of citations that the articles published in these fields have received. To date, articles on ToM have been cited a total of 50,314 times.

It is clear that research in the field of ToM has had several times more impact than that of emotional intelligence, which in 2009 showed the first signs of 'cooling down': the number of works published in that year was smaller than in 2008.

In addition to offering escape from 'monoculturality', collaborating with talented people almost always pays off. (Although throughout my conscious life I have considered myself a psychophysicist, it was Pärtel Lippus who taught me how to model a three-dimensional psychometric function.)

Recipe no. 4

Think about maximising the lifespan of your article. This is measured in terms of how many years it continues to be cited. According to the general rule (which holds true for the majority of scientific disciplines) citation frequency reaches its peak at about two to three years after publication, after which in most cases the frequency of citations starts to decline.

As with radioactive decay, the 'half-life' of an article can be measured in the amount of time it takes for citation frequency to decrease two times from the maximum level. It is as simple as that: publish as many articles as possible with the longest possible half-life - not the usual five but, say, 10 years.

But how can one predict the lifespan of an article? Actually, it is not as difficult as it may first appear. Choose a research problem that many are trying to solve and publish your results in a high impact journal.

Recipe no. 5

Don't try to do what others can do better! Who could possibly compete with David Schmitt, who was able to collect data from 56 nations for his cross-cultural comparative study? At least I know for certain that I can't.

What I was able to do, however, was to ask questions to which the data Schmitt had accumulated could provide answers. For instance, we checked our hypotheses about the geographical distribution of human personality traits, which turned out to be a perfectly relevant research problem.

We also asked the same question that plagued Henry Higgins - why can't a woman be more like a man? Again, data gathered by Schmitt provided an interesting answer. With the development of human society, differences in personality traits between men and women do not converge but on the contrary - mainly because of the changes in men's personality traits - become even more marked.

Interestingly enough, this article made it into the top 1% of the most-cited articles published that year (by 19 March 2010 it had been cited 25 times).

Recipe no. 6

For your message to hit home, you need to repeat it at least six times (Tulving's Rule). This was Endel Tulving's first recommendation to me at our very first meeting.

This advice probably came after I had complained that nobody had taken notice of my great discovery. Tulving has repeated this idea to me at least six times - in perfect accordance with the rule - although the number of repetitions required to bring the message home has sometimes varied, depending on the number of Manhattans we had already consumed.

No matter what the exact number of repetitions, the rule is based on the observation that in order to penetrate the inert human mind you need to present your idea (if there is one) from many different aspects.

So to doctors you need to introduce it in a way that enables them to see how it could help them in treating patients. Pedagogues need to see how it could benefit the teaching process. Sociologists should understand, when listening to your story, what piece of insight they have thus far lacked in understanding human society.

Recipe no. 7

What you don't do immediately, in all probability you never will (The Rule of Time).

I have noticed three common mistakes when observing myself and my colleagues at work. First, more time is spent on accumulating data than on formulating the results; second, playing around with data seems to be much more interesting than actually writing the article; third, through lack of focus young researchers often lose track of what has already been done and consequently redo things over and over again.

But the biggest deficiency seems to be the lack of resolution. The most frustrating feature of any research project is its tendency to drag, which is not at all due to a lack of intelligence. Usually the solution is within close reach but there is a lack of decisiveness in making the final step. If this last step is not taken, projects tend to drag on endlessly, ultimately becoming real nightmares for a young researcher.

Therefore my last recipe, which I personally regard as the most important, is very simple. Do what can be done immediately - otherwise there is a strong chance that you will never do it.

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