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THE INTEGRITY OF SCIENTIFIC RESEARCH

This paper first appeared in the Autumn issue of the 'Skeptical Intelligencer', 2020, pp 2-3.

'80,000 Hours' is a website offering careers advice, which has recently featured a 'psychology replication quiz' on one of its pages (*note 1*). As the compilers explain:

Depending on how long you want to play, we'll describe 10, 15 or 21 recent findings [in social psychology] published in the world's top journals Nature and Science - and you'll have to guess whether a repeat/ replication of the same experiment, with a larger sample size, got the same result.

They go on to say:

Before starting this project - which was published in Nature in August 2018 - the people who organised these 21 replications asked expert psychologists and gamblers to predict which results would hold up. We'll show you how you compare to their performance - and other people who have taken this quiz - at the end!

They provide a clue for anyone doing the quiz, namely:

The fraction of experiments that replicated was between 35% and 65%.

The unreliability of research findings that have been published in respected scientific journals and books is now recognised as a major problem, and psychology is no exception. Traditionally scientists have not been interested in repeating experiments that have already been published by others, and journal editors have discouraged this by their lack of enthusiasm for publishing such research. Where a failure to replicate is announced it is usually because the authors have modified the original experimental procedure to test whether the reported findings were related to an uncontrolled artefact. Also, journals tend not to publish a failure to obtain significant results unless, for example, the purpose of the research was to investigate a contentious and, as yet, unproven claim (e.g. that certain cognitive exercises enhance one's intelligence).

For many years now there has been mounting pressure on academics to increase their rate of research publications in the learned literature, and indices of their success have been devised and monitored—e.g. the number of the papers they have authored or co-authored that appear in peer-reviewed journals, the citation rate of their papers in other articles, and their success in having their work published in a journal of high prestige—e.g. *Lancet* or *Nature*.

It is no secret, and no surprise, that academics have hit on ingenious ploys to enhance their research performance indicators—viz multiple-authored papers, multiple papers reporting different aspects of the same research, and arranging reciprocal citing of papers with one's colleagues. It is also likely that the need to publish research influences what kind of research is undertaken. In ideal terms, one should be drawn to an area of investigation where there is confusion, uncertainty and gaps in knowledge (and I mean knowledge that is of some import): the excitement of making a significant, even if small, contribution is what drives the enterprise. *Not* obtaining the predicted results is not inconsequential but positive findings are a bonus—a great outcome—as is any ensuing recognition in one's specialism. But nowadays, all too often it seems that it is the tail that is wagging the dog: the need for recognition drives the research. Consequently, at least it appears to me, there is a preference for the kind of research that is convenient and easy to undertake.

As stated earlier, the unreliability of too much scientific research has attracted increasing attention over the last few years and several books have been devoted to the subject (*note 2*). The latest was published this July and is by Dr Stuart Ritchie, a psychologist and neuroscientist at the Institute of Psychiatry in London (*note 3*). In the words of the publisher's blurb:

While the scientific method will always be our best and only way of knowing about the world, in reality the current system of funding and publishing science not only fails to safeguard against scientists' inescapable biases and foibles, it actively encourages them. Many widely accepted and highly influential theories and claims – about 'priming' and 'growth mindset', sleep and nutrition, genes and the microbiome, as well as a host of drugs, allergies and therapies – turn out to be based on unreliable, exaggerated and even fraudulent papers. We

can trace their influence in everything from austerity economics to the anti-vaccination movement, and occasionally count the cost of them in human lives.

ASKE has been unable to obtain a review copy of this but if anyone does read it, a review or even some brief feedback would be welcome for inclusion in a future issue.

Notes

1. <https://80000hours.org/psychology-replication-quiz/>
2. A recent example is *The Illusion of Evidence-Based Medicine: Exposing the crisis of credibility in clinical research* by Jon Jureidini & Leemon B. McHenry, Wakefield, 2020.
3. *Science Fictions: Exposing Fraud, bias, Negligence and Hype in Science*, Vintage publishers.