

Editorial: Professorial Leadership and the h-index: the rights and wrongs of academic nursing

The h-index as a key academic indicator

Questions about the role and purpose of nursing professors have once again been brought to the fore. In a recent editorial published in the *Journal of Advanced Nursing* (Watson *et al.* 2016), Roger Watson and colleagues claim that it is not possible to display academic professorial leadership without a fairly substantive track record of well-cited publications, and they question whether promotion should be granted to professorial candidates who do not have a track record of well-cited papers in 'academic' journals. They propose the h-index as a reasonably accurate, valid and reliable tool for measuring scholarly output and proceed to conduct 'an objective and transparent assessment of data in the public domain, pertaining to a key indicator of the performance of professors of nursing in the UK'. They explain that the h-index is 'a combined measure of publication productivity and impact', and commend it as one of the better measures of its kind.

The results of their analysis are published in a table with details of the h-index values for all the professors on the RCN database (<http://onlinelibrary.wiley.com/store/10.1111/jan.12924/asset/supinfo/jan12924-sup-0001-FileS1.xlsx?v=1&cs=f3b96a93c7d93bbdc98876f1bbb0ce77980ce864>). While this table makes interesting reading, I wish to question the accuracy, validity and reliability of the h-index as a measure either of academic scholarship or professorial leadership, and thus as a 'key indicator' of performance.¹

¹Both Scopus and Watson's table are subject to regular update. The data quoted in this paper were correct at the time of writing (11 April 2016), but may have been amended in the meantime.

Accuracy

The authors claim that 'These figures are accurate to the best of our knowledge ... but we are happy to amend the Supporting Information', and suggest that at least one correction has already been made to their table. In any public document that 'names names' and questions the academic credibility of colleagues and their suitability for their professorial posts, accuracy is of the utmost importance, and I would suggest that the authors have a professional and moral responsibility for going to every possible length to ensure that their table offers a true representation of the academic output of their colleagues. With 260 names on the list, this is a daunting task, and not one that I felt was possible or appropriate to undertake for my editorial. However, a quick scan of the list immediately alerted me to three names for whom I was fairly sure that the low h-index scores were inaccurate. Further investigation revealed that I was correct in my assumption in all three instances, which all appear to be wrong for different reasons. I have chosen not to reveal the names of these individuals, but the interested reader will no doubt be able to identify them from Watson *et al.*'s supplementary table referenced above.

The first example appears to be in part a simple transcription error by Watson and colleagues. Their table lists this particular individual as having zero citations and an h-index of 0. He is therefore classed by Watson as one of several 'zeroes-to-heroes' of the nursing professoriate, people who have been accorded the status of professor despite an h-index rating of 0. However, the Scopus entry for this person

lists four publications and an h-index of 1, with his institutional web page citing further papers in the *Journal of Nursing Management* and the *Journal of Advanced Nursing* that were not picked up by Scopus. It is perhaps also worth mentioning that another 'zero to hero' identified by Watson and colleagues has at least one paper published in the journal *Nurse Education in Practice* which Scopus identifies as having 11 citations.

A second example appears to be a further error on the part of Scopus, which lists an eminent professor as having published four papers with an h-index of 1. However, her institutional web site lists 78 articles, five books and five book chapters, with papers in such high-profile journals as the *BMJ*, *International Journal of Nursing Studies* and the *Journal of Clinical Nursing*. It is not clear why Scopus has failed to pick these up. A third example is presented in Watson's supplementary table as having a total of 1 citation and a h-index of 1. However, her institutional web site lists seven book chapters and 54 articles in a range of reputable journals including the *Journal of Advanced Nursing*, and Scopus lists most of these papers, which were published both under her current and previous names, awarding her an h-index of 9.

I find it somewhat concerning that, of the three entries in Watson's supplementary table that I instantly identified as suspect, all three were found on further investigation to be incorrect, with a possibly damaging effect to the academic reputations of those concerned. In my opinion, it seems very likely that the table contains other errors, and it appears that Watson and colleagues failed to account for the fact that, in

the example above and perhaps in many others, academics (particularly women) sometimes change their names in mid-career.² Hopefully, other nurse academics will check their entries and notify Watson of any errors, but I suggest that, in a document which could have serious and far-reaching implications for careers and reputations, it appears that the authors should have taken even greater care over accuracy.

Validity

The validity of a tool is, put simply, the extent to which it is measuring what it claims to be measuring. The fact that the h-index is a measure of academic outputs and citations is incontestable, but the more important issue is the extended claim made by Watson and colleagues that it is also a reasonably valid measure of one aspect of academic professorial leadership and scholarship. If that is indeed the case, we would expect h-index scores to indicate relative academic standings across a range of scholars. I was therefore keen to see how my own somewhat modest h-index score of 17 would compare to the scores of the great and the good. To my surprise, it would appear that I rank higher in the academic hierarchy than Sigmund Freud (h = 2), Ludwig Wittgenstein (h = 3), Charles Darwin (h = 6), Richard Dawkins (h = 11) and even Albert Einstein (h = 14). Turning to my own discipline of nursing, I find that I also rank higher than Florence Nightingale (h = 1), Nancy Roper (h = 3), Annie Altschul (h = 5), Martha Rogers (h = 7), Virginia Henderson (h = 8), Alison Tierney (h = 15) and Jean Watson (h = 16). Unfortunately, Patricia Benner is higher than me (h = 21), but I did at least score more highly than Donald Schön (h = 8).

There are three possible explanations for this: first, I am really a superior scholar to all of these (Benner excepted!), with a greater and more

²This particular problem is now being addressed through the ORCID initiative (orcid.org), which provides a numerical identifier for researchers in an attempt to take account of mid-career changes of name.

influential impact on my discipline; second, the Scopus records are hopelessly incomplete or inaccurate; or third, the h-index scores cannot be extrapolated beyond their immediate claims to measure citations, which is to say that citations (at least as they are measured here) are not, in my opinion, a valid indication of academic scholarship or professorial leadership. Much as I would like the first explanation to be correct, I suspect that it is a combination of the second and third.

Reliability

Apart from inaccuracy, I suspect that the real issue here is that there appears to be a trade-off between validity and reliability. One of the problems with obtaining a reliable measure of citations is, as Watson and colleagues acknowledge, that of manipulation or what they call 'malleability'. If the h-index is to be used, for example, as a measure for the allocation of funding in the REF exercise, then it must be resilient to manipulation by individuals and institutions. Watson and colleagues believe that the h-index largely achieves that through its curious and somewhat arbitrary formula for calculating scores. Thus, a score of h = 1 is achieved by publishing one paper which has been cited at least one time; h = 2 is achieved by publishing two papers which have each been cited at least two times; h = 3 means three papers which have each been cited three times, and so on. Watson and colleagues claim that this formula ensures that h-index scores are 'one of the least malleable of citation indices', although I believe that this reliability is gained at the expense of decreased validity. They continue:

Naturally, individuals could focus on self-citation or coercion of others to cite articles which were just at the cusp of increasing their h-index, but considerable effort would be required simply to raise the h-index and, of course, such an effort may have to be applied to several papers to raise an h-index by one unit. We have no doubt that this has been tried by many people but, in our

experience, where it is possible to omit self-citations from the h-index calculation, there is usually only a reduction in one h-index unit. The effort hardly seems worth it and the effect in terms of skewing the metric is negligible. (Watson *et al.* 2016)

In my opinion, this analysis of the situation is not fully accurate on two counts. First, in some cases very little effort would be required to raise the h-index, and in other cases self-citations can make a significant difference to h-index scores. I will support these claims with examples both from my own Scopus record and that of Roger Watson.

In my own case, I have 17 papers which have been cited more than 17 times each and a further three papers each with 15 citations, which gives me an h-index of 17. To raise it to 18 (i.e. to have 18 papers which have each been cited at least 18 times), I would need only to find three more citations of any one of the latter three papers. This would be relatively simple, either through a policy of self-citation or through persuading colleagues to cite my work, perhaps with the promise that I would cite theirs in return. If such a strategy was adopted by an entire department in an effort to raise their REF score, it could effectively lead to some significant distortions in the h-index.

Watson is perhaps right to suggest that, in many cases, self-citations make only a negligible difference to h-index scores. In my own case, my h-index drops from 17 to 16 when self-citations are removed. However, if an author self-cites to a greater extent, the effect can be significant. For example, Scopus identifies a total of 3468 citations for Watson between the years of 2012 and 2016. If self-citations are removed, this falls to 2939, suggesting a self-citation rate of around 15%. If these are excluded from the h-index calculation, Watson's h-index falls from 32 to 28, which in my opinion is a not insignificant difference.

Conclusion

I hope that I have cast at least some doubt on the claim by Watson and

colleagues that the h-index is, in their words, 'a key indicator of the performance of professors of nursing'. I have suggested firstly that there is potential for a serious shortfall in the accuracy of the data in both the Scopus database and the table which Watson and colleagues have derived from it. The extent of this shortfall is at present unknown, but I suspect that it is significantly more extensive than I have been able to ascertain in my short and cursory investigation. Apart from anything else, at least two of the three 'zeroes-to-heroes' identified by Watson and colleagues do not actually appear to have h-indices of 0. In any case, I believe that the term is derogatory and not a fitting way to refer to colleagues, and I would be pleased to see it withdrawn. Second, I seriously call into question the validity of any tool that ranks my published output above that of Einstein, Wittgenstein, Freud and Darwin, not to mention the great nurse theorists and researchers such as Annie Altschul and Alison Tierney. Regardless of the number and age of the papers and books they have published, these great thinkers, scholars and researchers are simply not being recognised as such by this particular measure, which calls into serious question its ability to recognise *anything* worthwhile. Third, I suggest that what Watson and colleagues see as possibly the greatest virtue of the h-index, its relative resistance to systematic distortion,

is also not as great as they would have us believe.

So why do they continue to champion its use? I think that the clue to answering this question lies in their somewhat curious statement at the beginning of their editorial that:

Whether the citation reflects on the work in a positive or a negative light is immaterial; *someone who has published and "got it wrong" has achieved a great deal more than someone who is right but has never published.* (Watson *et al.* 2016, my emphasis)

In my opinion, they appear to be saying that the number of citations that a paper receives is more important than its accuracy of its content, regardless of the harm that 'getting it wrong' might cause; and that the author of a paper which widely disseminates 'wrong' information or research findings through multiple citations has achieved far more than someone who is 'right' but who does not publish her or his findings in a format or journal recognised by Scopus. This might be interpreted as suggesting that the primary role of the nursing professor is simply to publish, regardless of whether what they are disseminating is inaccurate or misleading. This, in turn, calls into question the criteria on which nursing professors, and indeed all nurse academics, should be judged; whether it is possible to be an academic leader without publishing highly cited papers; and

whether the title of professor should ever be awarded to so-called academic 'zeroes' who have chosen alternative scholarly paths. It could be argued, for example, that the influence of a professor of nursing should be judged by the extent to which her or his work is implemented by practitioners rather than the number of times it is cited by other authors. As Watson and colleagues state in their opening sentence, 'Professors are supposed to be leaders in their field'. However, their somewhat one-dimensional interpretation of academic leadership appears to raise more questions than it answers. Rather than concerning ourselves so much with h-index scores, perhaps the profession should give some serious thought to what we might call the p-index, that is, the factors that *really* indicate what makes a good professor of nursing.

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Reference

Watson R, McDonagh R & Thompson DR (2016) Editorial. h-indices: an update on the performance of professors in nursing in the UK. *Journal of Advanced Nursing*, early view, Available at: <http://onlinelibrary.wiley.com/doi/10.1111/jan.12924/full> (accessed 11 April 2016).