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R. Meneghini

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R. Meneghini

SciELO, Scientific Electronic Library Online,
FAP, Fundação de Apoio à Universidade Federal de São Paulo,
São Paulo, SP, Brasil

Abstract

Nine Brazilian scientists with an outstanding profile of international publications were invited to publish an original article in the same issue of a Brazilian Journal (Anais da Academia Brasileira de Ciências). The objective was to measure the impact of the papers on the number of citations to the articles, the assumption being that these authors would carry their international prestige to the Brazilian periodical. In a 2-year period there was a larger number of citations of these articles compared to others published in the same journal. Nevertheless, the number of citations in Brazilian journals did not equal the number of citations obtained by the other papers by the same authors in their international publications within the same 2-year period. The reasons for this difference in the number of citations could be either that less significant invited articles were submitted or that it was due to the intrinsic lack of visibility of the Brazilian journals, but this could not be fully determined with the present data. Also relevant was a comparison between the citations of Brazilian journals and the publication in Brazilian journals by these selected authors. A clear imbalance due to a remarkable under-citation of Brazilian authors by authors publishing in Brazilian journals raises the possibility that psychological factors may affect the decision of citing Brazilian journals.

Key words: Impact factor; Brazilian journals; Journal visibility

Introduction

There is a general worldwide perception that authors of scientific papers from developing countries submit articles to national scientific journals usually as a second choice, especially when their area of investigation is at the cutting edge of science. The national journal is usually an alternative that is chosen after their articles have failed to be accepted by the editors of international journals whose reputations rest on the impact factor (IF), which is calculated by dividing the number of citations in year X to papers published in year X-1 plus year X-2 by the total number of papers published in years X-1 plus X-2. The importance achieved by the ranking of journals on the basis of their IF is just one more example of the culture of "ranking the best" in many distinct activities of society. However, many criticisms have been raised regarding the assumption that there is a direct relationship between IF and quality. This argument is even more critical when the prestige (IF) of a journal is transferred automatically to any of its articles (1,2) because IF measures a property of journals, not of a specific article.

In some way, both the community of scientists and of publishers have adhered to the belief that the IF is an indicator of quality, accepting it as a primary indicator. A third group who uses this criterion consists of the assessment committees that judge grant proposals or an application for an academic position or for the proposal of tenure. From an extreme viewpoint, the simple average of the IF's of a scientist's publication list would be a measure of his competence. Public agencies supporting science in many countries encourage the use of the IF of journals in which papers are published to assess the merit of scientists or research units (3,4).

This policy has driven most of the best scientists in developing countries to try to publish their articles in the high IF journals of their research areas. Frequently, these are international journals managed by commercial publishers based in a few developed countries and edited in English.

Correspondence: R. Meneghini, Fundação de Apoio à Universidade Federal de São Paulo, Rua Dr. Diogo de Faria, 1087, 8º andar, 04037-003 São Paulo, SP, Brasil. E-mail: rogerio.meneghini@scielo.org

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From the viewpoint of a developing country, there are two perspectives on this scenario. A positive one is that in dealing with highly reputed international journals the authors have to overcome several barriers, including the linguistic one (5,6) and bring the content of their communications to the level of the international state of the art. This certainly tends to enhance the quality of their science and is likely to drive it towards the international themes in vogue. The negative aspect of this tendency is that neglecting to publish in national journals deprives them of the best qualified science produced in the country, with a consequent reduction in the quality of national journals and eventually national science. It causes what may be viewed as a gap in the cycle of making science (7).

In 1997, the SciELO program (Scientific Electronic Library Online, www.scielo.bireme.br) was launched in Brazil. Since then, its commitments have been 1) to select a collection of national scientific journals, assisted by a committee of experts, in order to improve the quality of their content, 2) to provide open access to the e-versions of the articles in order to gain a larger and wider audience, and 3) to create a bibliometric database that permits a comprehensive coverage of citations of their articles because most of these national journals were overlooked by the international bibliometric databases at that time. The expectation was that the SciELO program, in addition to making papers in Brazilian journals accessible by open access, would increase the interest of Brazilian authors (and, under these circumstances, of international authors as well) to publish in SciELO journals.

In order to evaluate the effect of the increased accessibility provided by SciELO to Brazilian papers, we enlisted the cooperation of outstanding Brazilian scientists by publishing a paper in a SciELO journal and used the number of citations as a measure of the outcome. A dozen Brazilian scientists who had published articles in international journals covered in the Web of Science (WoS) (8) during the period from 1994 to 2003 were invited to submit an article to the March 2008 issue of Anais da Academia Brasileira de Ciências (AABC), a prestigious Brazilian scientific journal. The aim was to determine if these authors, who usually publish in high IF international journals, would carry their reputation with them to the AABC, as indicated by the citations received from WoS journals. A positive result would be expected to stimulate interest in more submissions of articles to SciELO journals.

The results of this exercise pointed to an increased number of international citations of the articles written by the invited authors when compared to the average AABC articles during the same period. However, the number of citations was not as large as that achieved by other articles by the same authors published in international journals during the same period. Other interesting results that came from this exercise will be described in Results.

Material and Methods

The choice of the Brazilian scientists to be invited to this exercise was based on their leading performance in publishing articles during the 1994-2003 time period, which received more than 100 citations up to 2006 (8). Fourteen scientists were invited, 11 from the life sciences area, 2 from physics, and 1 from chemistry. Nine accepted to participate, all from life sciences. Their articles were published in the March 2008 issue of AABC. The leading authors of the articles were O. Augusto, P.M. Fearnside, R.T. Gazzinelli, F.G. Graeff, I. Izquierdo, M.F. Lopes, M.R. Passos-Bueno, S. Schenkman, and A.E. Vercesi. The total number of WoS citations of these articles during the 2008-2009 period was computed and the results were analyzed using different forms of evaluation.

Results

Impact of the articles by selected authors

The 9 articles published in the AABC received a total of 15 citations (including 3 self-citations) in the WoS database during the 2008-2009 period (Table 1, row A), corresponding to 1.67 citations per article (row B). During the same period, the other 38 AABC articles from 2008, belonging to the area of life sciences, received 29 citations, i.e., 0.76 citations per article (Table 1, rows C and D). Citations of AABC articles tend to peak within 3 years and remain steady at this level for the next 4-5 years (considering the articles published in 2000). Therefore, the 9 articles will certainly continue to be cited and the number of citations will increase. However,

Table 1. Citations originating from the articles published in 2008 by the nine selected authors of the exercise.

A - Citations in 2008-2009 to the 9 articles published in AABC	15
B - Citations/article (from A)	1.67 (15/9)
C - Citations in 2008-2009 to 38 other articles published in 2008 in AABC (other than the 9 selected authors)	29
D - Citations/article (from C)	0.76 (29/38)
E - Citations in 2008-2009 to 62 other articles published in international journals in 2008 by the 9 selected authors	256
F - Citations/article (from E)	4.13 (256/62)

AABC = Anais da Academia Brasileira de Ciências.

it is clear that these 9 articles (rows A, B) stand out when compared to the other 38 articles published in AABC (rows C, D) at this earlier stage of the citation record.

Did the articles published by the selected authors in international journals during the same time achieve a higher impact?

It is certainly interesting to compare how the other articles by these 9 authors, published in 2008 mostly in international journals, were cited in 2008-2009 in the WoS. Row E in Table 1 shows that they published 62 other articles in 2008 (not including the 9 AABC articles), which received 256 citations (row E). Clearly, the citation rate of the 62 articles, 4.13 citations/article (row F), published mostly in international journals, is significantly higher than the rate of the 9 articles published in the AABC (1.67 citations/article). This is not surprising and may be explained by two main reasons: i) the lower visibility of regional journals compared to international ones and ii) the natural tendency of Brazilian authors to save the best papers for submission to the most prestigious journals. This will be further commented upon in the Discussion.

What was the tendency of the nine selected authors to publish in national journals?

One may ask how frequently the scientists of the present exercise publish in national journals. In fact, the number of these publications is higher than one may imagine. Considering an extended period of time (2000-2009), these 9 scientists published 590 articles indexed in the WoS, of which 49 (8.3%) were in Brazilian journals. Most of the latter articles were published in two journals, Anais da Academia Brasileira de Ciências (18 articles) and Brazilian Journal of Medical and Biological Research (16 articles). It is probable that these publications represent submissions subsequent to first submissions to international journals that failed to succeed.

What is the tendency of the nine selected authors to cite Brazilian journals?

The 9 authors of the present exercise cited 3943 articles in all of their 2008 publications. It is interesting to examine the contrasts between publishing and citing (Table 2). First, the vast majority of citations (3095, 78.5%) are to articles published in international journals. The proportion of self-citations was 11.4%, which is not exaggerated if we consider that it is 1/3 below the number found in a study of more than 45,000 publications (9). It is also important to observe that 402 (10.2%) of the citations refer to articles of other Brazilian authors publishing in areas related to those of the nine selected authors. The negative aspect of this result is that only 1.52% of the total number of citations by the 9 selected authors in 2008 were to Brazilian journals. This limited number of citations to Brazilian journals is well below that expected from the relatively high percentage of use of Brazilian journals (8.3%) in the publications of these nine selected authors.

Table 2. Features of the citations by the nine selected authors in their articles published in 2008.

A - Total No. of citations obtained	3943 (100%)
B - Citations to international journals	3095 (78.5%)
C - Self-citations by the nine selected authors	448 (11.4%)
D - Citations of Brazilian authors other than the 9 selected ones	402 (10.2%)
E - Number of citations to Brazilian journals	60 (1.52%)

Discussion

More than one thousand scientific journals are published in Brazil, virtually all as initiatives of academic institutions and scientific societies. No commercial publishers are involved although more recently some have expressed interest in co-publishing several of the journals. Until 2009, only 31 of these journals were indexed by Journal Citation Reports (JCR) and their highest IF in 2008 does not exceed 1.5. This has driven a significant part of the Brazilian scientific community to pursue publication in international journals with higher IFs.

A sample of these scientists was selected in the present study. Although small, it includes prominent Brazilian scientists active in the last decade, selected on the basis of the impact of their publications in terms of the number of citations received (8). The way they publish, cite and are cited exemplifies the behavior of an elite of Brazilian scientists and therefore deserves a more careful examination to determine the possible consequences of their practice on Brazilian journals.

The citations per article achieved by the nine AABC articles of the selected authors during the 2008-2009 time period (1.67) was twice that of most AABC articles of life sciences during the same period (0.76). This supports the view that the more frequent presence of high-performance authors in AABC would significantly raise the IF of this journal *per se*. However, this involves a price for the authors, i.e., not publishing in prestigious international journals and consequently abdicating the possibility of publishing in journals with significantly higher IFs.

In principle, there are two main reasons for the most prestigious Brazilian scientists to publish in Brazilian journals. The first choice may be the consequence of an unfavorable evaluation of the article by the author himself, who would feel that the article is highly unlikely to be accepted by an international journal (this may not be the case in areas in which publishing in national journals offers notorious advantages, such as agriculture for instance). A second possibility may occur when a first attempt in an international journal failed to succeed. In

both cases, the result is negative in terms of quality of the scientific material that is submitted to Brazilian journals.

An outstanding fact is the relatively high percentage of publications in Brazilian journals by the selected authors (8.3%) and the very low percentage of citations to Brazilian journals by these same authors (1.52%). It would seem that these authors have chosen to neglect citing Brazilian journals assuming that they may pass to the reader the impression that the article is flawed. The opposite posture would be to give preference to the citing of very high IF journals since this would add merit *per se* to the article. Certainly one cannot draw this conclusion from these very preliminary results but this is definitely a topic that deserves an appropriately focused investigation since it may have profound consequences for the evolution of Brazilian journals.

References

1. Smith R. Commentary: the power of the unrelenting impact factor - is it a force for good or harm? *Int J Epidemiol* 2006; 35: 1129-1130.
2. Seglen PO. Why the impact factor of journals should not be used for evaluating research. *BMJ* 1997; 314: 498-502.
3. Garfield E. The history and meaning of the journal impact factor. *JAMA* 2006; 295: 90-93.
4. Geuna A, Martin BR. University research evaluation and funding: an international comparison. *Minerva* 2004; 41: 277-304.
5. Meneghini R, Packer AL. Is there science beyond English? Initiatives to increase the quality and visibility of non-English publications might help to break down language barriers in scientific communication. *EMBO Rep* 2007; 8: 112-116.
6. Vasconcelos SM, Sorenson MM, Leta J, Sant'ana MC, Batista PD. Researchers' writing competence: a bottleneck in the publication of Latin-American science? *EMBO Rep* 2008; 9: 700-702.
7. Packer AL, Meneghini R. Learning to communicate science in developing countries. *Interciencia* 2007; 32: 643-647.
8. Meneghini R, Packer AL. Articles with authors affiliated to Brazilian institutions published from 1994 to 2003 with 100 or more citations: II - identification of thematic nuclei of excellence in Brazilian science. *An Acad Bras Cienc* 2006; 78: 855-883.
9. Aksnes DW. A macro study of self-citation. *Scientometrics* 2003; 56: 235-246.