

To cite or not to cite: author self-citations and the impact factor

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Abstract Author self-citations are another factor that affects the impact factor of a journal. Typically these self-citations are just counted as such. But to be more meaningful I suggest that when examining the contribution of authors' self-citations to impact factors one should first count the number of citations in the text rather than in the reference list, and then discriminate between different kinds of author self-citations—from those that are informative to those that are self-enhancing—if these data are to be more credible.

Keywords Co-authors · Impact factors · Reference lists · Author self-citation · Journal self-citation

Introduction

Vanclay's otherwise splendid article (2011) fails to discuss one other important issue that contributes to the weaknesses in the calculations of the journal impact factor. And this issue concerns the measurement of author self-citations as opposed to journal self-citations (Hartley 2009).

Such author self-citations contribute to the overall citation count of an article and to the impact factor of the journals in which they are cited (Anseel et al. 2004; Glanzel and Thijs 2004a; Glanzel et al. 2006; Kulkarni et al. 2011). Each author self-citation in a reference listed is treated equally when calculating citation rates and impact factors but, of course, each citation in the text can contribute differently to the article. In terms of self-citations, an author might cite him or herself to point to an earlier experiment, to indicate a paper with a contrary view, to enhance the reputation of the author, to encourage the sales of a book, etc. Table 1 lists some possible reasons for citing one's-self and others. Table 2 lists some of the varied estimates of the amount of author self-citation in articles in different disciplines. One might also expect that the proportion of author's self-citations will vary as

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Table 1 Possible reasons for citing others (O) and self (S)

O S	Tell the readers where they can find the material being discussed
O S	Provide evidence for the writer's claims
O S	Draw the reader's attention to little-known and unknown work
O S	Indicate to the reader the scholarship and the experience of the writer
O S	Align the author with a particular school of thought
O S	Show development of thought
O –	Show the writer's respect for particular people
O –	Mutual grooming—you cite them and they will cite you

Entries based on Hyland (2003), Pichappan and Sarasvady (2002), Robillard (2006)

Table 2 Pairs of estimates of the amount of self-citations in different disciplines

Approx. estimate (%)	Disciplines	Sources
3	Humanities	Snyder and Bonzi (1998)
19	Arts and Humanities	Glanzel and Thijs (2004a) ^a
6	Social Sciences	Snyder and Bonzi (1998)
23	Social Sciences	Glanzel and Thijs (2004a) ^a
10	Psychology	Brysbart and Smyth (2011)
21	Psychology	Aksnes (2003)
7	Clinical Medicine	Aksnes (2003)
20	Clinical and Experimental Medicine	Glanzel and Thijs (2004a) ^a
15	Biomedicine	Falgas and Kavvadia (2006)
25	Biomedicine	Glanzel and Thijs (2004a) ^a
18	Neuroscience	Aksnes (2003)
24	Neuroscience	Glanzel and Thijs (2004a) ^a
23	Engineering	Aksnes (2003)
40	Engineering	Glanzel and Thijs (2004a) ^a
26	Physics	Aksnes (2003)
38	Physics	Glanzel and Thijs (2004a) ^a
31	Chemistry	Aksnes (2003)
37	Chemistry	Glanzel and Thijs (2004a) ^a
22	Mathematics	Aksnes (2003)
44	Mathematics	Glanzel and Thijs (2004a) ^a

^a These are 'world-estimates' and hide massive disparities between different countries (Glanzel and Thijs 2004a)

a function of the type of article—review, experiment, report, etc. but there are few, if any data, on these matters.

Hou et al. (2011) argue that counting the citations *in the text* is a better way of assessing people's contribution than just counting the number of citations *in the reference list*. They argue (and provide support for the idea) that even though each citation appears only once in the reference list in science articles, the more important citations are cited more frequently in the text than are less important ones. This note questions whether or not the same might be true of self-citations.

Brybaert and Smyth (2011) argue that, in a typical psychology article, there are 3–9 self-citations, depending on the length of the reference list, and that this is about 10% of all citations. In contrast, other authors rarely receive more than three citations each. They call this the self-citation bias—the preference researchers have to refer to their own work when they guide readers to the literature. They argue that this self-citation bias is a self-serving bias—motivated by self-enhancement and self-promotion.

In this paper I argue that the matter is more complex than this. I wish to argue that there are various different reasons for author self-citations and it is unwise to count all such self-citations as instances of self-enhancement. Like all citations, self-citations may have different purposes (as listed in Table 1). Thus the best way of assessing the role of self-citations in articles is to count the frequencies of their appearance in the text according to their purpose, and not simply to count the single entries in the reference list.

In this paper I try to do this for three of my own articles to provide examples. These three analyses aim to show that simply counting author self-citations in the reference list is misleading. Self-citations have different frequencies and different purposes in different articles and different disciplines.

Example 1

In the paper analysed for this example (Hartley, submitted) there are 20 references, only one of which is a self-citation. The purpose of this single citation is three-fold: (1) to refer the reader to accessible research on the writing activities of Nobel prize winners; (2) to direct the reader to a chapter in my own textbook in this respect (Hartley 2008); and (3) to draw the readers' attention to the fact that I have published a text in this area (i.e. self-aggrandisement/self promotion/increase sales?). However, this reference is listed only once in the text and once in the reference list.

Example 2

In the paper analysed for this example (Hartley 2012) there are 46 references in the reference list, 11 of which refer to papers by myself or myself and colleagues. However, because the editor of the journal involved invited me to write on a topic of my own expertise, I chose to illustrate many points by examples from and references to my own work. Thus there were 5 single author self-citations and 6 joint-ones in the reference list but these self-citations were cited 15 times in the text.

The purpose of these 11 self-citations I judge to be as follows:

- (1) A deft reference to a much earlier paper to show that I had published a paper in the *American Psychologist* (a high impact journal) many years ago (i.e. self-aggrandisement).
- (2) A reference to an earlier study of mine that supported the argument I was now pursuing in the paper (informative and self-enhancing).
- (3) A reference to an earlier paper of mine summarising the research on a particular issue (informative and self-enhancing).
- (4) A reference to my book on the topic (self-enhancement and to encourage sales).
- (5) A reference to an earlier work I had conducted on this topic (informative and self-enhancing).

- (6) A co-authored paper with two other colleagues to show research had been done on this topic (informative and self-enhancing).
- (7) A co-authored paper with two other colleagues (different from reference 6) to show research had been done on this topic (informative and self-enhancing).
- (8) A co-authored paper with another (different) colleague to support an argument (informative and self-enhancing).
- (9) A co-authored paper with two authors (where I was the second author) to illustrate the argument (informative and self-enhancing).
- (10) Another co-authored paper with the same two authors (and I was again the second one) to illustrate another argument (informative and self-enhancing).
- (11) A co-authored paper from a much earlier paper with a different colleague who was also the first author (informative and self-enhancing).

Thus it could be said that all of these author self-citations were self-enhancing but that nine of them were also informative in that they told the reader where they could find more detailed studies on the topic in question. So, in this study, there were more author self-citations in the text than in the reference lists, and these self-citations served different purposes.

Example 3

Example 3 provides an analysis of the references in this present paper. Here there are 19 references in the reference list, only four of which are self-citations to the present author. Again, the functions of these four self-citations differ from those in the earlier papers. Here one points to an earlier discussion on the topic (Hartley 2009). The other three simply point to where the examples that I am discussing in this article can be found: they do not suggest self-enhancement or aggrandisement. The other 14 references are also simply informative—they point to previous research relevant to the topic carried out by others. In this paper 14 of these 16 references are cited only once in the text and once in the reference list, although one of two are cited several times in the text if the references listed in Table 2 are counted as separate items. But basically, in this paper, there are four separate self-citations in the list and five in the text, and all four of these self-citations are informative rather than self-enhancing—although, of course, one might consider this whole article to be an essay in self-promotion!

Concluding remarks

In this article I have argued that author self-citations can be an important factor in determining journal impact factors. Further, I have argued that because there are typically more citations in the text than in the reference list, we need to count the number of references in the text to gain a better measure of how many author- and other-citations there are in an article. In the three examples given in this paper these differences are not large but they might be in other papers and in other disciplines (see Table 2 and Hou et al. 2011). So more research is need here.

I have also argued that author self-citations have different purposes—as do conventional citations—so that it is inappropriate to simply count the items in the reference list when carrying out research on self-citations. I have tried to demonstrate this concern in this paper

with current examples from my own writings because one of the things that I found when examining other people's papers was that it was difficult to work out the purpose of every self-citation. I concluded that the authors of individual papers might be in a better position to do this if asked rather than independent judges.

One thing I have not done in this paper is to speculate about the numbers and amount of author self-citations that arise when there are two or more authors. This becomes a tricky issue as the number of authors for journal articles increases. Aksnes (2003) and Glanzel and Thijs (2004b) point out that, other things being equal, the number of self-citations in multi-authored publications is normally much higher than that in single-authored papers. Schubert et al. (2006) also point to the complexities involved when there are two or more authors to a text.

So, I conclude this paper by suggesting that counting author self-citations is important—but that it is more important to count the right things if we want to relate the findings to impact factors more precisely.

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