

Reference Citations in *JACC*: Litera Scripta Manet*

Thomas H. Marwick, MBBS, PhD, MPH,† Y. Chandrashekhar, MD,‡
Jagat Narula, MD, PhD§

The man who doesn't read has no advantage over the man who can't read.

—Mark Twain, 1835–1910 (1)

One of the most important but underappreciated and probably least discussed sections of a paper is the list of references at the end. As Editors, we are occasionally reminded about how this section can raise issues for our decision-making. We are sometimes amazed at the rather superficial treatment accorded to this section; some papers come with too many and only remotely relevant citations and others come with too few citations, partially ignoring important previous work. References sometimes purport to be something they are not. More recently, we were even faced with a paper where we were admonished by an investigator who thought his seminal work was ignored in a paper we published. Creating the most suitable reference list is a delicate balance and there is not much discussion about it. Therefore, we address some of these issues as it pertains to *JACC*.

The purpose of references is to document the evidence that underlies a paper, to put the work in context of existing material, and to credit the work of existing authors, on which the paper is based (2). References form a critical component of scientific writing, and are coming under threat in the current era of cost containment, page restrictions, and an unprecedented proliferation of knowledge. Restrictions on the number of citations of primary papers in the current era is either overt, or originates from word count limits on manuscripts caused by page limitations. Much of what is written about references (especially in Instructions for Authors) relates to issues pertaining

to formatting, but it is the more cognitive aspect of the process of reference selection that is the focus of this editorial. The reference list carries important information for authors, reviewers and editors, and especially readers.

For the reader who is seeking unbiased and accurate information, citations carry significant insight about the author. For the investigator, a well-done list reassures about the quality of science and weaves a nice web of related papers that can help the search into newer avenues of thought. A brief reference list is either the mark of an extremely novel paper, an author who has incomplete knowledge or who has failed to thoroughly review the field, or a disengaged senior author. Self-citation may be necessary in a field where an author or group are dominant, but often is a marker for incomplete or distorted review of the relevant science.

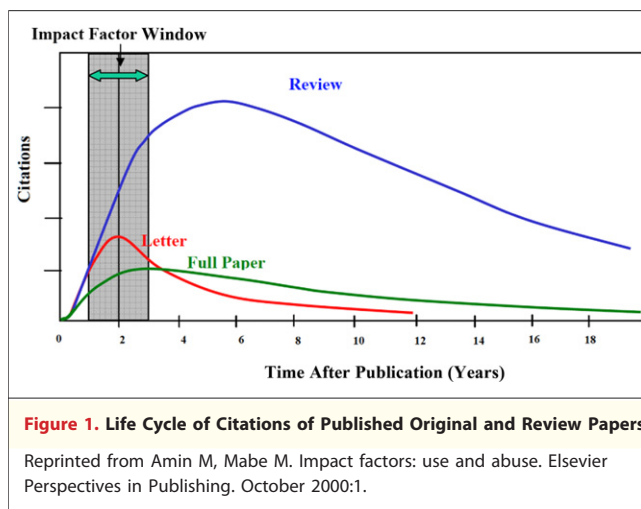
To the reviewer and the editor, knowing that the paper is placed in the context of existing material is a vital process in a scientific endeavor. In many ways this is the most challenging process of reference selection. Citations are of most value when they are specific to the hypothesis of the paper and perceptions about what is most relevant to the index paper under consideration are likely to be varied. One area that is a matter of judgment is which papers should be considered seminal, which among those need citation, and how far back into the distant past need they be quoted. Authors, the reviewers, the editors, and, most importantly, other investigators who feel their papers should have been accorded more importance, may often differ in their perception. A recent example in *JACC* relates to the assessment of ischemic memory using speckle tracking echocardiography (3). In such a paper, the relevant background references might pertain to speckle tracking, alternative tests for ischemic memory, and the clinical setting. While there is a rich and

From the †Cleveland Clinic Foundation, Cleveland, Ohio; ‡University of Minnesota School of Medicine, Minneapolis, Minnesota; and the §Mount Sinai School of Medicine, New York, New York. *The written word endures.

valuable literature about the underlying pathophysiologic process (4), if this is a diagnostic paper related to speckle tracking echocardiography for ischemic memory, citation of the underlying pathophysiology is not necessarily critical. Clearly, if there were no such thing as page limitations, it would be desirable, but we no longer live in that era.

It is interesting to realize that a citation has a life of its own. A citation is an acknowledgment of an author's claim to the originality of an idea as well as appreciation of its impact on subsequent science in that area. It also provides an idea about the pedigree of other concepts that build upon and follow that original idea. Understandably, authors would like a continuous acknowledgment of their contributions in the form of a citation. However, like many other phenomena, citations have a finite time course: a quantifiable immediacy, a peak period for citations, a dying tail and a citation half-life. This is the result of the natural ferment in ideas and time-related progress in that field. Ideas quickly become layered with other related ideas and soon only the very rare, most seminal ones have a chance to stand out in the new edifice of science. On an average, research letters and full papers have a peak citation period of 2 to 3 years following which time most papers rapidly decline to minimal rate. Review papers have a more prolonged durability but they too suffer from a similar decline (Fig. 1). This period of continued citations is further curtailed in the era where the journals may limit citations due to page limitations. In fact, we at *ijACC* strongly recommend that authors stick with the most relevant citations to substantiate their work. This is reflected in the fact that most papers now have shorter citing half-life and a cited half-life as well as a shorter aggregated cited half-life (thought to be an indication of the turnover rate of the body of work in a given subject). In fact, in rapidly moving fields and very high-impact journals, cited half-lives hover around 2 to 3 years suggesting that researchers would be able to retrieve more than 80% of the current citations to those journals by looking at merely the past 3 to 4 years of journals.

For authors, documentation of the evidence that underlies the paper is critical because the



Methods section should enable another investigator to perform the same experiment with the same result. Accurate citation of previous work using the same methodology may allow an author to limit space in the Methodology section. The two most common errors relate to references pertaining to inaccurate citations (which cannot then be identified) and failure to read primary sources. Review articles should be used to guide the reader towards the original papers. Excessive reliance on review papers is a significant hazard to authors, as traditional rather than systematic reviews (5) may be biased towards a particular viewpoint, or may even misrepresent previous papers. A third and more serious problem relates to selectivity. In selecting citations it is more important to search in depth in relation to the current topic than to include a broad search that includes related topics. A particular problem is failure to cite references that are similar to the paper under review. Sometimes this occurs because of a long preparation and review process, in the course of which new papers are published. Other times, it may occur because the authors wish to hide the fact that their study has already been published by someone else. If identified, this strategy may be catastrophic for the authors during the review process for the paper, and frequently is, because the editors identify reviewers who are knowledgeable about the current literature.

For those who do not take the references as seriously as the other parts of the paper should remember that this is part of the written record. "Litera scripta manet."

REFERENCES

1. The Quotes Page. Available at: <http://www.quotationspage.com/quote/597.html>. Accessed March 3, 2012.
2. AMA Manual of Style. Available at: http://www.amamanualofstyle.com/oso/private/content/jama/9780195176339/p034_print.html. Accessed March 3, 2012.
3. Asanuma T, Fukuta Y, Masuda K, Hioki A, Iwasaki M, Nakatani S. Assessment of myocardial ischemic memory using speckle tracking echocardiography. *J Am Coll Cardiol Img* 2012;5:1-11.
4. Heusch G, Guth BD, Widmann T, Peterson KL, Ross J Jr. Ischemic myocardial dysfunction assessed by temporal Fourier transform of regional myocardial wall thickening. *Am Heart J* 1987;113:116-24.
5. Mulrow CD. The medical review article: state of the science. *Ann Intern Med* 1987;106:485-8.