

# Editorial

## Some Problems in References to the Literature

It is standard procedure in articles in professional journals that report on research studies, or that discuss significant issues, to refer to the relevant literature. The reference may be for the purpose of indicating the importance of the issue being addressed, describing what is already known about it, justifying the methodology employed, comparing the new findings with previous ones, or providing support for the interpretations or conclusions reached. The process plays an important role in determining what becomes accepted as new knowledge. As de Lacey<sup>1</sup> points out, inaccurate reporting of the work of others means “that untruths become accepted fact”.

One of the main problems in references to the literature occurs when the citation given for the reference is so inaccurate that the source cannot readily be found by the reader. Eichorn and Yankauer<sup>2</sup>, in a study of 150 randomly selected references from the May, 1986 issues of three public health journals, found that 5, or 3%, were in this category. De Lacey<sup>1</sup>, in a study of 300 randomly selected references from the first 1984 issue of six medical journals, found a higher rate, 8%, of such citation errors.

Eichorn and Yankauer<sup>2</sup> found that the rate of citation errors per reference was strongly correlated with the number of references per article, clearly suggesting that as the task of ensuring accuracy in the citations becomes larger, authors become more careless. They point out that: “citations could theoretically be checked as part of the copy reading process, but few journals can afford this luxury”. It seems clear that the responsibility for the accuracy of citations belongs to the authors. Ensuring accuracy in the spelling of authors’ names or the recording of year of publication, volume, and page numbers for journals, is not easy. There is no short-cut to very careful visual checking by the author at each stage of the process—when recording the citations initially from the sources, when listing them in the references section at the end of the manuscript, and when checking the galley proofs from the printer against the manuscript.

The other main problem in references to the literature, and one with more serious consequences, involves inaccurate or misleading referral to earlier published work. De Lacey<sup>1</sup> found a 6% rate of such errors that were bad enough to be classified as “seriously misleading”, and Eichorn and Yankauer<sup>2</sup> found that the rate of such errors which they classified as “major” was 15%.

There are a number of categories for such inaccurate or misleading referral to earlier published work, of which two will be illustrated here. The first involves errors in the numerical manipulation of the findings in the cited reference, resulting in an erroneous and seriously distorted impression of those findings. A good example came to light in the course of my recent processing of a manuscript that had been submitted to this Journal,

in which the statement appeared that: “Drug-induced illnesses have been shown to cause 41.3% of hospital admissions for patients 61 years and older”. Since I was sure from previous reading that this figure was much too high, I checked the reference that was given for it<sup>3</sup> which, it turned out, did not report any new work that resulted in such a figure, but only cited an earlier paper by Lundin et al.<sup>4</sup> Lundin, in turn, had not done the research in question, but cited a still earlier paper by Caranasos et al.<sup>5</sup> Caranasos et al. had done the study involved, but nowhere in their paper did it state that 41.3% of their hospital admissions for patients 61 years and older were caused by drug-induced illnesses. Their Table 1 gave the numbers for total hospital admissions and “adverse drug reaction admissions”, by age group, without any percentages. Of 1,910 total admissions aged 61+, 73, or 3.8%, were “adverse drug reaction admissions”, a far cry from 41.3%. Lundin et al. probably derived their 41.3% figure by dividing the 73 cases of elderly adverse drug reaction admissions by the total of 177 adverse drug reaction admissions of all ages, (which yields a quotient of 41.24%, which rounds to 41.2% rather than 41.3%). Thus, they used the wrong denominator for the rate they said they calculated. Instead of finding what proportion of total elderly admissions were due to adverse drug reactions, they found what proportion of adverse drug reaction admissions in all age groups occurred in elderly people. Their error, coupled with the subsequent uncritical references to the “finding” by others, perpetuated an erroneous and striking overestimate of the magnitude of this problem.

A broad category of inaccurate or misleading referral to earlier published work involves those seriously misleading instances described by De Lacey<sup>1</sup> where the reference “had little resemblance to the original source” and those major instances described by Eichorn and Yankauer<sup>2</sup> where the reference “either failed to substantiate, was unrelated to, or even contradicted the author’s assertion”. In the example given by De Lacey, an author, in referring to patients with Korsakoff’s syndrome, stated that “several studies have shown that the immediate memory span is intact”, but one of the two cited references for this statement was a paper on the psychological aspects of rehabilitation in cases of brain injury, with no mention of patients with Korsakoff’s syndrome. In the example given by Eichorn and Yankauer, an author, in reporting his finding on blood levels of lead in human study subjects, stated that: “The average blood levels seen in our population are below that usually associated with renal insufficiency”, but the cited reference reported on the relationship between blood levels and renal insufficiency in rats.

De Lacey et al.<sup>1</sup> think that the primary responsibility for accuracy in references lies with the author. However, they think that: “Editors could help or stimulate authors to be more accurate—for example, journals might carry a column prominently entitled ‘Misquotations’. The author misquoted would send the complaint to the editor, who, if he agreed, would refer the misquotation to this column. A classification that included

serious misrepresentation should encourage some authors to be more careful and the more cavalier to be more circumspect". Perhaps, but I seriously doubt that a procedure that depends in the first place on the misrepresented author spotting the misrepresentation and taking action would go very far in reducing such misrepresentation. Eichorn and Yankauer<sup>2</sup> believe that the accuracy of references "could not possibly be checked" by journals and "are a responsibility of authors". To help reduce the problem, they recommend that "when an author quotes figures not found in the original source but calculated from its data, or if the author interprets data differently from the source author, readers be so informed", a recommendation I heartily endorse. In addition, they comment that: "quotation errors could be avoided if an original source was read carefully and in its entirety".

To the extent that inaccurate or misleading referral to earlier work is due to pure carelessness on the part of the author, increased care on his or her part in both reading the original source and the wording of the reference to it in the manuscript will help to reduce the problem. However, I suspect that a goodly proportion of these errors result from unconscious bias or even conscious laxity on the part of the author in trying to demonstrate support for findings or views in a way that he or she recognizes as intellectually sloppy but expects will escape detection. Increasing the risk and the embarrassment of detection seems to me to be the most promising way to reduce such errors, and this could be more effectively accomplished by involving editors and reviewers of manuscripts than by hoping that the misrepresented author will notice. While editors cannot be expected to routinely read all references cited in manuscripts, they can be expected to read the manuscript itself, before sending it out for review. Their reading could include alertness to the references made to earlier work. They might themselves check out any of which they are suspicious, or that they consider most significant regarding the impact the manuscript will have, or a randomly selected sample. If they are too busy for that, some might have a big enough budget to permit a professional assistant to do so. The instructions to reviewers might ask them to be alert to the issue, and to try to check on suspicious referrals to earlier work. A preventive approach might also be utilized, by including in a journal's published instructions to authors the information that the content of referrals made to earlier work will be checked for accuracy against the original sources, at least on a sampling basis.

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