

Assessing the Internal Logic of a Manuscript

Speaker:

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Canadian Medical Association Journal
Ottawa, Ontario, Canada

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American Journal of Clinical Nutrition
Bethesda, Maryland

Patricia Huston, an associate editor-in-chief at the time of the presentation, suggested that one role of an editor in improving the work of others is assessing the internal logic of a manuscript by examining whether the study described in the methods, results, and conclusions sections is the same as that suggested in the title and introduction. Perhaps surprisingly, that is not always the case. Internal logic can be defined as the coherence of the underlying structure of a presentation. Improving the internal logic of a manuscript can increase its readability and lessen the chance of misinterpretation of data.

Huston referred to the session presented by Richard Horton ("Twisting the Text: The Rhetoric of Research in Scientific Publication"), who asserted that scientific work is steeped in rhetoric. Huston agreed: Authors put a "spin" on their data. However, rather than look at rhetoric—which includes such things as mood, style, and argument formulation—Huston focused solely on logic. She suggested that in medicine, a love of evidence can blind us to logic.

Huston presented her technique for examining a paper's logic by using 2 structured abstracts drawn from evidence-based medical journals: one abstract in which the logic was good and a second in which it could be improved. Next, the attendees divided into groups to discuss additional examples. Assessment of internal logic includes examining the sequence of data presentation, checking for consistencies and mathematical integrity, and screening for logical fallacies. Two steps are used to assess internal logic: Pose a series of questions, and jot down the answers to these questions in tabular form.

For example, one of the questions was as follows: Are the data that the authors propose to collect and the sequence in which they propose to collect them established in the research objective, and is the sequence followed in the description of the outcome measures, results, and conclusions? In most of the abstracts studied, the answer to this question was no. In one abstract, the objective was to determine whether lovastatin reduces 1) mortality, 2) major cardiovascular events, and 3) progression of subclinical atherosclerosis. But the results were given as follows: 3) lovastatin decreased intimal-medial thickness, 1) there was 1 death in the lovastatin group, compared with 8 in the placebo group, and 2) there were fewer cardiovascular events in the lovastatin group. A simple reordering of data would make this abstract clearer. (A logical fallacy was also identified in the abstract: A lowering of cholesterol was noted as an outcome in the results section, but in fact lowering of cholesterol was part of the protocol.)

In the discussion of the internal logic of each abstract, issues of external validity kept arising. Huston reminded attendees that reviewers are called on to assess the external validity of a manuscript by responding to such questions as, Is this research question relevant? Important? Has the research been done before? Is the methodology valid? It is often hard to separate external validity from the assessment of internal logic, but internal logic is related to presentation. Huston compared a scientific paper with classical music: establish a theme and follow it throughout. The speech dictum also applies: Tell them what you're going to say, say it, and then tell them what you said.

Huston summarized by emphasizing that rhetoric is inevitable in scientific writing, that it is acceptable as long as logical fallacies do not slip in, and that editors should assess the internal logic of articles to improve the presentation of the authors' work.

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