

A Question of Internal Validity

The author of a prospective journal article in draft form asks you, the manager of an editorial group, whether you have anyone who can advise him on what statistical tests to use in analyzing his data before he writes his final paper. He also wants assistance in writing the final paper. Can your manuscript editors complete this project? What external resources might you consider consulting? Will you want to see a final draft before starting the editing process? In other words, at what stage of manuscript preparation will you accept a manuscript for editing, and how far do you go?

Solutions

When I was manager of Medical Editing Services at The Cleveland Clinic Foundation, I would have referred this author to the biostatistics department for assistance. Now, as a consultant, I would also suggest that he see a statistician, perhaps one with whom I work when this situation arises.

I would be willing to write or edit the initial or the final draft for him provided that I had the statistician's report, the printout of the analysis, or both and that we had discussed the research in depth. I actually prefer to write the statistical-methods section and the results of the data analyses myself as opposed to having these components written by the author or the statistician. There are great differences between analyzing statistics and communicating them, and I believe I can communicate them more effectively than authors and statisticians, having written a book on the topic [Lang T, Secic M. *How to Report Statistics in Medicine: Annotated Guidelines for Authors, Editors, and Reviewers*. Philadelphia: American College of Physicians; 1997].

As either a manager or a consultant, I would have the statistician review the final draft of the entire manuscript. In some circumstances I would advise the author to include the statistician as a coauthor. The two editors I supervised at the Cleveland Clinic were trained to provide the services described above.

Tom Lang

Tom Lang Communications
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Our department provides assistance in reporting quantitative data and the results of statistical tests, but when authors seek advice about analyzing data we refer them to our institution's biostatistics department. The biostatistics department provides consulting and collaboration in all stages in biomedical research; we encourage researchers to discuss ideas with biostatisticians before they even begin their research projects, and we ourselves consult the biostatisticians for help in understanding confusing manuscripts.

We generally edit only final drafts; although a manuscript without completed statistical analyses can be copyedited, it cannot usually be substantively edited because it lacks information that is integral to the conclusions. However, we do sometimes work with authors early in the writing process. We teach courses in scientific writing; course participants and other physicians sometimes consult us for help in such tasks as writing an outline, composing accurate and comprehensible visual representations of data, choosing a journal, deciding on the scope of a proposed research or review article, or writing in English as a foreign language.

Jessica Ancker

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For selected journal articles such as case reports, we do not need to see a final draft. We have helped physician authors write their rough drafts and final versions of case reports, sometimes working from handwritten notes and medical records.

However, if this author is asking what statistical tests to use after he has conducted original research, he has already made one important error. The nature of the statistical tests to be used should be determined when the study is designed. These tests are instrumental in determining the power and validity of the analysis and thus influence the final design and size of the study populations. Although I believe that we author's editors should be skilled in determining whether an incorrect test has been done, it is beyond our responsibility to determine

whether the most correct test was done. It is possible that these data can be salvaged, but I would recommend that a biostatistician review the research design and the collected data before any editing is attempted.

In summary, although we can accept selected manuscripts for editing at any stage of manuscript preparation, we will advise an author if he or she needs to consult outside resources before we can edit a particular manuscript.

Margaret Hoppenrath
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This scenario sets up the odd premise that an institution that actually *has* an “editorial group” does not have statisticians. Assuming that there is no institutional statistician to whom the author can be referred for help, the question becomes how much statistical knowledge a manuscript editor has or should be expected to have. Is it enough to feel comfortable in advising an author about statistical analysis *after the fact*? The author has already done the study, so it is late to be asking what tests should be done. Most editors who have familiarized themselves with some basic statistics *know* that. They also know that the choice of statistical tests to use is determined by the hypotheses that were supposed to be tested in the study, for example, how many groups are being compared—as well as sample size and type of data, all of which should have been considered *before* the author conducted the study.

Good editors can make up for *a lot*, but I don’t believe that they should be expected to pinch hit as statistical consultants unless they have had formal training in statistics. It is one thing to edit a draft and note that an author has summarized data using a mean when a median would have been more appropriate, or even to point out that an author has done too many *t* tests without adjusting his *P* values to account for the number of comparisons being made. It is something else entirely to be asked about appropriate statistical tests. Myriad resources are out there to answer this question for researchers. If they cannot help themselves, one of the most helpful things editors can do is refer them to books and software that have

been well reviewed. Editors who are more knowledgeable may consider directing the author to specific chapters of a good book; for example, “You seem to be comparing the same individuals before and after treatment. According to the statistics book I use to help me figure out the best way to edit, that means you should probably have analyzed your data using repeated-measures analysis of variance.” That is already going pretty far. Authors are the ones who must take public responsibility for their work; that means that they have to know how and when to analyze it.

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New Question:

A Question of External Validity

Interested authors will have read in the March-April issue of *Science Editor* about survey findings indicating that study-design flaws and inadequate methodologic detail are often responsible for manuscript rejection,¹ but that insufficient recognition of previous research, ignoring important work by others, and duplication of previous work rarely, if ever, lead to manuscript rejection. Elsewhere in the same issue a synopsis noted how “early scientists and scientific societies transformed science from an anonymous process” (“based on the Baconian ideal of collective research: Truth is UNcovered, not DIScovered”) to one in which “science grew into a means of evaluating the work of persons who were outside the established society” in which “authorship is key” and “identity contributes to credibility”.² I invite your comments on what the survey findings indicate for future bioscientific article format and on how the current trend toward informal exchange of information in online discussion groups might affect the continuum of authorship to anonymity.

1. Byrne DW. Common reasons for rejecting manuscripts at medical journals: a survey of editors and peer reviewers. *Sci Ed* 2000;23(2):39-44.

2. Kronick DA. Anonymity and identity: editorial policy in the early scientific journal. *Libr Q* 1988;58:221-37. [Synopsis by L Dirk. *Views Afield*. *Sci Ed* 2000;23(2):53-4.]