

### Research Roadmap: Disseminating Your Research (Part 2)

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*Editor's note: This piece is the second of two parts from the "Research Roadmap" session delivered at the 2018 Annual Meeting of the Medical Library Association. Part 1 covered advice and guidance about doing research while Part 2 discusses how to share the products of your research. Part 1 can be found in [Hypothesis Vol. 30, No. 1, Fall/Winter 2018](#).*

### **Presenting at a conference**

As you near the completion of your research project, you will probably begin thinking about whether to present your project at an upcoming regional or national conference. Should you present your research at a conference? The answer is “yes,” unreservedly “yes.” There is no point to conducting research if you do not disseminate your results to other researchers and practitioners, this is the distinction between data gathering for quality improvement for internal use and research intended for sharing. Presenting at a conference is often a first step in disseminating your research and can have several benefits, including building your professional identity as a researcher, forming new connections with colleagues and potential collaborators, allowing your colleagues to build upon your experiences and findings, adding another line to your CV to boost your tenure, promotion, or future career endeavors, and getting preliminary feedback on your project before you write it up and submit to a journal. Perhaps a more pertinent question is: should you present your research as a poster or as a talk? The answer to this question is “it depends”—on factors such as your preferred mode of communicating with others, the content of your presentation, your primary motivation for presenting, and the size of the conference.

Talks are often considered more prestigious than posters. If you seek public recognition as a researcher and an expert in your research area, you may opt to give a talk so that your name receives more emphasis on the conference program and your face becomes more familiar to your peers. However, weigh your personal preferences for social interaction into this decision. Perhaps the thought of standing alone at the front of a room and speaking to an audience induces deep fear or anxiety. If you are this kind of person, remember that the fear of public speaking often diminishes gradually over time with repeated experience—it really does get easier the more you do it. On the other hand, perhaps you dread the thought of standing awkwardly at a poster for hours, enticing not a single viewer while your poster-presenting neighbors draw in crowds. If you are this kind of person, it may be more appealing to “get it over with” by standing at a podium and speaking for 15 minutes, provided that you can sufficiently quell your nervousness. Essentially, if you can stomach the thought of giving a talk at a conference, then go for it!

In some circumstances, presenting a poster may clearly be a better choice. For instance, a poster is better for showing information visualizations that require closer examination than a brief glimpse on a slide, such as network graphs, flow diagrams, timelines, or other complex charts or graphs. You may also be more inclined to present a poster if your goal is to solicit a lot of feedback on your research or to generate conversations with colleagues. An abundance of tips for creating visually appealing posters that clearly and effectively convey your intended message can be found online and in the published literature; essentially, aim for clean and concise.

Finally, the potential impact of a talk versus a poster can differ markedly depending on the size of the conference. If you are attending a large national or international conference with multiple streams, a talk will compete with other talks or conference events occurring at the same time, which can result in a disappointingly small audience. Thus, a poster might ultimately receive more viewings, particularly if it can be left up for one or more days. By contrast, if you are attending a small local or regional conference with only one stream, you will have a more “captive audience” for your talk, whereas a poster session may be more likely to be skipped by attendees opting for down-time or catching up with colleagues. In other words, a poster may be more impactful at a larger conference, and a talk may be more impactful at a smaller conference. You can hardly make a wrong decision; presenting your research at a conference can be extremely meaningful—to both you and your audience—regardless of its presentation format.

### **Understanding the Publishing Process**

Next comes the more daunting question. Should you publish your research in a journal? The answer to this question is “yes, but . . .”. Publishing your research in a journal is extremely satisfying, can mark the successful completion of your project, and is important if not critical for building your identity as a researcher. However, publishing a journal article takes a lot of time and effort, requires strategic decision-making, and can be an arduous if not maddening process. It is worth it.

Before starting to write a manuscript describing your research, identify a target journal so that you can write to their specifications. We provide guidance for tackling each of the major sections of an article in an IMRAD (Introduction, Methods, Results, and Discussion) format. However, it is often easiest to write a manuscript “from the inside out”—first writing the Methods and Results as you prepare your protocol and analyze your data, and then writing the Introduction and Discussion.

### **Writing the Manuscript**

#### **a. Introduction**

The Introduction section is very important for framing your study and its purpose. It is wise to compose the Introduction as a logically constructed argument that convinces reviewers (and future readers) that your study is a valuable contribution to the literature. The lack of a previously published study investigating your research question is not sufficient motivation; rather, it is important to identify a clear gap in knowledge or practice that your study seeks to fill. Writing an Introduction section can be as easy as following a three-step formula: (1) dedicate the opening paragraph to describing a higher-level (e.g., national, discipline- or profession-wide) issue or trend that provides broad context for your study and attracts readers, (2) use one or more paragraphs to present specific complexities or problems that serve to narrow into your research

question, and (3) conclude with a paragraph that describes the specific objective(s) of your study. If the journal you are submitting to employs the IMRAD format, a separate literature review section is likely unnecessary. Instead, references to the existing literature should be woven into your argument (and not simply presented as a list, such as “Author A found this. Author B found that.”). A well-constructed Introduction can be accomplished in as few as 1-3 double-spaced pages.

### **b. Methods**

The Methods section explains your procedures and analyses with enough detail to allow others to replicate them. From the perspective of a journal editor, reviewers hardly ever complain that the Methods section is too detailed; instead, unclear or incomplete description of the methodology is a much more common reviewer complaint. Your methodology will be more easily understood by readers if the Methods section is well-organized (e.g., in temporal order, by technique or approach) and employs subheadings.

### **c. Results**

The way in which you lay out the Results section can vary dramatically depending on your study design and actual findings. The goal is to present your results in a manner that is intuitive to readers using text, tables, and visualizations (i.e., figures). Sometimes your Results section will “write itself”; other times you may need to experiment with different ways of presenting your results before you discover the most effective approach.

Do not include tables or figures “just because”; reserve the use of tables and figures for data that cannot be easily described in a couple of sentences. For example, a simple one-or two-columned table, a pie chart, or a bar graph showing a single difference between two groups is often unnecessary, as these data can most likely be easily reported in the text. At the same time, however, try not to make your tables and figures overly complicated. The purpose of tables and figures is to help readers discern patterns in your data; reader should not have to spend a great amount of time studying a table or figure to comprehend the key information it is intended to convey. Avail yourself of resources and training on the effective visualization of data and other information. Furthermore, there should be no redundancy between the text and the information presented in tables and figures; although the content of tables and figures should be generally described in the text, specific numerical values shown in tables and figures should not be duplicated in the text.

Nearly all research articles will report some type of descriptive statistics, such as frequencies (e.g., counts, percentages) and measures of central tendency (e.g., mean, median) and spread (e.g., standard deviation, range). However, to make certain claims, you may also need to perform inferential statistical analyses, such as Chi-

squared tests or correlation coefficients. For example, if you state that students in an active learning condition scored higher on a test than students in a passive learning condition, this must be supported by inferential statistics showing that the difference between groups is greater than would be expected by chance. When inferential statistics are needed, report not only  $p$ -values but also other test statistics such as the  $\chi^2$  value,  $t$  value, or Pearson correlation coefficient ( $r$ ) and the corresponding degrees of freedom. When in doubt, consult with someone who is knowledgeable about statistical analysis (and consider including them as a co-author!).

Be sure to keep the Results section free of methods and discussion. While it may be important to remind readers why or how a certain analysis was performed, methodological procedures should not be described again or for the first time in the Results section. Also, while data can be objectively characterized in the Results section, their subjective interpretation should be restricted to the Discussion section.

#### **d. Discussion**

The Discussion section can be more free-flowing than other sections, but it should still be a concise, logically constructed argument that achieves strategic goals. Most importantly, do not simply restate your results in the Discussion section; rather, go beyond a summary of your findings and discuss what those findings might mean, whether they support or contradict previous research findings or existing theories, and how they extend the knowledgebase or advance practice. Address any limitations of your study and how they might impact your results or their interpretation. Explore the implications of your findings for future research or practice, particularly considering the journal's primary audience. Engage the literature; the Discussion section should be rich with references to previous work in the area. Each paragraph in the Discussion should make its own unique point, with smooth transitions between paragraphs. Although subheadings can be used in the Discussion section, good writing can eliminate their need. Reviewers and readers look favorably upon a concluding paragraph that briefly synthesizes your findings and reiterates the study's contributions to the literature and implications.

#### **Navigating the peer review process**

At some point, after taking great care to produce a high-quality research manuscript, you must turn it over to a journal and hope that it survives the gauntlet of peer review. Reviewer comments can never be fully anticipated, and the path that a manuscript can travel through the peer review process can be long and convoluted. As you are already likely familiar with the basics of peer review, here are "pro tips" for increasing your chances of manuscript acceptance.

### **a. Sending pre-submission inquiry**

If you are uncertain about whether your manuscript would be a good fit for a journal, you should send the journal editor an email to gauge his or her interest.

### **b. Submitting the manuscript and associated documents**

Cover letters used to be standard when manuscripts were physically mailed to the editor. More recently, cover letters have become optional, although they are still required by some journals. Should you submit a cover letter with your manuscript? If you have specific information that you want to convey to the editor, then “yes”. For instance, you may want to highlight why your manuscript is particularly valuable to the field or relevant to that journal’s readership. You may want to explain the history of the manuscript (e.g., if parts have been published elsewhere) and any potential or perceived conflicts of interest. Also, you may want to suggest specific individuals who would be good reviewers of your manuscript or who you would prefer not to review your manuscript due to personal or professional reasons (although the journal editor is under no obligation to honor those suggestions). If the submission system requires you to recommend reviewers, one way is to find them is to look for authors who have published similar work but have no affiliation with your project.

### **c. Checking in on manuscript status**

Online journal submission systems will often show the status of your manuscript as it moves through the editorial and peer review process. However, if your manuscript appears to get “stuck” at a certain point or you feel that the review is taking an unreasonably long time, you may judiciously and politely contact the editor to inquire about the status of your manuscript. Typical reasons for delays include difficulty finding reviewers for the manuscript or tardy reviews.

### **d. Receiving reviewer comments and the editorial decision**

Even before you receive an editorial decision on your manuscript, you should be mentally prepared to revise your manuscript to address the reviewers’ concerns. Outright acceptance of a peer-reviewed manuscript without revisions is extremely rare, as reviewers will invariably spot a weakness or make recommendations for improving the manuscript. Also know that sometimes editorial decisions are very difficult to reach, especially if reviewers provide very different evaluations of the manuscript. It is completely normal to feel disappointed, frustrated, or angry upon your first read of the reviewers’ comments and editorial decision. Let that emotional response settle overnight or for a few days before deciding how to respond. Often, what initially seems to be insurmountable reviewer criticisms can often be addressed without major alterations to the manuscript.

### **e. Addressing reviewer comments**

With few exceptions, every reviewer comment should be addressed by a change, however slight, to the manuscript. Even in instances in which a reviewer overlooked or misunderstood some aspect of your study, take that as an indication that you might not have been completely clear or direct in your writing, and edit accordingly. The editor may ask you to submit a point-by-point reply to the reviewers' comments along with the revised manuscript. In this reply letter, compose your responses with a respectful yet confident tone and indicate briefly what changes you made in the revised manuscript to address each comment. Keep in mind that the editor may send this reply letter along with the revised manuscript back to the original reviewers, who may be asked to re-evaluate the revised manuscript. Expect that the reviewers will want to see evidence that you seriously considered their concerns. If you are completely perplexed about how to adequately address a reviewer's comment, such as when two reviewers make contradictory recommendations, you can contact the editor for clarification or advice.

### **f. Asking for reconsideration**

If an editor declines your manuscript, that decision is probably final. However, if you strongly feel that the reviewers' evaluations of your manuscript were biased or inaccurate or that you would be able to perform major revisions (e.g., collecting new data, using different approach to analysis) that would resolve the critical issues, you could send the editor an email asking them to reconsider their decision or inquiring whether they would be amenable to receiving a significantly reworked manuscript as a new submission. [See also the Q&A in Part 1]

### **Conclusion**

Writing this article about the session was our first step in sharing our experiences in research with MLA members and broader audiences. It was very enlightening to encourage research questions from our members in this approach. While each of us has served as a research mentor, those questions tend towards either the project-specific or personal development. To have multiple researchers considering the same questions for a diverse audience was a unique experience. While many of us would provide similar feedback, there are areas in this paper where each author may have a different perspective, particularly on overcoming barriers and obstacles. Depending on your job title, duties, concerns for life balance, the guidance to find time or change duties may not resonate. Please be in touch with the Research Caucus if you have questions or suggestions for further research education programming opportunities.