# Preparing the Four Main Parts of a Scientific Paper: Concise Advice

如何准备学术论文的四个部分：简明指导

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This resource consists of the posts in the four-part series "IMRAD Info", which appeared in the AuthorAID blog in December 2016. This series, by Barbara Gastel, provides basic advice on writing the main parts of a scientific paper. We thank AuthorAID member Wilfred Kokas Aupal for suggesting that the series be made available as a single document.

这篇资料集合了“IMRAD 信息”系列（2016 年 12 月发布于 AuthorAID 博客） 的四部分。这个系列有 Barbara Gastel 教授撰写，提供撰写学术论文各个主要部分的基本建议。我们根据 AuthorAID 成员 Wilfred Kokas Aupal 的建议将这个系列集合成一个文档，在此对 Wilfred Kokas Aupal 表示感谢。

**IMRAD Info #1: Introducing the Introduction**

第一部分：介绍

Greetings again. I hope you’re doing well.

大家好，希望大家最近过得很好。

A recent AuthorAID blog post described the hourglass-like structure of journal articles having the IMRAD format (introduction, methods, results, and discussion). In a comment, a reader requested more information on the four IMRAD sections.

最近的一篇 AuthorAID 博文描述了 IMRAD 格式（介绍，试验方法，结果和讨论）沙漏形学术论文结构。有读者留言建议提供更详细的信息。

Therefore this month I’m providing posts on the four sections. The current post discusses the introduction. Posts on the other three sections will follow.

从本月开始我将就这四部分分别介绍。本文讲述“介绍”，其他部分将在后续博文中讲述。

Before drafting an introduction, look at the introductions to some articles in the journal where you’ll submit your article. Introductions in different journals sometimes differ, for example in length. See what is typical for your journal.

在起草“介绍”之前，阅读目标期刊（你想要投稿的期刊）已发表文章的介绍。不同起开的介绍部分有不同要求，比如长度。请参考目标期刊的规则。

Also consider functions of the introduction. One function is to provide background so readers can understand your work and appreciate its importance. Another function is to indicate the purpose of the research, for example by stating research questions or hypotheses. Be sure to fulfill these purposes.

同时请考虑“介绍”的作用。功能一是陈述学术背景和这项研究的重要性。功能二是陈述这项研究的目的，比如问题陈述和假设。“介绍”部分必须具备这两个功能。

As usual, authors should consider their audience. In a paper for a general journal, the introduction may need to provide basic background. A paper for a specialized journal might not need to do so.

读者应该考虑读者（的学术背景）。对于面向普通大众的学生论文，“介绍”部分应该包含基本背景介绍。对于专业期刊，介绍部分可以省略基本背景介绍。

As noted in the earlier post, the introduction typically starts broad and then narrows down. For example, it may

- present general information on the subject,
- then summarize previously published findings on an aspect of it,
- then identify a gap in knowledge about that aspect, and
- then state the questions or hypotheses that the current research therefore addressed.

“介绍”部分应“由广至专”。举例：提供这个课题的基本信息，然后总结已发表的相关结论，其后指出这些已知发现需要补足的地方，最后提出本文将要论述的问题或假设。

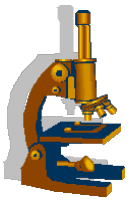
Because it starts broad and ends narrow, the introduction is said to resemble a funnel. If written appropriately, it will funnel readers effectively into the rest of your article.

“介绍”部分“由广至专”，形似沙漏。成功撰写的“介绍”可以有效引导读者继续阅读。

Until the next post—

下期见

Barbara



**IMRAD Info #2: A Method for the Methods Section**

**第二部分：实验方法**

Greetings again. I hope you're doing well.

大家好，希望大家最近过得很好。

Last week's post discussed writing the introduction section of a journal article. This week's post focuses on the next section: the methods.

上期主题是“介绍”，本期是“实验方法”。

Start preparing to write the methods section while still doing the research. As you work, keep careful records of what you do. In particular, note any changes from what you planned. Otherwise, you might forget the changes.

进行实验的同时开始撰写实验方法”部分。仔细进行实验记录，特别注意实验时与实验计划有差别的地方（这些地方尤其容易被忘记）。

Consider the purposes of the methods section. In general, this section should provide the information needed to (1) replicate the research and (2) determine whether the methods suited the research question.

思考“实验方法”的目的。这部分应提供“重复这项研究”和“判断这些方法是否适合研究课题”的信息。

Check whether your journal's instructions to authors include guidance on the methods section. Also look at the methods sections of some articles in the journal. Doing so can show what format and level of detail are suitable.

确认目标期刊对“实验方法”部分的具体要求。阅读目标期刊已发表论文的“实验方法”部分，可以对实验方法部分的格式和细节要求程度有所了解。

Of course, the methods section should be logically organized. Often much of the methods section is chronological. Some methods sections have parts—for example, on the study population, the survey protocol, and the statistical procedures. .

“实验方法”需要遵循逻辑顺序。通常“实验方法”是按照时间顺序记录的，例如针对“实验对象”“调查方法”和“统计步骤”的描述。

The methods section must contain enough detail. For example, authors may need to specify manufacturers of chemicals, strains and sources of organisms, and brands and models of equipment.

“实验方法”必须提供足够的细节。例如，作者应列出试剂的生产商，实验对象生物的品种和来源，以及实验仪器的品牌和型号。

If you used a previously published method, you can briefly describe it and cite the source rather than describing the method fully. Of course, you must note any modifications you made.

如果使用已发表的实验方法，可以只简单描述实验步骤并引用前文，同时列出对实验方法的任何修正。

Figures or tables sometimes can help communicate the methods. Among possibilities are flowcharts, maps, drawings of apparatus, and tables of experimental conditions.

图表有助于描述实验方法，如流程图，地图，仪器图示和实验条件列表。

In sum, preparing the methods methodically can help yield an effective paper.

系统性的“实验方法”部分可以帮助完成一篇高效的学术论文。

Until the next post—

下期见

Barbara

**IMRAD Info #3: Results Sections That Get Results**

**第三部分：实验结果**

Greetings again. I hope you’re doing well.

大家好，希望大家最近过得很好。

The previous two posts discussed writing the introduction section and the methods section. This week’s post focuses on the results section.

前两期讨论了介绍和方法，这一期主题是“实验结果”。

The results section is the heart of a scientific paper. Without results there's no paper. However, a results section need not always be long. If research is highly focused, the results section may be short but strong.

“实验结果”是学术论文的核心和必不可少的部分。但是“实验结果”并不一定冗长。如果这是一项专项研究，“实验结果”可以言简意赅。

The purpose of the results section is, of course, to report your findings. The findings should follow from the methods you described. And they should help answer the question(s) you posed.

“实验结果”部分的目的是报告研究的发现。这些发现应该是从实验中得出的，并解答介绍部分所陈述的问题。

When writing results sections, some new researchers feel compelled to include every piece of data they obtained. However, summarizing data or providing representative findings is often preferable. Looking at papers in your target journal can help in knowing how much detail to include.

有些作者认为“实验结果”部分必须事无巨细。但是总结实验结果，只列出有代表性的发现是更有效的方法。阅读目标期刊的已发表文章可以帮助了解报告实验结果时的细节程度。

The results section should be well organized. Sometimes chronological order works best. Other times, another order—such as from most important to least important—works better. Sometimes a combination is most effective.

“实验结果”应该是有组织的。有时按时间顺序是最有效的，有时依实验结果重要程度（从最重要的发现开始）进行报告更有效，或者两种方法搭配使用。

Often a results section includes tables or figures. It should mention each one. But it shouldn't repeat its content in detail. Rather, it should state the main message of the table or figure and perhaps note some important items in it.

“实验结果”通常包括图表。所有图标都应该在实验结果描述中被设计但是不应该在描述中重复细节。实验结果描述应集中报告图表的主要信息。

Unless a paper has a combined results-and-discussion section, the results section should just state the findings, not comment on them. For example, it should not speculate on reasons for the results.

除非“实验结果”和“讨论”部分合二为一，否则实验结果应该只描述实验结果而不发表评论，比如不阐述实验现象发生的原因。

Such commentary belongs in the discussion section. I look forward to discussing that section in the next post.

这些针对“实验结果”的评论应该包括在“讨论”部分(下期主题)。

Until then—

下期见

Barbara

**IMRAD Info #4: Discussing the Discussion**

**第四部分：讨论**

Greetings again. I hope you're doing well.

大家好，希望大家最近过得很好。

Earlier posts in this series discussed writing the introduction, methods, and results sections of a journal article. The current post discusses the discussion. This section can be especially hard to write because it can vary considerably in content and structure.

前三期已讨论过“介绍”“实验方法”和“实验结果”。这一期主题是“讨论”。“讨论”部分可能有很多表达形式。

One way to approach writing the discussion is to consider its **beginning, middle,** and **end.**

方法之一是：开始，中段和结尾。

Commonly, the **beginning** should focus on the current research. It should quickly summarize what was done and found. And often it's the place to answer the question(s) that the research addressed. Other items to consider discussing here include discrepancies in the findings and strengths and limitations of the work.

通常“开始”部分集中本项研究，应总结实验结果，回答“介绍”部分陈述的问题，也可以包括实验发现的争议，本项研究的强项和局限性。

The **middle** should put the current research in the context of previous research. For example, it may show how your findings are or aren't consistent with published findings and may speculate on the reasons. This part may have relatively many citations.

“中段“部分应该比较本项研究和早期研究，例如，列出本项研究的发现与早期研究发现的不同并指出原因。这一部分将引用很多早期研究。

Finally, the **end** should put the research in broader context, for example by noting theoretical or practical implications or both. If the article won't have a conclusions section, the discussion may conclude with a paragraph briefly summarizing the research and stating the take-home message.

"结尾"部分应该从放宽视野，例如提出理论性或实际性的推论。如果这篇学术论文没有"结论"部分，那么最后一个段落可以简要总结这项研究并陈述作者希望读者能够记住的信息。

Discussions vary somewhat among fields and journals. Therefore, it's important to look at examples in one's target journal.

"讨论"部分因学科和期刊而异，所以阅读目标期刊的已发表论文作为参考会非常有效。

Whereas the introduction moves from general to specific, the discussion tends to move from specific (the current research) to general (broader significance). In other words: The introduction resembles a funnel, but the discussion resembles an inverted funnel. It leads readers back into the wider world in which the research occurred.

"介绍"部分是"由广至专"，"讨论"部分则是"由专（本项研究）至广（广义的本项研究的重要性）。所以，"介绍"部分是沙漏形，而"讨论"则是"倒沙漏形"，将读者引导回这个研究的广义背景。

Until the next post—

下期见

Barbara