

Effective scientific writing

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Pieces of a paper

- Title
- Abstract
- Introduction
- Methods
- Results
- Discussion
- Bibliography

Title

- Serves two purposes:
 - One line take-home message
 - Attracts interest in your paper

Abstract

- Usually 250—500 words
- Summarize your question
- Summarize your approach
- Summarize your most critical findings

Introduction

- Think: Pitch lab
- Usually 2—3 pages
- Describe your question and why it's interesting
- Summarize what's already known about your question
- Set up your approach
- Briefly foreshadow what you found

Methods

- Think: Drawing lab
- Usually 2–5 pages (succinctly describe everything critical)
- Describe what you did (and sometimes why you did it)

Methods

- Participants: Who did you test? How did you motivate them to participate?
- Experiment: What was your experiment? How did you implement it?
- Analyses: What were the goals of each analysis? Describe the underlying logic. If there were any important considerations (e.g., multiple comparisons, statistical assumptions), describe those too

Results

- Think: Data sleuthing lab
- Usually 3—5 pages
- Start with an overview of what your question was and how you approached it
- Then go through each result in turn (usually Figure + 1—2 paragraphs, including some stats)
- Tell the “story” of your data

Figures

- Labeled axes
- Legend
- Visually pleasing
- Consistency across panels/figures

Figure captions

- Figure number
- Bolded title summarizing the key message
- Describe what the figure is showing

Discussion

- Think: Literature review lab
- Usually 2—3 pages
- Summarize (again) your question, what you did, and what you found
- Situate your findings within the context of the broader literature
- Point out interesting future directions
- End with some sort of “inspiring” message

Recap

- Every section of a paper reminds the reader of the question, approach, and key findings
- Different sections emphasize different aspects of the study

What makes an effective paper?

- Easy to read
- Easy to follow
- Interesting
- Trustworthy
- Logically consistent

Empathy

- As an **author**, you should put yourself into the **reader's** position
- What would you want to read about?
- What would you find interesting, convincing, worth your time, etc.?

How much should you write?

- Never write to “fill space”
- Say what you need to say and then stop
- Rule of thumb— include if (and only if):
 - Directly relevant to your core message
 - Necessary for someone to reproduce or understand what you did/found
 - Adds a specific tangible element to your story

Keep it simple.