



University of Vermont Graduate Writing Center Science Writing 101: Distinguishing between Results and Discussion

What is the difference between the Results and Discussion sections of a scientific paper? For starters, think of it this way: In the Results section, you present *what you found* while in the Discussion section, you interpret and evaluate *what your findings mean*, particularly in relation to the question or hypothesis your paper posed.

Also see Mimi Zeiger's *Essentials of Writing Biomedical Research Papers* for in-depth guidance in writing hypothesis-driven research papers plus Gopen and Swan's "The Science of Scientific Writing" for more on creating clarity and power in your writing.

Tips for Writing the Results Section

- Report key findings in logical sequence.
 - If you are reporting on a study whose steps/experiments were determined in advance, the logical sequence will likely be most important to least important.
 - If you are reporting on a study in which one experiment determined the next, the logical order is chronological with each subsection presenting an experiment's question, overview, and result(s).
- Do not simply present data; data need to be accompanied by general statements that sum up the direction of an effect: e.g., X was higher/lower then, increased/decreased from ... to ... etc.
 - Think of yourself as continuing the story foreshadowed by the Methods section: When we did X, this happened. When we did Y, this happened.
- Prevent data (the "trees") from overwhelming a reader's understanding of the results and their pertinence to your question (the "forest") by
 - only including results (both those that did and did not match your hypothesis) relevant to the question.
 - stating a result and then presenting the data that support it.
 - minimizing data in the text, using tables and figures for most of the data presentation instead.
- When first introducing a key finding, place it in the sentence's *stress* position (the sentence's end).
 - Not: "Hydrogen bonds formed almost exclusively between the bases when the derivatized nucleosides were dissolved in non-aqueous solvents" (a sentence that puts *what* you found in the topic or starting position and *how* in the stress position).
 - Instead: "When the derivatized nucleosides were dissolved in non-aqueous solvents, hydrogen bonds formed almost exclusively between the bases" (a sentence that puts *what* you found in the stress position—saving the best and most important for last).

Tips for Writing the Discussion Section

- Start with the big picture – WHY is your study important?
 - Think of yourself as telling the story of *how* your findings answer the question you posed and *why* your findings matter, how your field's status quo or understanding is *changed* by your results.
 - Clearly signal that you are answering the question your paper introduced: "This study shows that ..." or "Our results indicate that ..." or "In this study, we have shown that ..."
 - Explain and if necessary defend your answer in relation to previously published work on this topic or other possible answers that you want to convince readers are less satisfactory than the one you are presenting.
- Focus on *what your findings mean*: how the results presented in the previous section *answer* your paper's central question.
 - Use topic sentences (e.g., "That data obtained in this study show X in two ways") followed by transition clauses (e.g., "First ... Second ...") to show *how* the results support your claim(s).
- Explain any conflicting results and discrepancies by assessing possible explanations and acknowledge the study's limitations.
- Explain any unexpected findings. In the case of a potentially exciting unexpected finding, you might start a paragraph by naming the surprise ("A surprising finding was that ...") followed by summarizing the pertinent results ("As expected, X. However, contrary to our hypothesis, Y") and then speculating about possible explanations and significance ("One possible explanation is ... If this explanation is correct, this would imply that ...").

Rhetorically outlining a model or "mentor" text from your field can help you better understand what experienced writers do when they detail findings (Results) and describe, argue for, and speculate about their significance (Discussion). Use these questions to help you evaluate what the author(s) of your mentor text are doing in the Results and Discussion sections.

For the Results section of a paper, consider:

- In what sequence do they report results and why?
- How do they present information and evidence? What do they do at the sentence level that makes this story of results clear and compelling without straying from a focus on results (*what we found*)?
- What information do they choose to present as text? As a table or graphic? Why?
- What statistics do they use and why?

For the Discussion section of a paper, consider:

- How do they (re)introduce the big picture of the study?
- How do they link findings to their initial hypotheses and/or to literature?
- How do they link findings to significance and implications (*what these findings mean*)?
- How do they discuss limitations?
- How do they discuss future directions?