Academic Writing in Practice

Mgr. David Konecny / RECETOX

Research article structure

Research paper components

- Title page
- Abstract
- Introduction
- Method
- Results
- Discussion
- Acknowledgments
- References

Title page

Title page

- Title
- Running title
- Authors and affiliations
- Corresponding author + contact information
- Keywords

For your consideration

- Searchability
  - Search engines, databases and journal websites use words found in your title, abstract, and list of keywords to decide whether and when to display your paper.
- Access
  - The title and abstract are often the only parts of a paper that are freely available online. Once readers find your paper, they will read through the title and abstract to determine whether or not to purchase a full copy of your paper.
- First impressions
  - The abstract is the first section of your paper that journal editors and reviewers read. While busy journal editors may use the abstract to decide whether to send a paper for peer review or reject it outright, reviewers will form their first impression about your paper on reading it.

Compile your key words!

- Make a working version of your key word list. Include approximately ten items.
  - Include words/phrases that will lead people to your article
  - Use the most common term for a concept/theory
  - Do not make up new terms for an old concept
  - Indicate the topic area/metholodogy of your paper
  - If relevant, consider including the location/country name, etc.

Title

- A good title
  - **condenses** the paper's content – in a few key words
  - **captures** the readers' attention – by referring to a new finding
  - **differentiates** your paper from others published in a given area

Draft an effective title!

1. Answer these questions: What is my paper about? What techniques or designs were used? Who/what was studied? What were the results?

   - My paper studies whether X therapy improves the cognitive function of patients suffering from dementia. It was a randomized trial. I studied 40 cases from six cities in Japan. There was an improvement in the cognitive function of patients.

2. Use your answers to list key words

   - X therapy, Randomized trial, Dementia, 6 Japanese cities, 40 cases, Improved cognitive function

3. Build a sentence with these key words

   - This study is a randomized trial that investigates whether X therapy improved cognitive function in 40 dementia patients from 6 cities in Japan; it reports improved cognitive function. (28 words)

Draft an effective title!

4. Delete all unnecessary words (e.g., study of, investigates) and repetitive words, then link the remaining.

   - This study is a **randomized trial** that investigates whether **X therapy improved cognitive function in 40 dementia patients from 6 cities in Japan**; it reports improved cognitive function.

   - RESULT: **Randomized trial of X therapy for improving cognitive function in 40 dementia patients from 6 cities in Japan** (18 words)

5. Delete non-essential information and reword.

   - Version 1: **Randomized trial of X therapy for improving cognitive function in 40 dementia patients** (13 words)

   - Version 2: **X therapy improves cognitive function in 40 dementia patients: A randomized trial** (reworded with subtitle and a focus on the results, 12 words)

Title types

- Descriptive
  - Untargeted Screening and Distribution of Organo-Bromine Compounds in Sediments of Lake Michigan
- Conclusion
  - A Small Molecule Inhibitor of Ubiquitin-Specific Protease-7 Induces Apoptosis in Multiple Myeloma Cells and Overcomes Bortezomib Resistance
- Snappy
  - Ready, Set, Go: The EGF Receptor at the Pancreatic Cancer Starting Line

Title tips!

- Draft a working title or even several titles for your text. A few guidelines:
  - Indicate accurately the subject and scope of the study
  - Avoid using abbreviations
  - Use words that create a positive impression and stimulate reader interest
  - Use current nomenclature from the field of study
  - Identify key variables, both dependent and independent
  - Suggest a relationship between variables which supports the major hypothesis
  - Use approximately 10 to 15 substantive words
  - Do not include "study of," "analysis of" or similar constructions

Running title

- Short version of title, used in page header or footer
- Generally no more than 50 characters long
- Example:
  - Title: Subcutaneous Morphine for Dyspnea in Cancer Patients and Pulmonary Patients
  - Running title: Subcutaneous Morphine for Dyspnea

Capitalization

- Title case
  - No universal system
  - See capitalizemytitle.com for selected options
- Sentence case
  - Capitalize only the first word of the title, the first word after a colon (the subtitle), and all proper nouns/proper adjectives
  - APA title case vs sentence case

Authors and affiliations

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Authorship criteria

An author should meet the following criteria:

- Substantial contributions to the conception and design, acquisition of data, or analysis and interpretation of data
- Drafting the article or revising it critically for important intellectual content
- Final approval of the version to be published

Authorship criteria

- Acquisition of funding, data collection, or supervision of the group alone does not constitute authorship.
- Each author should have participated in the work to take public responsibility for appropriate portions of the content.
- Contributors who do not meet all criteria may be listed under Acknowledgements.

Corresponding author

- Usually the primary author, but the function of contact author may be directed to another author, e.g. a project director when primary author is a student
- Corresponds with journal's editorial office
- Reviews and corrects page proofs
- Obtains conflict of interest disclosures and signatures on copyright release forms from other authors
- Answers correspondence from readers about the research

Method

Method

- What are the purposes of the Method?
  - To allow the reader to evaluate the results
  - To permit replication

Method

- New method
  - Must be described in full
- Established method
  - Describe the method in general and refer to previously published articles for details

Method

- Sometimes titled Materials and Methods; may or may not be subdivided this way
- Subheadings may help guide the reader
  - Participants
  - Interventions
  - Data recording
  - Data analysis
  - Etc.

Results

Results

- **You are the expert in the subject of your study, the readers are not.**
- **Do not assume that results are self-evident to the readers.**
- **Explain the results as much as possible.**

Results

- Describe what you observed
- Be honest
- Show may be better than tell
- (Do not interpret the results)

Results > writing tips

1. Use guidelines indicated in the Instructions for Authors to plan the presentation of the results.

2. Prepare tables, graphs and figures.

3. Write the Results section as a sightseeing tour describing the data in the tables, graphs and figures!

Figures and tables > checklist > 1

- Is the figure necessary?
- Is the figure simple, clean, and free of irrelevant details?
- Is the data presented accurately?
- Is the grid scale correctly proportioned?
- Are parallel figures or equally important figures prepared according to the same scale?
- Is the lettering large and dark enough to read? Is the lettering compatible in size with the rest of the figure?

Figures and tables > checklist > 2

- Are terms spelled correctly?
- Is the title brief but explanatory?
- Does every column have a column heading?
- Are all abbreviations, special use of italics, parentheses, and dashes and special symbols explained?
- If the data are from another source, is the source properly cited?
- Are the symbols, abbreviations, and terminology in the figure consistent with those in the figure caption? Consistent with other figures? Consistent with the text?
- Is the figure referred to in the text?

Introduction

Introduction

- What are the purposes of an Introduction?
  - To describe the nature of the problem
  - To provide an accurate distillation of the relevant literature
  - To develop the rationale for the study

Introduction > writing tips

- First paragraph
  - What is known about the topic?
  - What is current/latest knowledge?
- Second paragraph
  - What are the problems/gaps in existing knowledge/unanswered questions?
  - What are the limitations of the existing solutions?
- Third paragraph
  - What questions are you trying to answer?
  - What problems are you trying to solve?

Introduction › writing tips

- Begin with **broad statements** about the nature of the problem
  - Nearly a quarter million new cases of lung cancer have been diagnosed in the US in 2012 …. A search for more sensitive early detection methods is ongoing ….”
- Tell a **story** about what is known
  - “Early detection efforts have focused on …”
- Literature review should be selective and can be chronological, logical, or both. Cite **key articles** (seminal and recent).
- **Narrow the focus** in the final paragraph and state the question addressed.
- Keep it **short**!

Introduction > writing tips

- Narrow focus in final paragraph, which should contain:
  - Question(s) addressed
  - Hypotheses tested (optional)
  - Summary of results (optional – check your journal requirements!)
- Be careful of "purpose" statements which can be meaningless.
  - "The purpose was to investigate the nature of ...."
- Posing the question or stating the hypothesis may help focus the purpose.
  - "The questions addressed were: What is the overall prevalence of...? Are men more likely than women to be diagnosed with...?"

Sample introduction

- The association between chronic environmental and intrinsic factors and the pathogenesis of disease has been extensively documented throughout the history of mankind and although many attempts at characterizing the very basis of health and disease have been made, no completely satisfactory theory capable of providing an exhaustive explanation of the general pathogenic processes has thus far been proposed.

  One of the first explanations – functional, broadly conceived and still accepted – is Hans Selye's General Adaptation Syndrome, a comprehensive stress theory proposed in 1936, which defines stress as the "nonspecific response of the body to any demand made on it". Although Selye was also the first to systemically address the crucial issue of the role of environmental influences in disease development, his theory did not provide a robust framework for the measurement of stress and was in effect criticized ever since the term's introduction.

  ...

  Although a great deal of effort has been devoted to developing a reliable model for the determination of the entropy production rate in the human body, a universally accepted entropy-based model which would explain stress-related response has yet to be introduced.

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  Although a great deal of effort has been devoted to developing a reliable model for the determination of the entropy production rate in the human body, a universally accepted entropy-based model which would explain stress-related response has yet to be introduced.

Complete this introduction!

Dietary flavonoids, abundant in plant-based foods, have been shown to improve cognitive function. Specifically, a reduction in the risk of dementia, enhanced performance on some cognitive tests, and improved cognitive function in elderly patients with mild impairment have been associated with a regular intake of flavonoids. A subclass of flavonoids called flavanols, which are widely present in cocoa, green tea, red wine, and some fruits, seems to be effective in slowing down or even reversing the reductions in cognitive performance that occur with aging.

Since chocolate consumption could hypothetically improve cognitive function not only in individuals but also in whole populations, I wondered whether there would be a correlation between a country's level of chocolate consumption and its population's cognitive function. To my knowledge, no data on overall national cognitive function are publicly available. Conceivably, however, the total number of Nobel laureates per capita could serve as a surrogate end point reflecting the proportion with superior cognitive function and thereby give us some measure of the overall cognitive function of a given country.

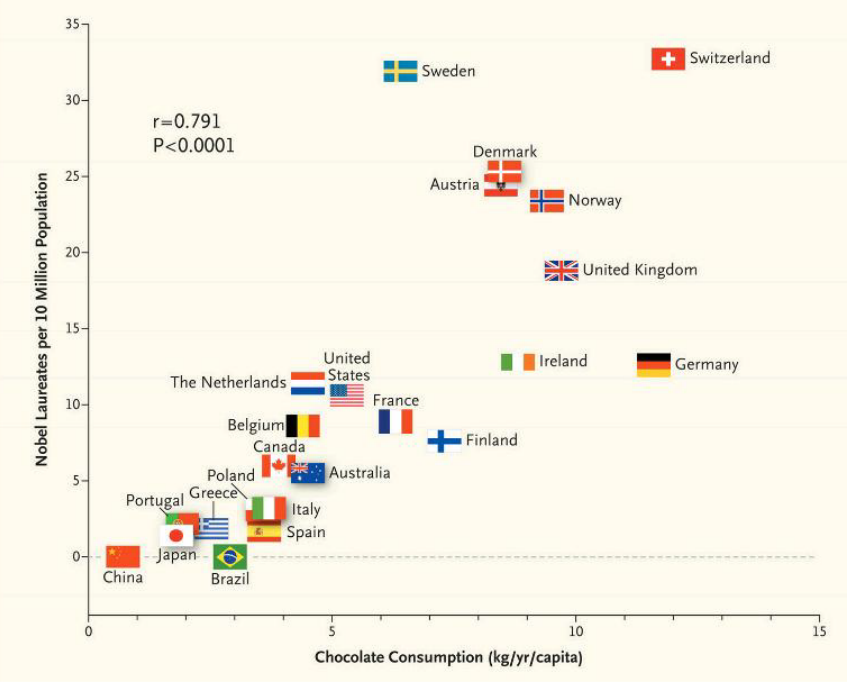
Therefore, I conducted a study to...

Complete this introduction!

Therefore, I conducted a study to…

determine the correlation between the number of Nobel laureates per capita and the chocolate intake of their country of origin.

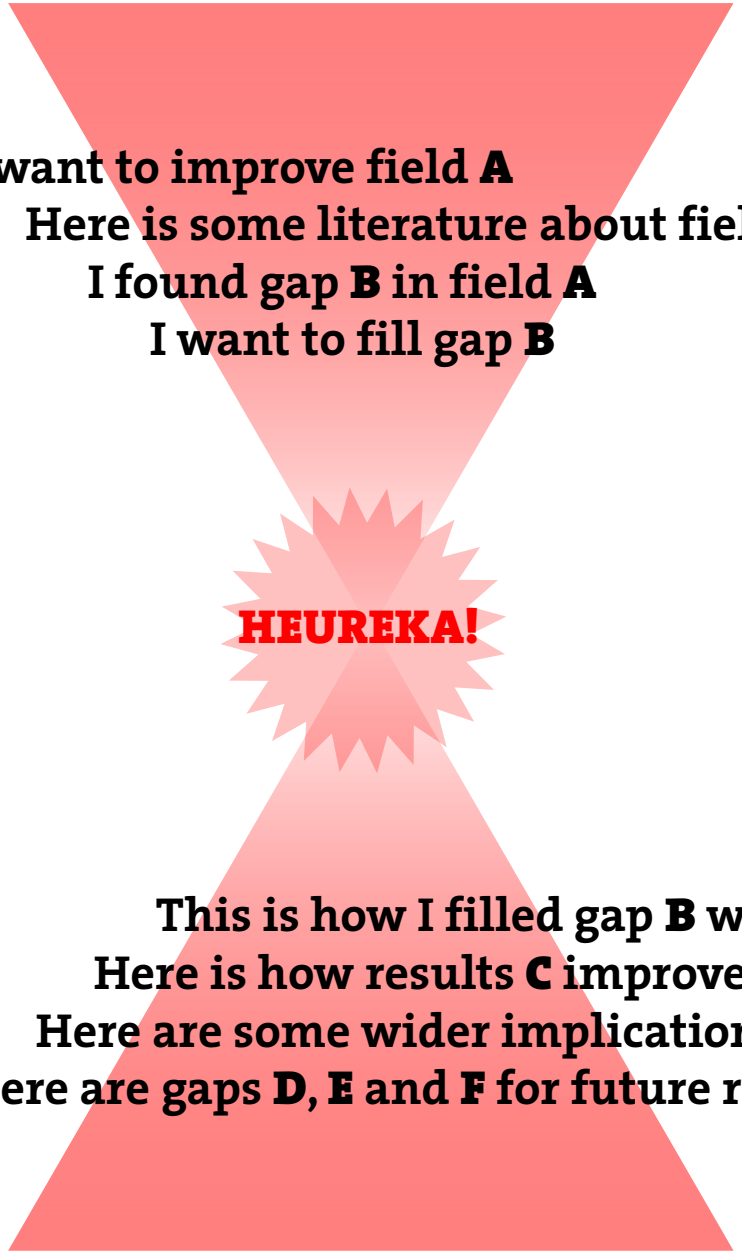
- Chocolate Consumption, Cognitive Function, and Nobel Laureates
- Franz H. Messerli, M.D.
- The New England journal of Medicine



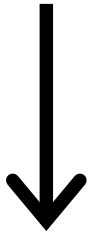
Discussion

Discussion

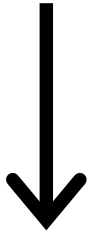
- What are the purposes of the Discussion?
  - To interpret what you observed
  - To generalize
  - To relate to previous observations
  - To relate to current theory, practice, etc.


1. I want to improve field A
2. Here is some literature about field A
3. I found gap B in field A
4. I want to fill gap B
HEUREKA!
4. This is how I filled gap B with results C
3. Here is how results C improved field A
2. Here are some wider implications
1. Here are gaps D, E and F for future research

GENERAL



SPECIFIC



GENERAL

INTRODUCTION

1. **Identify problem area, state importance**
2. **Review relevant literature**
3. **Identify a gap in existing research**
4. **State research aim to fill the gap**
   - Research question
   - Hypothesis
   - Indication of method

METHODS

Empirical and original part of your paper!

RESULTS

DISCUSSION

4. **Match results to research aim**
3. **Implications for specific area**
2. **Significance for entire field**
1. **Recommendations for future research**

CONCLUSION

Discussion › content and organization

- Observations and relationships within your data (remember to focus on your innovative result!)
- Exceptions within your data
- Relate to previous work
- Theoretical/clinical/social implications
- Summary and conclusions

Writing a discussion

1. Generate topic outline
   - Write the topic of each paragraph in the order that the paragraphs will be written.
2. Generate sentence outline next
   - Write a topic sentence for each paragraph.
   - Write a brief sentence for each idea presented within the paragraph.
3. Write!
   - Do not worry about details or references, do not edit

Discussion > common problems

- Poor organization and poor writing
- Repetition of the introduction
- Repetition of the results
- Failure to point out the novelty of the results
- Too much detail
- Ungrounded speculation
- Failure to compare results with others
- No alternative explanations

Acknowledgements

Acknowledgments

- Conflict of interest statement
- Funding statement
- Authorship breakdown, i.e. who did what
- Acknowledgement of the work of people who did not meet all authorship criteria

References

References › writing tips

- Provide a list of sources
  - Cite your sources
  - Cite your own previous work
  - Read every reference cited
- Cite sources in text


See you
next week!