Ms. Faosta (Ph.D)
Dresden International University
Fall. 2023

Dresden is waiting for you...

"The Florence of the Elbs"

Dresden International University

Dresden is waiting for you...

The Florence of the Elbs”

Dresden International University

Tell us something about you ...

/ Name
/ Cohort
/ Research interests
/ Fun facts ...

Rehabilition Medicine with Focus on Chiropractic

M11 - Fundamentals of Scientific Work

References

Textboooks

- Book for this course:
- *Matthews, J. R., & Matthews, R. W. (2014). Successful Scientific Writing: A Step-by-Step Guide for the Biological and Medical Sciences (4th ed.). Cambridge University Press. https://doi.org/10.1017/CBO9781107587915*

- Additional References (optional)

- Rasch, D., Verdooren, R., & Pilz, J. (2019). Applied Statistics: Theory and Problem Solutions with R. John Wiley & Sons, Ltd. https://doi.org/10.1002/9781119551584

M 11 Fundamentals of Scientific Work

Content

1. Introduction to scientific writing
2. Scientific Working Techniques
3. Planning of search precess
4. Term and Procedere
    1. Variables and date
    2. Hypothese
    3. Objectives of empririal research
5. Quiz and exercises

Goals of this Course

- Understand the basic requirements for creating scientific works, and be able to apply and implement these requirements
- Demonstrate typical styles and organizations of scientific research articles
- Implement language features, rhetorical devices, and the citation and referencing format used in scientific research
- Apply writing and research strategies from which you can begin to develop your own identity as a scientific writer.

Goals of this Course

Style Guides

- American Psychological Association (APA)
- Publication Manual of the American Psychological Association, Seventh Edition (2020) https://apastyle.apa.org/
- APA Style and Grammar Guidelines https://apastyle.apa.org/style-grammar-guidelines
- APA Style Blog https://apastyle.apa.org/blog
- Purdue University Online Writing Lab
  - *free resource for writing tips and assignments, research and citation tutorials, and teacher and tutor materials.* https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_style_introduction.html
- Just need a quick citation? Try ZoteroBib https://zbib.org/

Goals of this Course

Style Guides

- American Psychological Association (APA)
- Publication Manual of the American Psychological Association, Seventh Edition (2020) https://apastyle.apa.org/
- APA Style and Grammar Guidelines https://apastyle.apa.org/style-grammar-guidelines
- APA Style Blog https://apastyle.apa.org/blog
- Purdue University Online Writing Lab
  - *free resource for writing tips and assignments, research and citation tutorials, and teacher and tutor materials.* https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_style_introduction.html
- Just need a quick citation? Try ZoteroBib https://zbib.org/

Organization

During classes:

40mins: Lecture

- Introduction to scientic writing
- Scientific working techniques
- Planning of search process
- Terms and procedures
- ....

10 mins: break

40mins:

/ Excercises based on the lectures: getting ready for examination

/ Group work/ Peer review

How to prepare for scientific work

/ Write to remember
/ Write to understand
/ Write to test your thinking

Find a subject you care about and which you in your heart feel others should care about.
It is this genuine caring, not your games with language, which will be the most compelling and seductive element in your style.

——Kurt Vonnegut

What is Scientific Writing

"Scientific writing"

- can be narrowly defined as the reporting of original research in peer-reviewed journals, or:
  - review articles, abstracts, case study reports, grant proposals and summaries,posters, and slide-based presentations.

- must answer basic questions and address problems raised during the dialogs that identify and define a given subject.

- is clear, concise, and follows established formats.

Ask fondumental questions first

- What message do I want to convey? What is your research question (and possibly answer)?
- Who will be interested in my message
  - *So what? What effect will my message have on concepts or practices?*
  - *Who cares*? Who is the target audience?
- What format is most appropriate for my message? – How will you structure the text to make it reader-friendly for your audience?
- Where will your voice be heard – Where should this paper be published?

Ask fondumental questions first

/ For a scientist, it is not sufficient just to be the first to perceive or detect something new
  / he or she must be the first to publish the information “validly”

/ Valid scientific publication is:
  (1) the first publication of research results
  (2) in a form whereby peers can assess the observations, evaluate the intellectual processes, or repeat the experiment and test its conclusions
  (3) appearing in a primary journal or other source document that is readily available within the scientific community
  (5) has a certain format

Communication formats

Scientific research

- Research papers in the biological and medical sciences fall into four general categories:

- **Research Article:**
  - primary research - based on scientist's own experiences
  - presents new data obtained through experimentation or observation

- **Case History:**
  - primary research - based on scientist's own experiences
  - covers such subjects as a unique or previously unknown syndrome or disease, new information on an illness, an unsuspected causal relationship, or an unexpected outcome such as a possible therapeutic or adverse drug effect
  - retrospective (based on analysis of previously accumulated data) or prospective (with a design that pre-dates data collection).

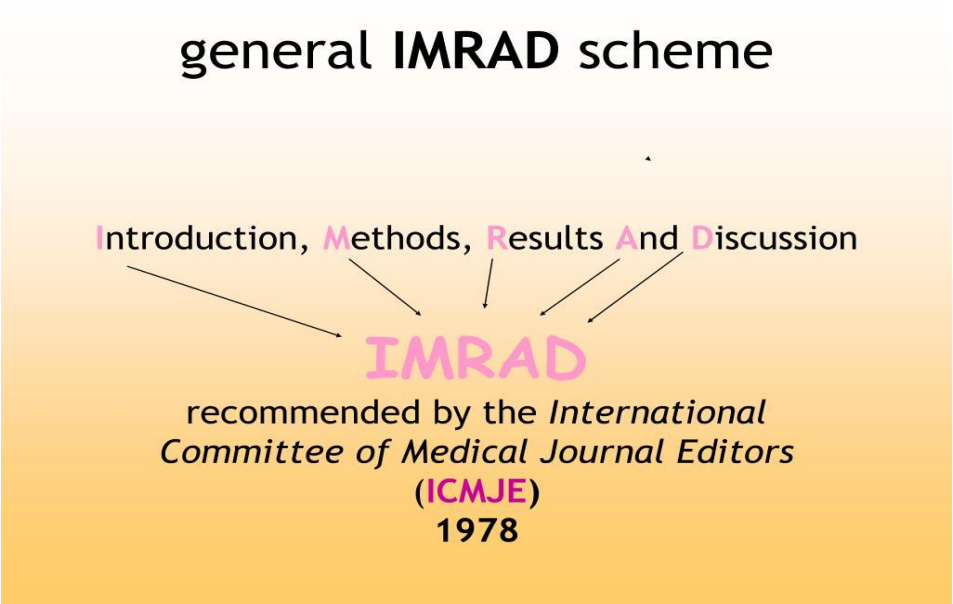
Communication formats

Similar Structure:

- They parallel the sequence of a critical argument.
- They present a question (often formally stated as a hypothesis).
- They marshal evidence to support various possible answers to the question or tests of the hypothesis.
- They attempt to persuade the reader of the truth of a particular choice of answers.

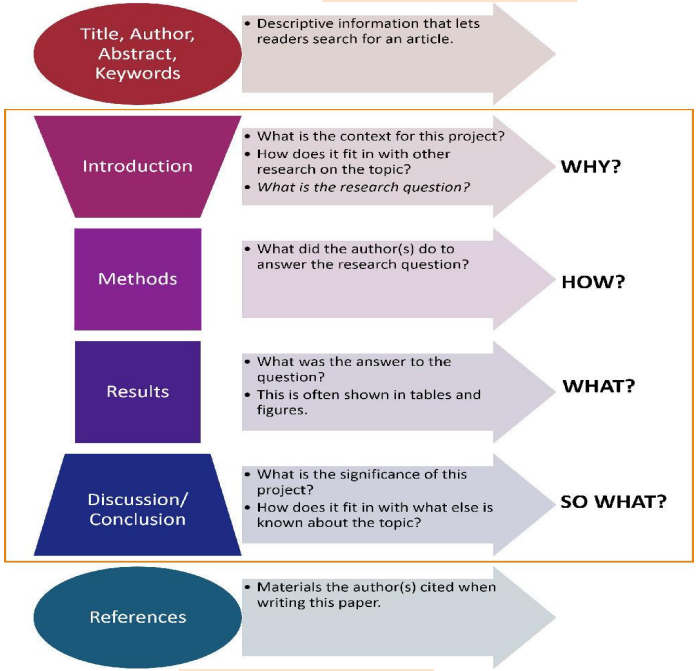
Communication formats

Primary research structure: research articles



Communication formats

Primary research structure: Research articles



Dresden International University

Communication format

- **Review Articles** and **case-series analysis:**
  - secondary research - the cover other scientists' discoveries
  - synthesize the results of a search through literature or other records
  - May yield new insights , hypothesis, and understanding

- **Thesis**:
  - gateway and rite of passage for the highest university degree
  - no generally accepted rules for their structure or composition
  - *compilations or monographs*

Structure of the thesis

Type 1: Traditional

Your research work	Chapter	Function of the chapter
Identifying a research area in which you are interested. Identifying and exploring problems in this area and their importance.	⇨ **1. Introduction**	Identifies research area and its importance. Identifies problems within this area and explains your interest in them.
Reading around the research area, identifying theoretical frameworks and gaps in the research.	⇨ **2. Literature review**	Identifies and reviews relevant literature and theory. Identifies a gap in the research and explains how your research will fill the gap.
Specifying research questions. Identifying an appropriate theoretical framework. Devising a method for a specific study that you will carry out.	⇨ **3. Methods**	Describes your research questions, your theoretical framework and key concepts, and the methods and materials used in your study
Carrying out a study that aims to answer your research questions and analyzing the results to produce findings.	⇨ **4. Results/Findings**	Describes the results and findings of the study that you have carried out.
Considering the meaning and significance of your findings in relation to previous research.	⇨ **5. Discussion**	Discusses and interprets your findings with reference to the literature review.
Reflecting on the overall contribution of your study to knowledge, its limitations and possibilities for future research.	⇨ **6. Conclusion**	Discusses the contribution of your thesis to knowledge in your field, the limitations in your work and possibilities for future research.

Structure of the thesis

Type 2. **A series of empirical studies**

- Typically used when research involves a series of empirical study on the same research topic.
- Each chapter has its own literature review, methodology, results/findings, discussion and conclusion sections.
- There are still overall introduction and conclusion chapter on the overall research topics.

Chapter 1	Introduction General background to the project General review of the literature General introduction of the research area Outline of the overall research design
Chapter 2	Report on Study 1 Introduction & literature review Methods Results Discussion and conclusions
Chapter 3	Report on Study 2 Introduction & literature review Methods Results Discussion and conclusions
Chapter 4	Report on Study 3 Introduction & literature review Methods Results Discussion and conclusions
Chapter 5	Conclusion General discussion of the studies as a whole Overall conclusion (and implications, if any) Directions for further research

Preparation for publishing

Dresden International University

Where should this paper be published?

‘ There are tens of thousands of refereed scientific journals in current publication.

Dresden International University

Where should this paper be published?

- Very often, the most appropriate journal is the one you already most often read:
  - What type of journal is it?
  - What categories of papers appear in the journal?
  - Is the general topic of my proposed paper within the journal's scope?
  - Is my topic represented in the journal frequently or only rarely?
  - What is the journal's acceptance/rejection rate?
  - How long does this journal take to publish papers? (How much is editing phase? How much is production phase?)
  - What do rankings such as Journal Citation Reports indicate about this journal?
  - What potential costs or other constraints need to be considered?

Some important journals in clinical research

	Journal name	Impact factor	Items published	Issues per
		2017	2015 and 2016	Year
1	New England Journal of Medicine	72.406	670	52
2	Lancet	47.831	646	52
3	Journal of the American Medical Association (JAMA)	44.405	410	48
4	British Medical Journal	20.785	446	52
5	Annals of Internal Medicine	17.135	150	24
6	JAMA Internal Medicine	16.538	275	12
7	PLOS Medicine	11.862	286	12
8	Journal of Cachexia, Sarcopenia and Muscle	9.697	88	4
9	BMC Medicine	7.901	418	
10	Journal of Internal Medicine	7.598	194	12

Preparation for publishing

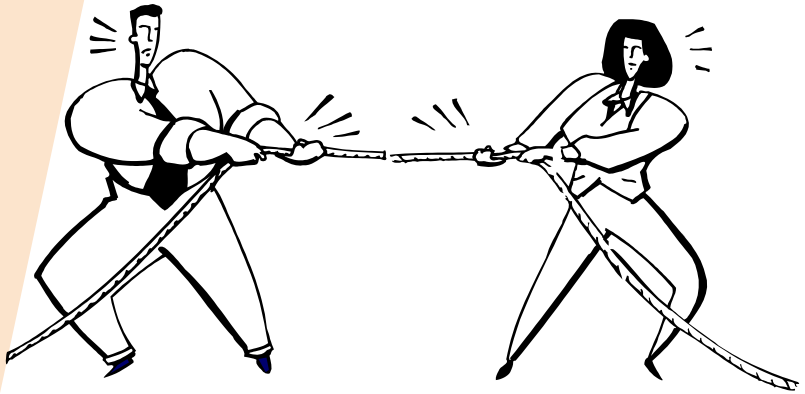
After choosing your target journal:

- Format the paper based on your target journal's guidance
- Write a cover letter to the edit
- Initial submission – send out for review – review's report received – editor make a decision – revise and resubmit
- Separate response letter to the editor, review 1, review 2, and review 3

Preparation for publishing

Is it one or more papers?

- Putting too much in one paper makes it diffuse and less compelling than if its focused
- Avoid Salami Science!



Exercises: Which one is more academic?

Option A	Option B	Which one is more academic?
The emergence of English as the international language of scientific communication has been widely documented.	English **has emerged** as the international language of scientific communication. This phenomenon has been widely documented.	

Which one is more academic?

Option A	Option B	Which one is more academic?
The emergence of English as the international language of scientific communication has been widely documented.	English **has emerged** as the international language of scientific communication. This phenomenon has been widely documented.	Avoid a very long noun phrase (nominalization)

Which one is more academic?

Option A	Option B	Which one is more academic?
New methodologies were **put into practice** for Phase I trial design	New methodologies were **applied** for Phase I trial design	

Which one is more academic?

Option A	Option B	Which one is more academic?
New methodologies were **put into practice** for Phase I trial design	New methodologies were **applied** for Phase I trial design	Use a single verb when possible

Which one is more academic?

Option A	Option B	Which one is more academic?
In this paper I argue that small incentives can lead to greater participation in low-risk randomized clinical trials	**This paper** argues that small incentives can lead to greater participation in low-risk randomized clinical trials	

Which one is more academic?

Option A	Option B	Which one is more academic?
In this paper I argue that small incentives can lead to greater participation in low-risk randomized clinical trials	**This paper** argues that small incentives can lead to greater participation in low-risk randomized clinical trials	According APA style: • Do not refer to yourself in the third person as "the author." • Use "I" to refer to yourself if you are the only author. Use "we" if you are writing a group paper. • Do not use the editorial "we" to refer to people in general. Use "we" only when referring to yourself and your coauthors, or when you are identifying yourself with a particular group (e.g., "As social psychologists, we…").

Which one is more academic?

Option A	Option B	Which one is more academic?
The analysis **didn't yield** any new results.	The analysis yielded **no** new results.	
You can see the results in Table 1.	The results can be seen in Table 1.	
Why has antibiotic resistance increased**?**	It remains unclear why antibiotic resistance has increased.	

Which one is more academic?

Option A	Option B	Which one is more academic?
The analysis **didn't yield** any new results.	The analysis yielded **no** new results.	Avoid contractions
You can see the results in Table 1.	The results can be seen in Table 1.	Avoid addressing the reader as you
Why has antibiotic resistance increased**?**	It remains unclear why antibiotic resistance has increased.	A direct question should be rarely used. It is particularly useful when laying out an argument or research questions. However, indirect questions are likely more common.

APA recommended verb tenses

/ **Use verb tenses consistently**. Shifts in verb tenses within a paragraph can lead to abruptness and may detract from your intended meaning.

Paper section	Recommended tense	Example
Literature review (or whenever discussing other researchers' work)	Past	Williams (2020) addressed
	Present perfect	Researchers have studied
Method	Past	Participants took a survey
Description of procedure	Present perfect	Others have used similar approaches
Reporting of your own or other researchers' results	Past	Results showed Scores decreased Hypotheses were not supported
Personal reactions	Past	I felt surprised
	Present perfect	I have experienced
	Present	I believe
Discussion of implications of results or of previous statements	Present	The results indicate The findings mean that
Presentation of study conclusions, limitations, and future directions	Present	We conclude Limitations of the study are Future research should explore

Academic vs Non-Academic

/ Avoid *etc.*, *and so forth*, *and so on*

/ Use *may*, *appear to*, or other language that softens a point

/ Consider using both active and passive voice

- When possible, use the **active voice** instead of the passive voice to create direct, clear, and concise sentences. For example, use the first person and the active voice to show your involvement in a project or to describe steps you personally took.

Brief summary of academic writing style

- The primary objective of scholarly writing is to communicate **clearly** and **concisely** using **precise**, **inclusive** language.

- Choose words that your audience will understand and that match language in the field. Write about other people, including participants in your study and past investigators in the field, with **professionalism**, **inclusivity**, **respect**, and **sensitivity**.

Excercises

p.251. Publication readiness: message, format, and audience

- How would you answer these questions? **More than one answer is possible**; justify your decision.
- Suggested time:
  - 5 minutes:indivudual thinking and writing.
  - 5 minutes:dicussion with your peer

- 1. A 75-year-old woman brought to your clinic has contracted a rare form of viral infection previously known to be associated primarily with children. A quick library search shows that the oldest affected person in the published literature was 62 years old. Should you publish your new information? Why or why not?

Excercises

p.251. Publication readiness: message, format, and audience

/ Suggested Responses

/ Probably not. Simple novelty or extension of a previous record usually is not enough to warrant publication. A case study must change, improve, or enlarge how people think.

Excercises

Publication readiness: message, format, and audience

- How would you answer these questions? More than one answer is possible; justify your decision.

- 1. Your supervisor suggests that you both review the records of the last 50 cases of canine heartworm disease referred to your clinic and coauthor a paper on the findings. You ask what question the paper is going to answer. “We are not trying to answer a question,” he says irritably. He just wants to report a summary of these data because colleagues elsewhere will be interested. Does the paper have a purpose? Does it have a message? What format would be most appropriate?

Excercises

Publication readiness: message, format, and audience

/ Suggested responses:

The paper your colleague has proposed would have a purpose – to report the case findings – but as a research paper it would not have a message.

However, a critical review of case records, coupled with a careful and critical assessment of the literature, might result in a valuable document. A case series analysis or review article would help busy clinicians get information without laboriously sifting through the primary literature. It would tell investigators where things stand on particular aspects of the disease. And, if well written, it could suggest directions new research should take

Excercises

Publication readiness: message, format, and audience

- How would you answer these questions? More than one answer is possible; justify your decision.

- 1. The two of you proceed to analyse those 50 cases of heartworm disease. Your analysis doesn't yield any new important findings, but does lend additional support to some previously published views. Is it still publishable? If so, in what form?

Excercises

Publication readiness: message, format, and audience

- Suggested responses

- Yes, with proper choice of format. A case-series analysis that would include these data could be a useful contribution

Excercises

Publication readiness: message, format, and audience

- How would you answer these questions? More than one answer is possible; justify your decision.

- You've written a concise, clearly worded summary of the genetics of horn development in jackalopes. A series of examples from the literature, combined with your own laboratory analyses and a field-based population study, all point to the conclusion that a single gene controls this trait. You reason that geneticists, veterinary pathologists, and wildlife biologists all should know this important new information. How many papers could justifiably arise from your study? Explain your reasoning.

Excercises

Publication readiness: message, format, and audience

/ Suggested response:

Only one primary research publication is justifiable, because all the results bear upon your single message. However, this could be supplemented with general articles written for the popular press to reach other target audiences.

Excercises

Publication readiness: message, format, and audience

- How would you answer these questions? More than one answer is possible; justify your decision.

- You've gone back through psychiatric clinic records for the past 18 years, and made a startling discovery. Nearly 80% of all the children hospitalized for manic depression had been previously identified in school tests as being highly creative. Who might be the potential audience for your message?

Excercises

Publication readiness: message, format, and audience

/ Suggested responses:

/ Psychological researchers, clinicians, psychologists, teachers, school administrators, parents.

Excercises

Communication format

- Suggested time: 40-60 minutes
- You are about to choose how your study will be disseminated: what are the fondumental questiosn you should think about before proceeding ? Explain and justify
- Think about the characteristics of primary research (Research articles and case histories), summarize their structure, including sections. (introduction, literature review, methods....)
- How would you define scientific writing style? What are its main objectives?