

Lecture 7

Choosing a title and writing the abstract

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Importance of the title

- Many people read the title. Fewer read the abstract. Even fewer read the entire manuscript. Thus, the title often determines whether a paper gets read;
- Indexing services depend heavily on the title to retrieve articles. Thus, the title has substantial impact on whether the paper reaches its intended audience.
- A good title should be:
 - Informative
 - Concise
 - Specific

What's in a title?

- Title could describe the content/subject of the work.

Stream denitrification across biomes and its response to anthropogenic nitrate loading

Control of nitrogen export from watersheds by headwater streams

Quantifying heterogeneity in a meta-analysis

Quantifying global soil carbon losses in response to warming

- Title could describe the findings of the work.

Global convergence in the temperature sensitivity of respiration at ecosystem level

Emergency of nutrient co-limitation through movement in stoichiometric meta-ecosystems

Temperature response of soil respiration largely unaltered with experimental warming

Temperature-associated increases in the global soil respiration record

Format of the title

- Conventionally, the title of a paper is a label. It normally is not a complete sentence.
- Traditionally, declarative title is often not recommended because it states a conclusion that is then stated more tentatively in the summary or elsewhere, but it becomes increasingly acceptable.

Fruit flies diversify their offspring in response to parasite infection

Boreal forest biomass accumulation is not increased by two decades of soil warming

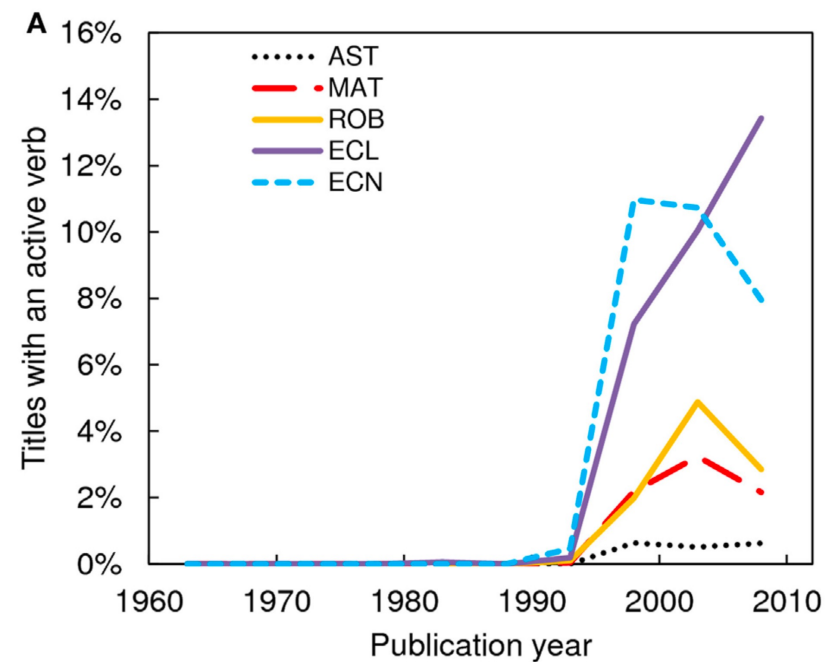
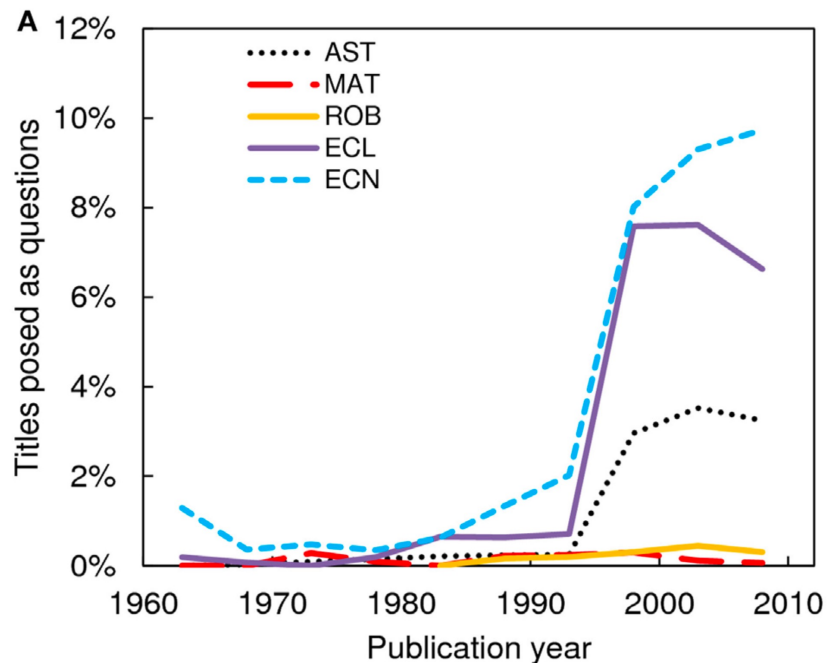
- Title posed as a question is traditionally not recommended because readers are more interested in the findings. But it becomes more acceptable and can be effective if the question itself is intriguing.

What happens to allochthonous material that falls into streams? A synthesis of new and published information from Coweeta

Is the river a chemostat?: scale versus land use controls on nitrate concentration-discharge dynamics in the upper Mississippi River basin

Format of the title

- **Declarative title** and **title posed as a question** become increasingly accepted over time.



(Milojević. 2017, Frontiers in Research Metrics and Analytics)

Format of the title

- **Hanging title** is often used to indicate the subject of the study and the type of study;

Terrestrial carbon inputs to inland waters: A current synthesis of estimates and uncertainty
Soil microbes and their response to experimental warming over time: A meta-analysis of field studies

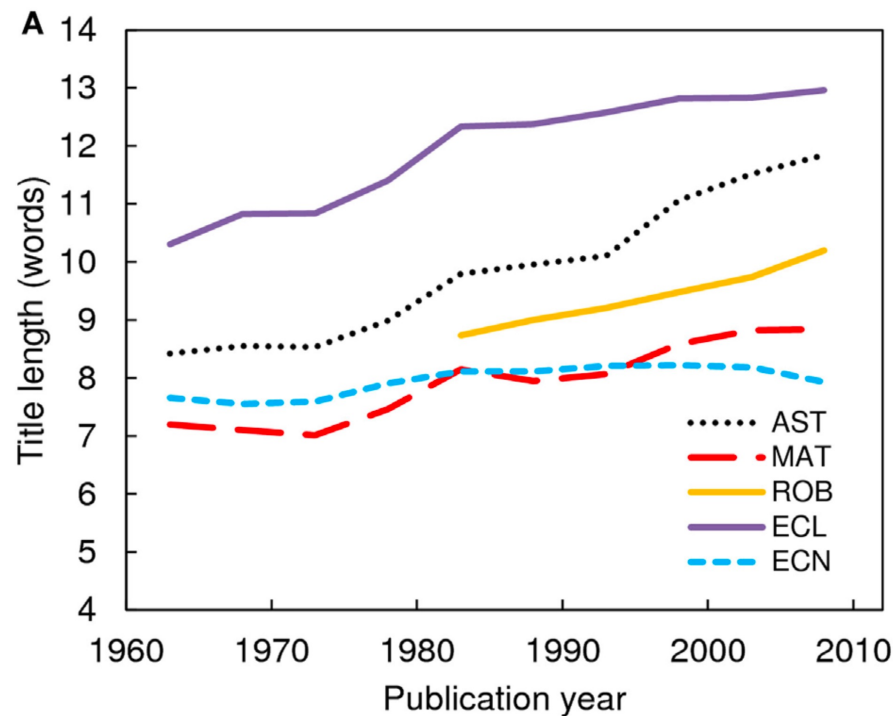
- It can also be used to connect distinct ideas/concepts in the title.

Transitions in Arctic ecosystems: Ecological implications of a changing hydrological regime
Catchment chemostasis revisited: Water quality responds differently to variations in weather and climate

Tracer Additions for Spiraling Curve Characterization (TASCC): Quantifying stream nutrient uptake kinetics from ambient to saturation

Length of the title

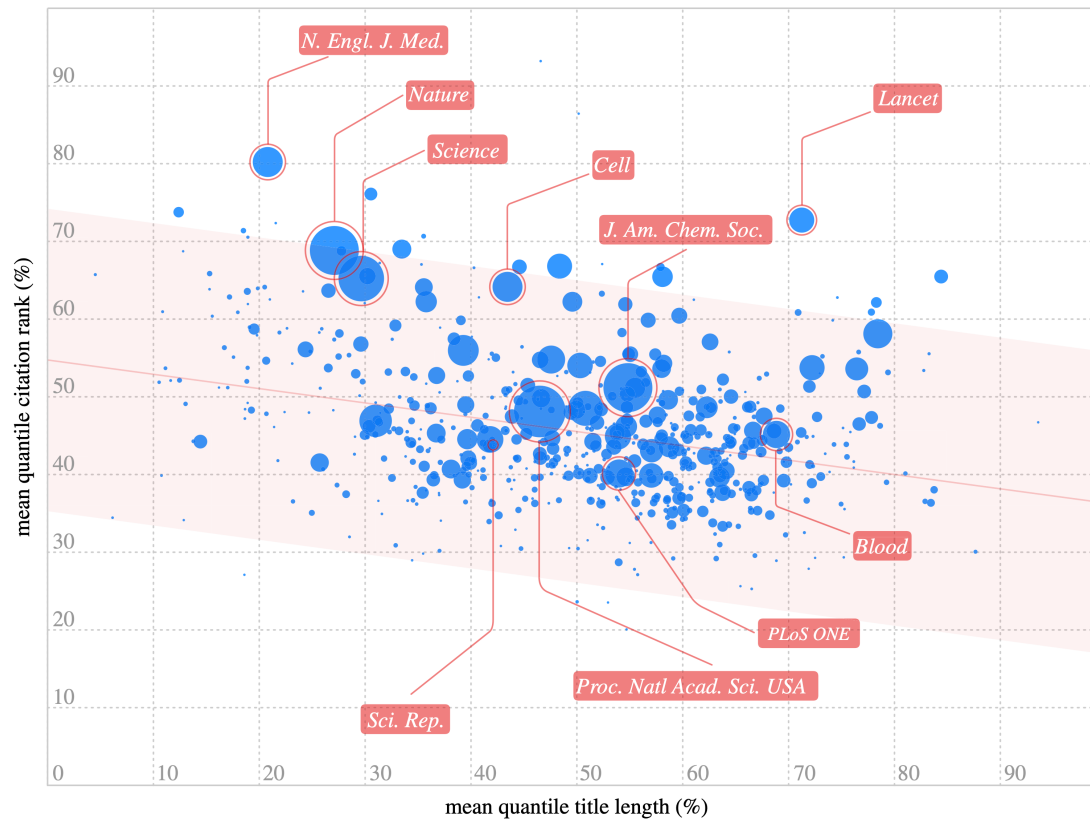
- Authors should strive to write a title as **concise** as possible;
- **Avoid waste words** such as “studies on”, “investigations on” or “observations on”.



(Milojević. 2017, Frontiers in Research Metrics and Analytics)

Length of the title

- **Shorter titles** appear to be associated with more citations when analyzed across journals.



(Letchford et al. 2015, Royal Society Open Science)

Title should be specific

- Title should give concrete, specific information about the paper. Avoid titles that too general to be informative.
- Imagine an experiment on the effects of root exudates of 15 cruciferous plant species on food consumption by one species of caterpillar, *Helicoverpa armigera*, an important pest world-wide, which of the following titles is the most appropriate?

The effect of chemicals of plant origin on caterpillars

The effects of 15 plant species on the larvae of *Helicoverpa armigera*

The effect of root exudates of 15 cruciferous plant species on the growth of *Helicoverpa armigera* larvae

Inhibition of growth in *Helicoverpa armigera* larvae by root exudates of 15 cruciferous plant species

Abbreviation and jargon

- Titles should almost never contain abbreviations, chemical formulas, proprietary (rather than generic) names, jargon, and the like.
- An exception to this rule is the widely known and used abbreviations, such as DNA, RNA or PCR. But one should be careful in what is considered as widely known.

Importance of syntax

- A very common grammatical error in titles is faulty word order;
- While the meaning can be obvious, the word order in the following examples may cause unintended misunderstanding:

Mechanism of suppression of nontransmissible pneumonia in mice induced by Newcastle Disease virus

Multiple Infections among newborns resulting from implantation with *Staphylococcus aureus* 502A

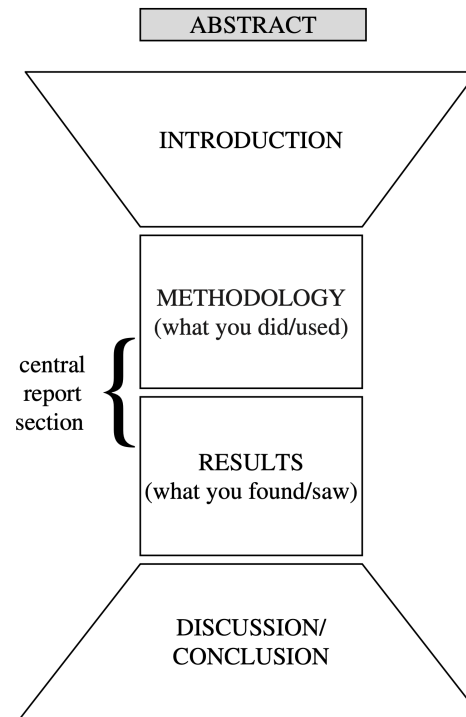
- Changing the word order can fix the issue:

Mechanism of suppression of nontransmissible pneumonia induced in mice by Newcastle Disease virus

Multiple Infections resulting from implantation with *Staphylococcus aureus* 502A among newborns

What is the abstract?

- An abstract is a miniature version of the paper and provides a **brief** summary of each main section of the paper.
- The abstract determines whether the manuscript gets sent out for review;



(Glasman-Deal 2010, Science Research Writing for Non-Native Speakers of English)

Elements of the abstract

- The abstract should provide a brief summary of each of the main sections of the paper: introduction, methods, results, and discussions/conclusions.
- Abstract should be **concise**. Most journals have strict **word limit** on abstract;
- The abstract should:
 - State the principal objectives and scope of the investigation
 - Describe methods employed
 - Summarize the results
 - State the principal conclusions

A model for the abstract

- Because the abstract is a miniature version of the paper, it is usually structured similarly to a paper.

Length	Content
1–2 sentences	Provide the general background
2–3 sentences	More detailed background and specific research question
1–2 sentences	Summarize the work being done
2–3 sentences	Summarize major findings/results of the paper
1–2 sentences	State the significance/implications of the paper

An example

- The example abstract is very clearly structured. The abstract contains general background (sentence 1), specific research question (sentence 2), summary of work done (sentence 3), major findings (sentence 4–5) and its implications (sentence 6).

The respiratory release of carbon dioxide (CO₂) from the land surface is a major flux in the global carbon cycle, antipodal to photosynthetic CO₂ uptake. Understanding the sensitivity of respiratory processes to temperature is central for quantifying the climate–carbon cycle feedback. We approximated the sensitivity of terrestrial ecosystem respiration to air temperature (Q_{10}) across 60 FLUXNET sites with the use of a methodology that circumvents confounding effects. Contrary to previous findings, our results suggest that Q_{10} is independent of mean annual temperature, does not differ among biomes, and is confined to values around 1.4 ± 0.1 . The strong relation between photosynthesis and respiration, by contrast, is highly variable among sites. The results may partly explain a less pronounced climate–carbon cycle feedback than suggested by current carbon cycle climate models.

(Mahecha et al. 2010, Science)

Writing style: general guidelines

- Because an abstract is often reproduced separately from the full paper, it has to be self-explanatory;
- Abbreviations or special terminology only explained in the paper should be avoided;
- No references to tables or figures in the abstract;
- No citations in the abstract.

Writing style: format

- Most abstract is written as a single paragraph;
- Some journal requires a structured abstract consisting of sections such as: background, methods, results, conclusions;
- Some journal uses a bullet point style summary as the abstract;
- Some journal may require a graphic abstract, i.e., a figure that summarize the main study question and/or findings

Writing style: tense

- As the abstract is basically a condensed paper, authors should use different tenses for different part of the abstract.
- Use **present tense** when
 - State the general research problem/question;
 - State the scope or purpose of the study;
 - State the significance/achievements of the study
- Use **past tense** when
 - Describe the methodology of the study;
 - Describe the results of the study;

Keywords

- Keywords serve to assist those who use various databases and search engines to find your paper;
- An effective keyword is a word with a specific meaning or significance; words such as study, change, or experiment are not effective words in this context.
- Do not to use words that are already contained in the title;