Common elements of a scientific paper

Title
Authors
Abstract
Keywords
Introduction
Methods; Materials and methods
Results
Extras:
  Figures
  Tables
Discussion
  (Conclusion)
  (Acknowledgements)
References

Abstract and/or Summary

Abstract - lat. abstrahere - to drag away, single out concise review of the paper includes all parts of the work except the discussion

Should quickly convey important information about the content so reader can quickly decide on further reading

Summary - a list or indication of the main conclusions

About 200-300 words (in a single paragraph)
Abstract

Decision making questions:

What question does this paper tackle?
What methods were used?
What are the main findings and how they improve the topic’s state of the art?

DON’T:
Waste words on background (intro)
Describe procedures in details
Omit the conclusion (what the results mean)

Abstract

Indicative abstract provides the essence of the work, without detailed info about the method and results (or conclusion)

Indicative abstract - example
Using light to modulate biochemical agents in living organisms has a significant impact on photodynamic therapy and drug release. We demonstrate that a photoresponsive system can reversibly induce paralysis in nematodes as a model for living organisms when two different wavelengths of light are used to toggle the molecular switch between its two structural forms. This example illustrates how photoswitches offer great potential for advancing biomedical technologies.

Informative abstract presents the aim, methods, results and conclusions
Teacher–child relationships were examined as predictors of cortisol change in preschool children. ... [methods and results]... The findings extend earlier work by suggesting that cortisol change across the child-care day is influenced by teacher–child relationship characteristics.

Based on monitoring of the stress hormone cortisol in children it has been previously found that daycare can be stressful for children. However, exactly which daycare activities are stressful is not known. We examined teacher–child relationships as predictors of cortisol change in preschool children. ... [methods and results]... Certain characteristics of teacher-child relationships are less stressful than others, and educators should consider these factors when designing their learning plans.

**Keywords**

Used to help database search

Science direct
http://www.sciencedirect.com/
Web of knowledge, Scopus...

Supplementing / complementing the title

Title:
Energy resources and feeding guild structure of macroinvertebrate assemblages in the hyporheic zone of calcite depositing lake outlets

Keywords:
Particulate organic matter, Tufa, Detritus, Flow velocity, Predatory pressure, Stable substrate, Karst

Details, phrases, taxa, localities ...
Introduction

Describe the general field of the study

Refer to the state of the art. The most relevant studies pertaining to your work

Define the problem/question and state (count) the aims. What gap does your research fill?

Offer a hypothesis

PRINCIPLE: GENERAL → PARTICULAR
It should be understood by non-experts!
Acquiring the knowledge?

- Scopus: http://www.scopus.com/home.url
- Science Direct: http://www.sciencedirect.com/
- Web of knowledge: http://apps.webofknowledge.com/
Searching for papers
Wiley Online Library
http://onlinelibrary.wiley.com/advanced/search
Blackwell Search
http://www.blackwellpublishing.com/search.asp
Hrčak
http://hrca克.srce.hr/

Achieving a logical progression of the story

Link everything linearly!

Phrase 1 - phrase 2 - phrase 3...

Paragraph 1 - paragraph 2 - paragraph 3

Do not branch, break or leave loose ends
Achieving a logical progression of the story - nifty tricks

Making reading a journey rather than a pile of facts

1. Repetition
2. Connecting phrases
3. ‘Relay’

Use in moderation!

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Repetition

An important socialization process for children is the development of “persuasion knowledge,” which is the ability to detect that advertisers “try to make you buy things” (Robertson and Rossiter 1974). Understanding the onset and extent of persuasion knowledge has been a topic of importance for decades. A child’s understanding of persuasion attempts is important from a basic social science perspective because it represents a large field of social understanding. Persuasion knowledge is also essential to the development of healthy skepticism of and resistance to advertising. From a public policy perspective, children’s ability to understand persuasion is key in understanding their vulnerability and, thus, any needed protection (Ringold 2005) or educational intervention (Eagle 2007). It should also be central to the development of industry self-regulation (Armstrong and Brucks 1988). Indeed, the Children’s Advertising Review Unit (2009) specifically invoked considerations of “unfairness” in advertising directed at children (under age 12) in its most recent self-regulatory guidelines. The goal of the current research is to understand how children develop persuasion knowledge by considering their individual social development.
Connecting phrases

An important socialization process for children is the development of “persuasion knowledge,” which is the ability to detect that advertisers “try to make you buy things” (Robertson and Rossiter 1974). Understanding the onset and extent of persuasion knowledge has been a topic of importance for decades. A child’s understanding of persuasion attempts is important from a basic social science perspective because it represents a large field of social understanding. Persuasion knowledge is also essential to the development of healthy skepticism of and resistance to advertising. From a public policy perspective, children’s ability to understand persuasion is key in understanding their vulnerability and, thus, any needed protection (Ringold 2005) or educational intervention (Eagle 2007). It should also be central to the development of industry self-regulation (Armstrong and Brucks 1988). Indeed, the Children’s Advertising Review Unit (2009) specifically invoked considerations of “unfairness” in advertising directed at children (under age 12) in its most recent self-regulatory guidelines. The goal of the current research is to understand how children develop persuasion knowledge by considering their individual social development.

Academic phrasebank advice on transitional words

<table>
<thead>
<tr>
<th>Good</th>
<th>Not so good?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idea A +</td>
<td>Idea B ≠</td>
</tr>
<tr>
<td>Idea B +</td>
<td>Idea A → Idea B</td>
</tr>
</tbody>
</table>

In addition
Furthermore
Moreover

However
Although
On the other hand

Since
Because
Given that

Good

Both

Meanwhile
While

Consequently

Također
Nadalje
Osim toga

S druge strane
Suprotno
Premda
Ali
No
Međutim

Jer
Posljedično
Radi
Slijedi
Ako ≠ ukoliko
Ukoliko - utoliko
Relay

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Methods; Materials and methods

Details that enable reproducibility
It should be understood by experts!

Why and what for was a specific tool used
(especially for the statistics: We used ANOVA to detect differences because our data was normally distributed)

Sometimes (in ecology often) description of the study site

Well written Methods testify to the level of your competence

Ask yourself: could I repeat all of my work just based on what is written in the Methods?
Methods; Materials and methods

Tips ‘n’ tricks

Begin writing the M&Ms during your experiments (or earlier).

Match the order in which methods are described to the order of the results generated by those methods.

Be sure that each method used is described, even a quick sentence e.g. ‘Toxin assays were performed according to (reference).’

Include citations for published procedures; If you made any modifications - list them.

Describe statistical tests as thoroughly as possible.

Results

Not everything that counts can be counted, and not everything that can be counted counts.

Carefully select only the relevant results

Carefully choose what to put in figures and tables

Put the most important in figures
DO NOT ‘DESCRIBE’ figures in the text, DO NOT REPEAT

Cite the figures and tables consecutively

Results should progress linearly

Put different results in different paragraphs (subchapters!)
Group together similar results in neighboring paragraphs