Introduction to Education and Mind Sciences

Topic 6. Research Publication

莊鈞翔
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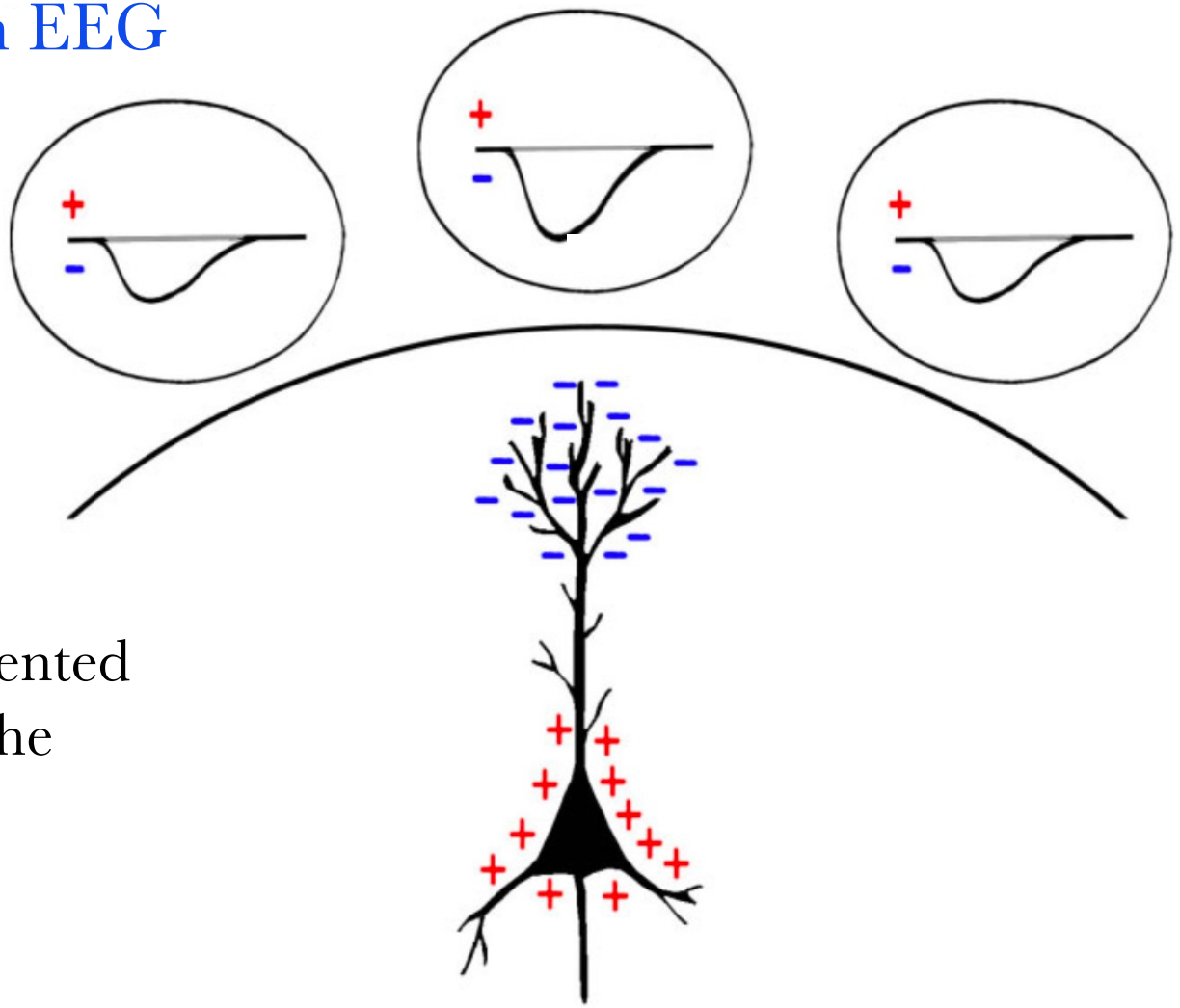
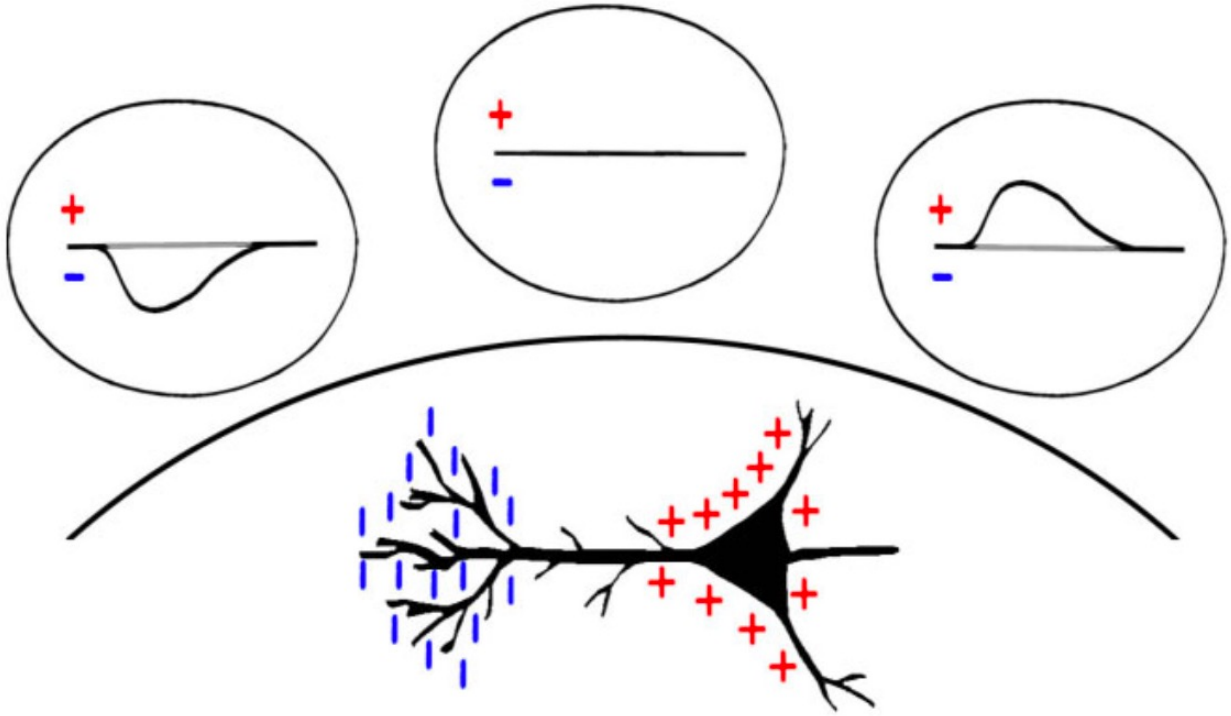
Two major types of dipoles are measurable in EEG



Radial, being oriented perpendicular to the surface.

Two major types of dipoles are measurable in EEG

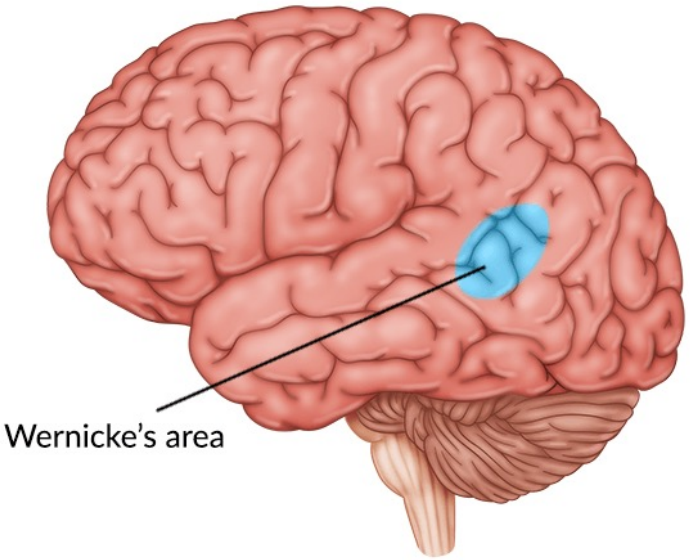
Tangential, being oriented parallel to the scalp surface

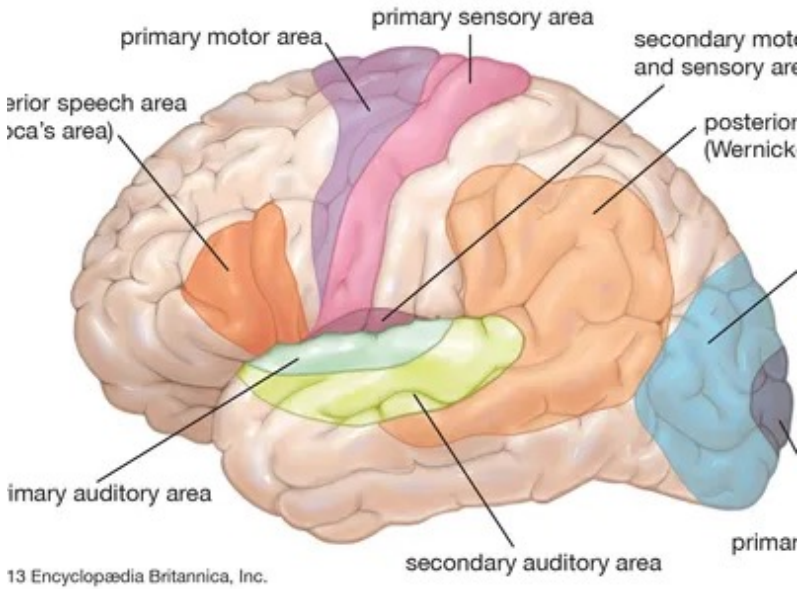


Where is Wernicke's area?

There is an absence of consistent definitions as to the location.

Despite the overwhelming notion of a specifically defined "Wernicke's Area," the most careful current research suggests that it is not a unified concept.





Agenda

How to Read a Research Paper
How to Write a Research paper:

- Title
- Research aims
- Thesis statement
- Identifying the gaps in the literature
- Research questions
- Innovation and significance of the research

How to Read a Paper

The key idea is that you should read the paper in up to three passes, instead of starting at the beginning and plowing your way to the end.

Reconnaissance:

The first pass gives you a general idea about the paper.

Survey:

The second pass lets you grasp the paper's content, but not its details.

Deep Dive:

The third pass helps you understand the paper in depth.

The first pass

5-10 minutes

a quick scan to get a bird's-eye view of the paper

1. Carefully read the title, abstract, and introduction
2. Read the section and sub-section headings, but ignore everything else
3. Read the conclusions

Five Cs

1. Category: What type of paper is this? A measurement paper? An analysis of an existing tool? A description of a research prototype?
2. Context: Which other papers is it related to? Which theoretical bases were used to analyze the problem?
3. Correctness: Do the assumptions appear to be valid?
4. Contributions: What are the paper's main contributions?
5. Clarity: Is the paper well written?

The second pass

One hour

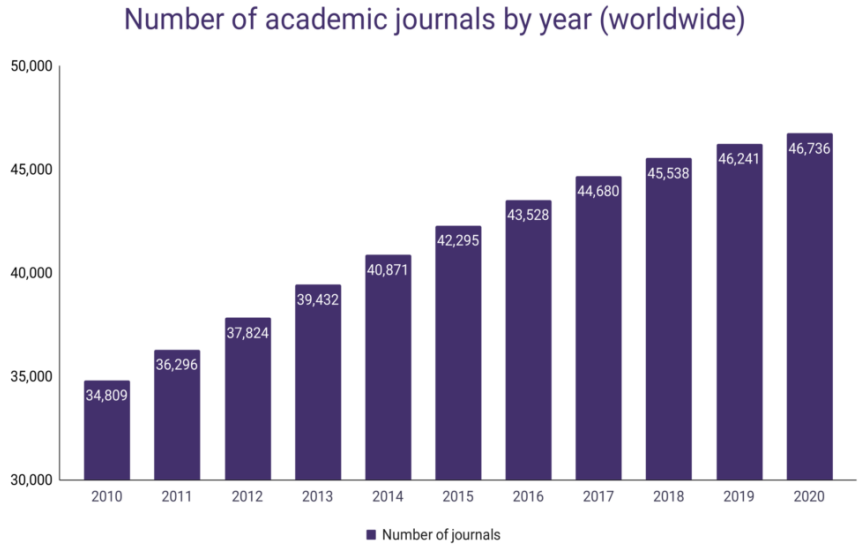
1. Look carefully at the figures, diagrams and other illustrations in the paper. Pay special attention to graphs. Are the axes properly labeled? Are results shown with error bars, so that conclusions are statistically significant?
2. Remember to mark relevant unread references for further reading (this is a good way to learn more about the background of the paper).

How many scientific journals are there?

As of 2020, there are 46,736 academic journals publishing papers worldwide.

75.04% of all academic journals are published in the English language.

Over 5,856 academic journals (12.53%) are published annually in the United Kingdom, as of 2020.



Journal publishers?

Routledge
Taylor & Francis Group

SPRINGER NATURE

BMC

OXFORD UNIVERSITY PRESS

frontiers

SAGE

WILEY-BLACKWELL

ELSEVIER

CAMBRIDGE UNIVERSITY PRESS

IEEE

How many academic articles are published each year?

As of 2022, over 5.14 million academic articles are published per year!

Which country has been with the most academic articles published in a year?

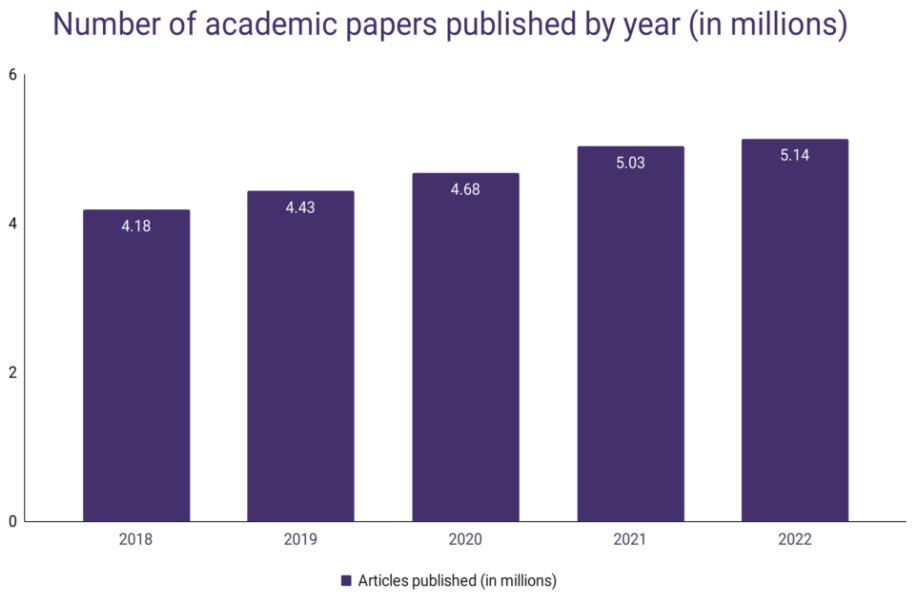
GLOBAL

Too much academic research is being published

Philip G Altbach and Hans de Wit 07 September 2018

There is a crisis in academic publishing – too much pressure on top journals, too many books of marginal quality, the rise of predatory journals and publishers that publish low or marginal quality research and tremendous pressure on academics worldwide to publish.

The decision by *The Review of Higher Education*, a highly respected academic journal, to temporarily suspend submissions due to a



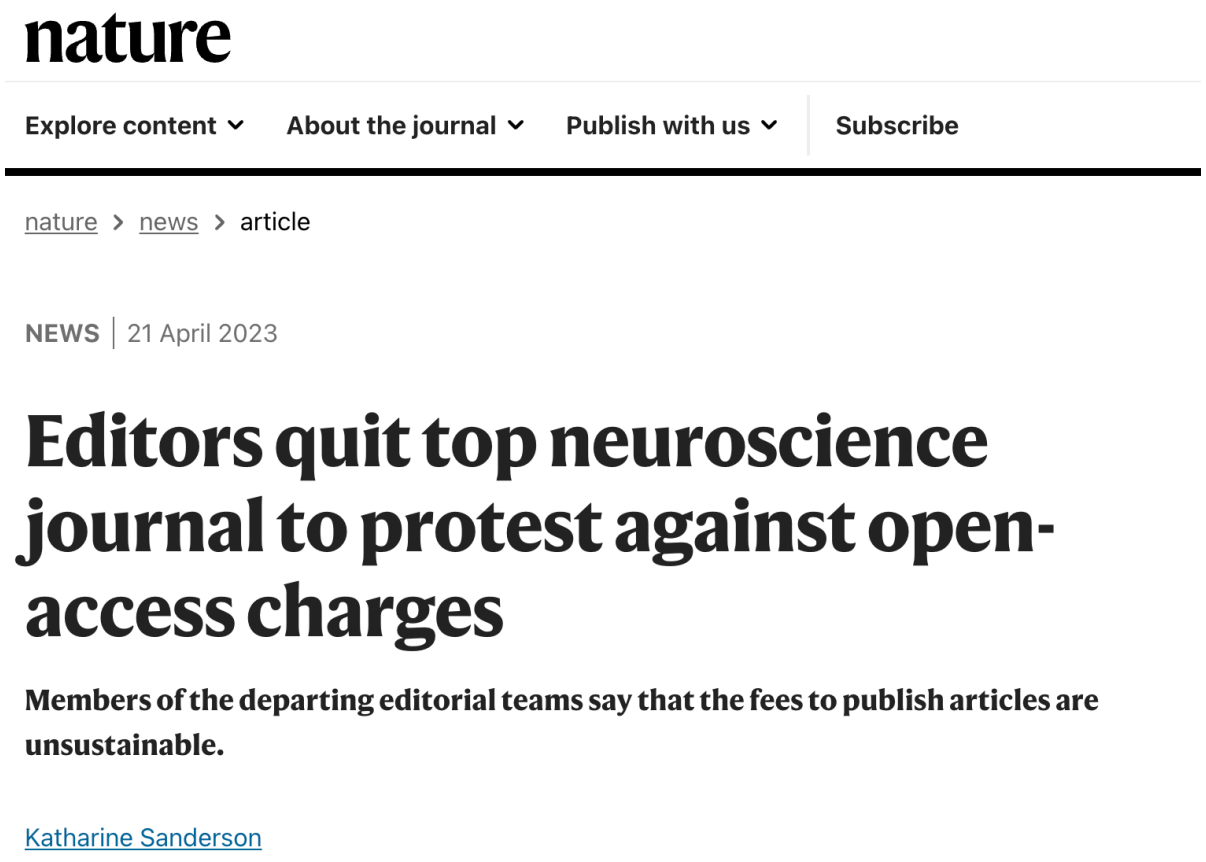
Country	Number of academic papers published	Global share
China	1,009,891	19.67%
United States	702,840	17.04%
India	275,367	8.05%
United Kingdom	236,145	7.50%
Germany	203,406	6.99%
Italy	152,881	5.65%
Japan	140,493	5.50%
Canada	130,678	5.41%
Australia	124,503	5.45%
France	123,837	5.74%

Are they free?
APC: article processing charge (publication fee)

Publisher	# publications	APCs average
Springer Nature	14103	1 992 €
Elsevier BV	12534	2 855 €
Public Library of Science (PLoS)	9027	1 448 €
Wiley-Blackwell	6959	2 351 €
Frontiers Media SA	5725	1 686 €
MDPI AG	3438	1 212 €
Springer Science + Business Media	3313	1 536 €
Oxford University Press (OUP)	3022	2 411 €
American Chemical Society (ACS)	2299	2 627 €
IOP Publishing	2127	1 569 €

All editors resigned in April 2023

The publisher, Elsevier, was unwilling to reduce the fees.



nature

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NEWS | 21 April 2023

Editors quit top neuroscience journal to protest against open-access charges

Members of the departing editorial teams say that the fees to publish articles are unsustainable.

Katharine Sanderson

Predatory Journals

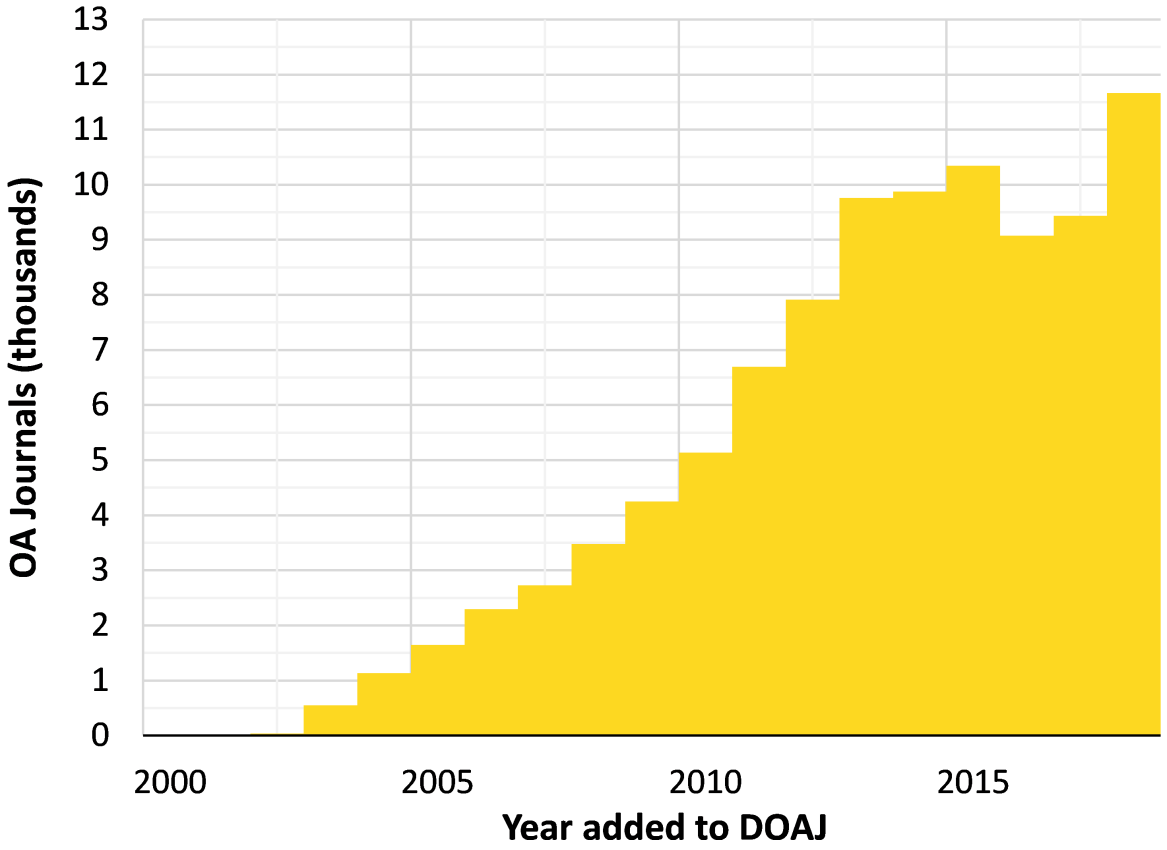
Predatory publishing is an exploitative academic publishing business model that involves HIGH charging publication fees to authors without checking articles for quality and legitimacy, and without providing editorial and publishing services that legitimate academic journals provide.

Beall's List – of Potential Predatory Journals and Publishers

… was maintained by University of Colorado librarian Jeffrey Beall on his blog

https://beallslist.net/

Number of Gold open access journals listed in the Directory of Open Access Journals

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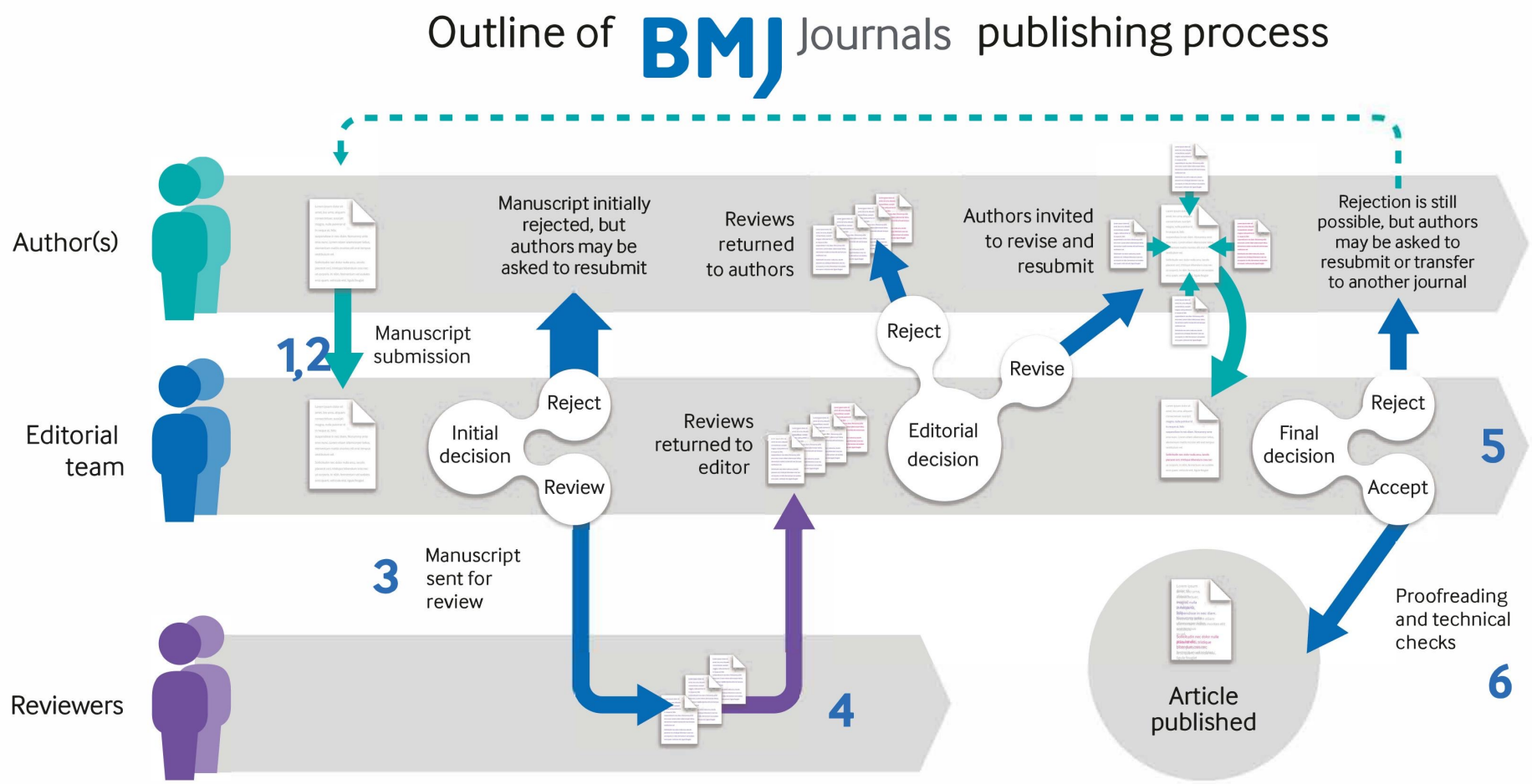
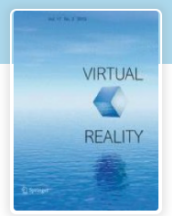
Journals
Articles
In all fields
SEARCH
80
LANGUAGES
136
COUNTRIES REPRESENTED
13,565
JOURNALS WITHOUT FEES
20,185
JOURNALS
9,609,106
ARTICLE RECORDS

Publishing / Review process



Review time

Springer



Virtual Reality

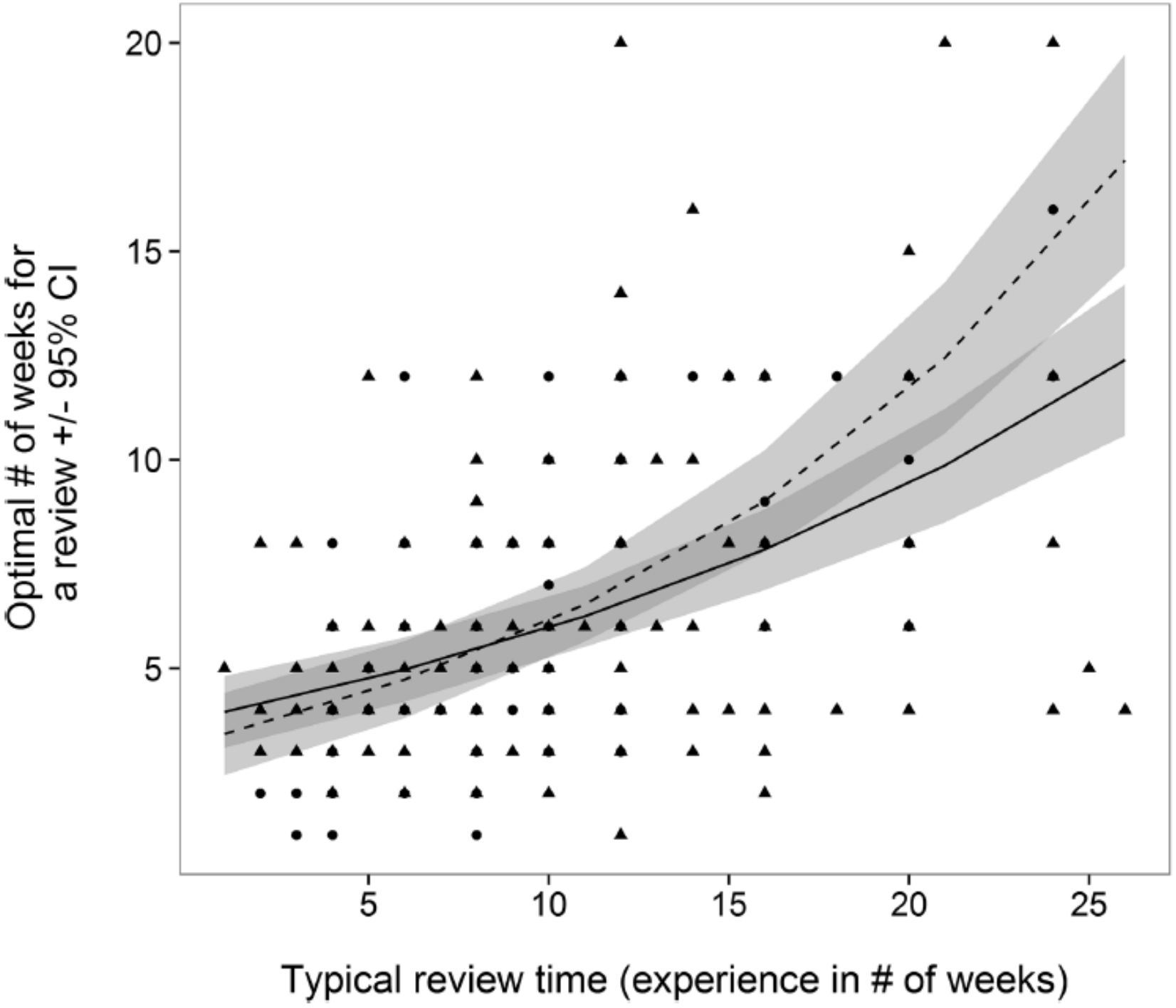
Editorial board | Aims & scope | Journal updates

The journal, established in 1995, publishes original research in Virtual Reality, Augmented and Mixed Reality that shapes and informs the community. The multidisciplinary nature of the field means that submissions are welcomed on a wide range of topics including, but not limited to: — show all

Editors-in-Chief
Robert D. Macredie, Daniel Ballin

Publishing model
Hybrid (Transformative Journal). Learn about publishing Open Access with us

5.095 (2020) Impact factor	**125 days** Submission to first decision	**145,912 (2020)** Downloads
5.521 (2020) Five year impact factor	**353 days** Submission to acceptance	


Optimal # of weeks for a review +/- 95% CI
20
15
10
5
5
10
15
20
25
Typical review time (experience in # of weeks)

Structures?

Visit journal homepage >

Submit your paper >

Open access >

Track your paper >

View articles >

Abstracting >

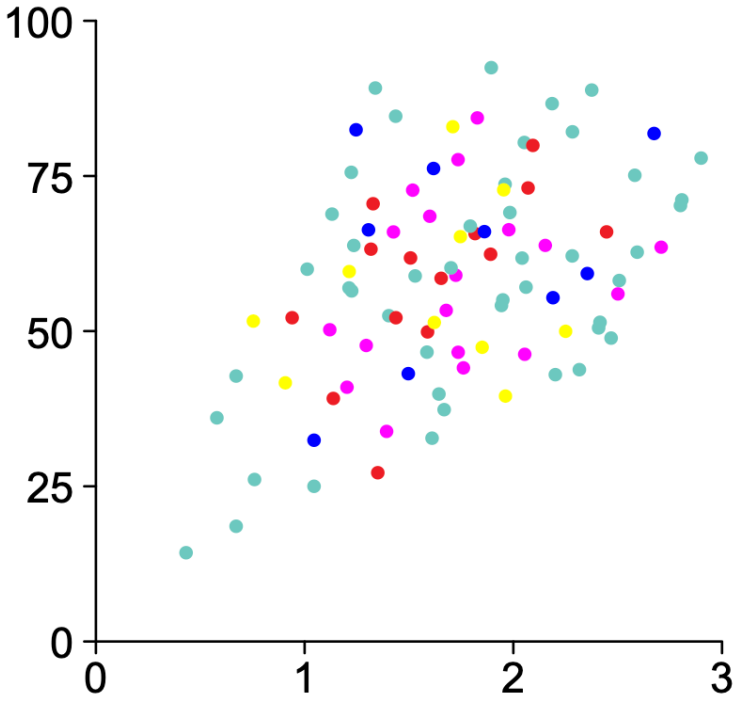
Editorial board >

Guide for Authors

Download Guide for Authors in PDF

Aims and scope +

Color in Scientific Figures



Color in Scientific Figures

FIGURE 1: COLOR WHEELS DEPICTING SOME COMMON COLOR PALLETS THAT YOU CAN CHOOSE FROM

PANEL A PANEL B PANEL C

A. COMPLEMENTARY COLORS

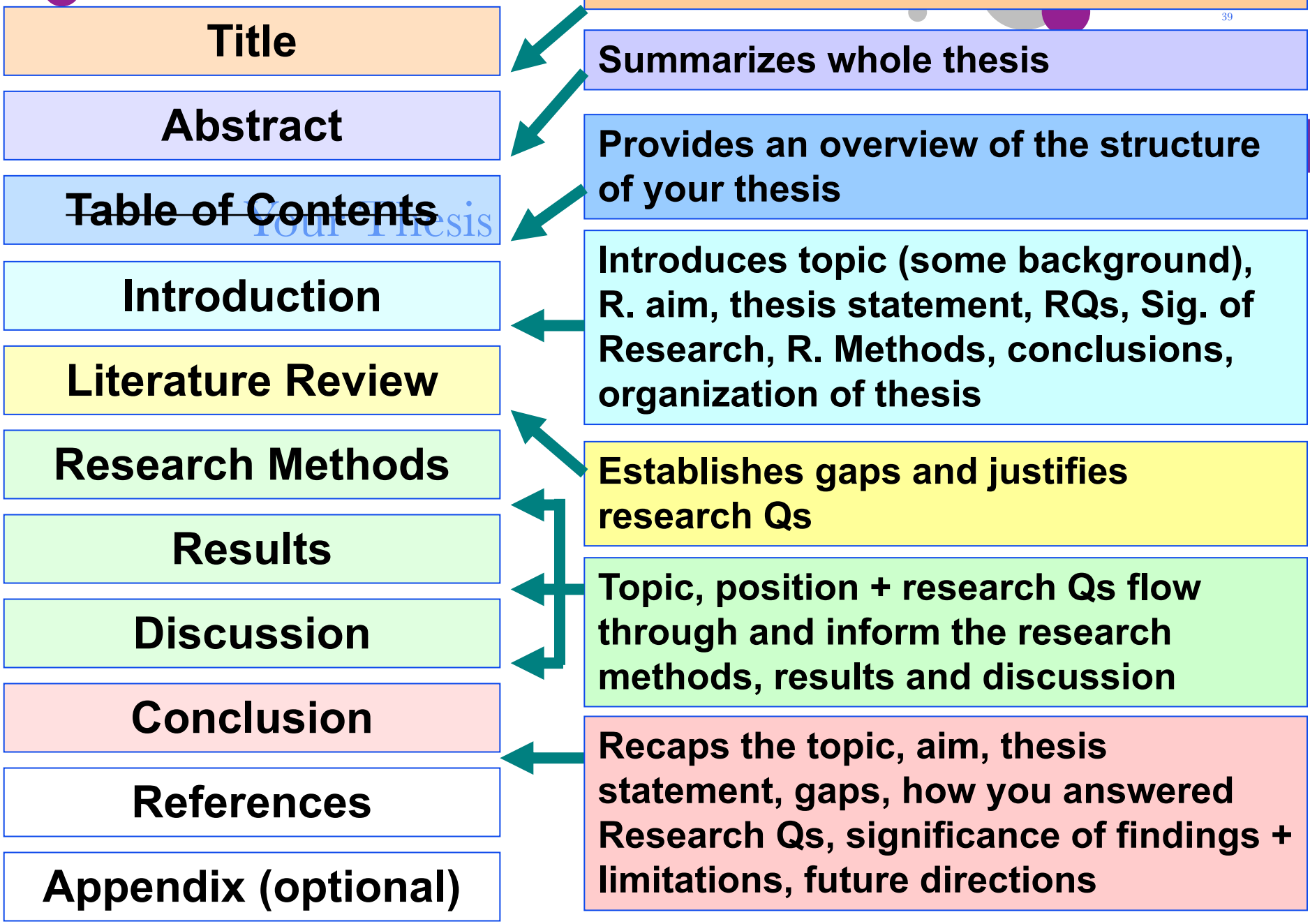
One common pallet uses complementary colors, which are colors that are opposite from each other on the color wheel (panel A). Complementary colors are good for showing differences between data sets.

B. ANALOGOUS COLORS

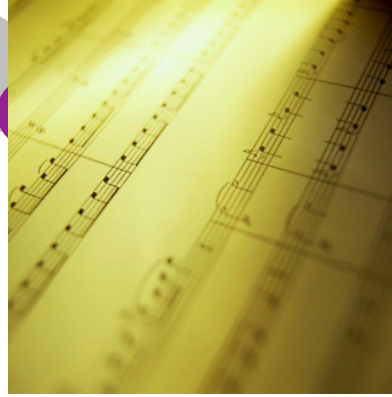
Another pallet uses colors that are near each other (i.e., analogous) on the color wheel (panel B); these types of pallets are good for showing similarities in datasets.

C. TRIAD COLORS

In addition, a triad scheme, which includes three colors that are equidistant from each other on the color wheel, can be used (panel C). Similar to the complementary scheme, a triad scheme can be used to show differences in color schemes but offer more variety in the colors that can be used.


Title
Abstract
Table of Contents
Introduction
Literature Review
Research Methods
Results
Discussion
Conclusion
References
Appendix (optional)
Summarizes topic + position/approach
Summarizes whole thesis
Provides an overview of the structure of your thesis
Introduces topic (some background), R. aim, thesis statement, RQs, Sig. of Research, R. Methods, conclusions, organization of thesis
Establishes gaps and justifies research Qs
Topic, position + research Qs flow through and inform the research methods, results and discussion
Recaps the topic, aim, thesis statement, gaps, how you answered Research Qs, significance of findings + limitations, future directions

Title of Your Thesis



A good title is composed from a brief statement of the Topic and an indication of your Thesis/position or your approach.

E.g.,

Topic: 'Interactive virtual musical instruments'

Thesis: Models which move in physically realistic ways **can mediate** between acoustic sounds produced by musicians and those produced by computers, and thus assist musicians playing with interactive music systems.

Title: Interfaces for Musical Expression based on Simulated Physical Models

Title of Your Thesis

Another example

E.g.,

Topic: Mobile technology and its use by Indigenous Australians

Thesis: Mobile phones are the technology of choice for Indigenous Australians. However, their use is ideally supported by other ICT.

Title: Exploring the Role of Mobile Phones in the ICT Ecology of Indigenous People

Research Aim(s) & Objective(s)

Well-defined and well-formulated aims should answer the question

"What are you going to conduct?"

Well-defined specific aims or objectives are key to the **successful completion** of a research project.

Not too many, e.g., 1-3

Research Aims

Aims specify **what will be known** at the end of the project, *that isn't known at its beginning*, and *has been revealed by the research*.

Usually this section is addressed to other specialists in your field

It is a key element of the research project, and the primary concern of technical reviewers.

Difference Between Aims and Objectives

?

Difference Between Aims and Objectives

Aims:

Emphasize **what** is to be accomplished

Objectives:

Emphasize **how** aims are to be accomplished

Example 1

Aims (what):

To explain the concept of energy and the need to conserve heat in houses

Objectives (how):

To list different forms of energy;

To describe how energy may be transformed from one for to another;

To be able to describe different forms of heat flow;

To distinguish between energy and power;

etc.

Example 2

Aims (what):

To **develop** a multimodal data mining platform enabling track and manage patients' chronic pain and also providing an alternative way of treatment on chronic pain through real-time biofeedback.

Objectives (how):

To collaborate with physicians on chronic pain diagnosis and treatment, patient recruitment and physiological data collection.

To identify the physiological signatures of chronic pain and to address the clinical usefulness of biomarkers for characterizing chronic pain.

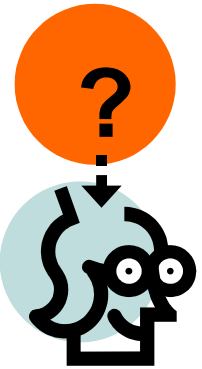
To develop a data stream mining technology for real-time tracking and analyzing of physiological signal.

The Gaps in the Literature

Stated briefly in the **Introduction**

Demonstrated by a detailed and critical analysis of the literature in the **Literature Review**

Research Questions



Research Question

A research question is a clear, focused, concise, complex, and arguable.

The research study is centered around a research question.

Research Question

(Almost) Everyone has a great idea for a research study.

However, **translating an idea into a research question**, that can be studied **scientifically**, can be a challenging undertaking, especially if an individual is fairly new to research.

Good Research Questions

Research question should be clear. It must be **understandable** to you and to others.

It should be **researchable**. It should be capable of development into a research design/program

> If a research question is not researchable, it is extremely difficult (if not impossible) that data could be collected to validate the research question.

If your research study has **multiple** research questions, these must be **linked to each other**.

> Unrelated research questions are unlikely to be acceptable, since you should be developing an coherent argument in your dissertation.

Evaluation of your Research Questions

Is your research question **clear**?

A research question should leave no room open for interpretations or ambiguity.

Is your research question **focused**?

Research questions must be specific enough to be addressed taking in view some of the following constraints:

Time

Budget

Is your research question **complex**?

Research questions **should not be answerable** with a simple "yes" or "no" or by easily-found facts. They should, instead, require both research and analysis on the part of the researcher

Sample: (Un)clear Research Question

RQ1. Why are social networking sites harmful?

RQ2. How are online users experiencing or addressing privacy issues on social networking sites such as Twitter and Facebook?

The unclear version of this question doesn't specify:

what kind of harm is caused by the social networking sites?

which social networking sites have the potential to cause the harm(s)?

who could the social networking sites harm (the users?)

Sample: (Un)focused Research Question

RQ1. What is the effect on the environment from global warming?

RQ2. How is glacial melting affecting penguins in the Arctic Circle?

The unfocused research question is so broad that it couldn't be adequately answered in a book-length piece, let alone a standard research paper.

The focused version narrows the scope of research down to a **specific cause** (glacial melting), a **specific place** (the Arctic Circle), and a **specific group** that is affected (penguins).

Sample: Too Simple Research Question

Too simple: How are doctors addressing diabetes in the U.S.?

The simple version of this question can be looked up online and answered in a few factual sentences; it leaves no room for research or analysis. It is in fact common knowledge

As a general rule of thumb, if a quick Google search can answer a research question, it's likely not very effective

Appropriately Complex: What are common traits of those suffering from diabetes in America, and how can these commonalities be used to aid the medical community in prevention of the disease?

Innovation and Significance

Research significance and innovation are closely linked.

Innovation:

The novelty resulting from the research

Significance:

Implications of the novelty to knowledge and society

Why Significance?

Rationale for your research

Demonstrates that your research is worth doing/researchable

Persuades someone to support or fund your research

Convinces approving body that you are not wasting resources or participants' time

Importance of the problem/topic

Mention why the general area is **important**

> your project brings us one step closer to... (improving what practice, our knowledge about what)

Describe how is this topic important for society, business, health, education, safety

> e.g. reduces ..., improves the way people ...

Numbers often help here, e.g. so many people, companies, places, conferences

> Very important in grants proposal (e.g. national priorities)

Research Significance (Contribution to Research)

What would be the importance of the outcomes derived from this project, in the scope of the **current research knowledge** (in the topic of the project)?

Would the project result in

better understanding of the research area,

solving long-standing research problem(s),

initiate a new line of reasoning or new research area?

You may point out and discuss the scientific significance that each of the identified objective(s) would result in.

Social Significance

Highlight (and clearly articulate) how the outcomes from this project will result in benefit for the society or mankind.

How would the outcomes from this project result in solving practical problem to the:

Environment; Society; Health Practices;

Advanced treatment of diseases?

State/Province; Country; World

You may point out and discuss the social significance that each of the identified objective(s) would result in.

Bibliography
vs.
Reference

Bibliography vs. Reference

Bibliography

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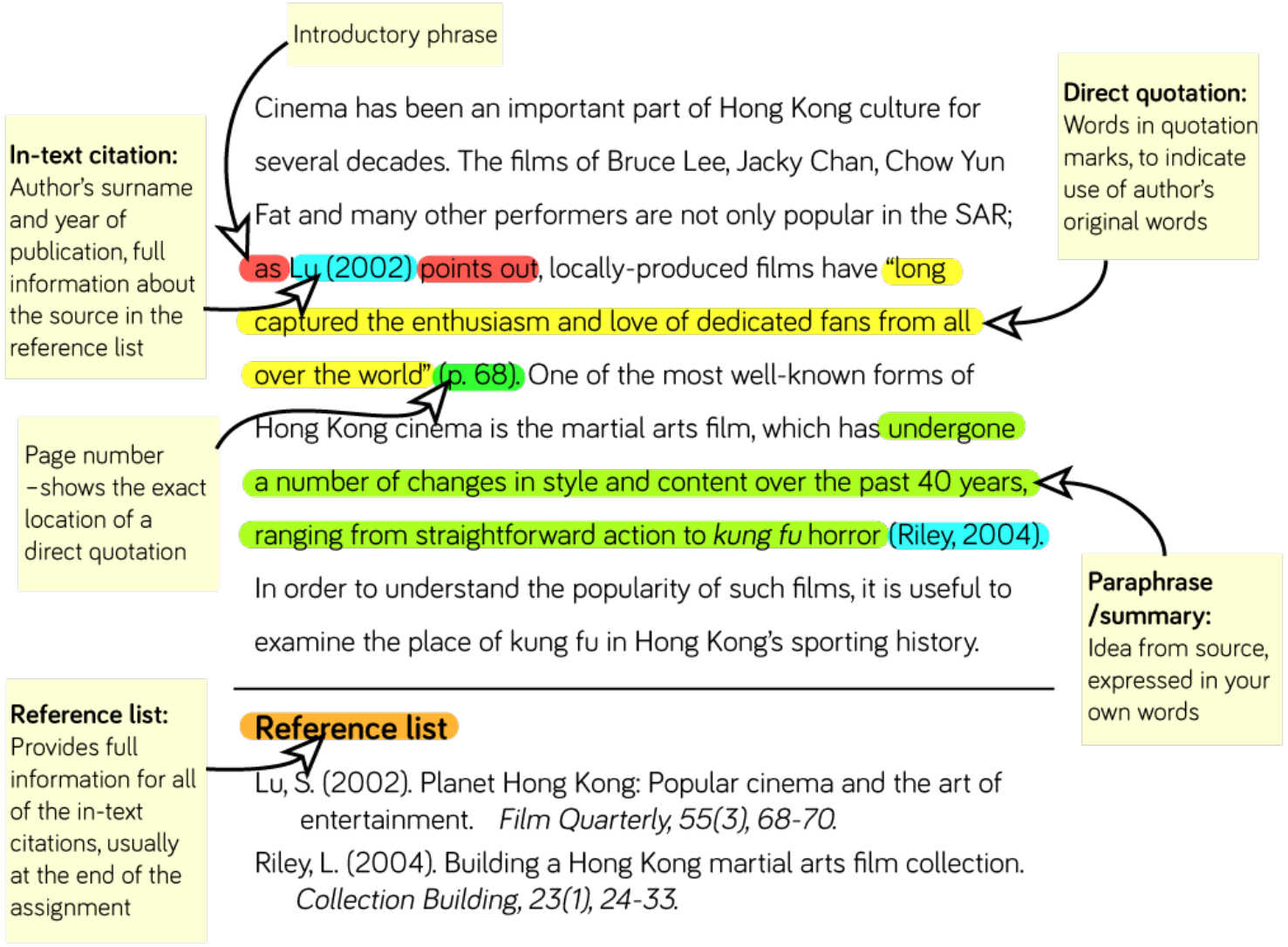
Chong, Curtis R, and David J Sullivan. 2007. "New Uses for Old Drugs." *Nature*

Bibliography vs. Reference

References usually come at the end of a text (essay or research report) and should **contain only those works cited within the text**. So, use the term '**References**' to cover works cited, and 'Additional **Bibliography**' to refer to works read as general background.

Example


Introductory phrase
In-text citation: Author's surname and year of publication, full information about the source in the reference list
Direct quotation: Words in quotation marks, to indicate use of author's original words
Page number – shows the exact location of a direct quotation
Paraphrase /summary: Idea from source, expressed in your own words
Reference list: Provides full information for all of the in-text citations, usually at the end of the assignment
Cinema has been an important part of Hong Kong culture for several decades. The films of Bruce Lee, Jacky Chan, Chow Yun Fat and many other performers are not only popular in the SAR; as Lu (2002) points out, locally-produced films have "long captured the enthusiasm and love of dedicated fans from all over the world" (p. 68). One of the most well-known forms of Hong Kong cinema is the martial arts film, which has undergone a number of changes in style and content over the past 40 years, ranging from straightforward action to kung fu horror (Riley, 2004). In order to understand the popularity of such films, it is useful to examine the place of kung fu in Hong Kong's sporting history.
Reference list
Lu, S. (2002). Planet Hong Kong: Popular cinema and the art of entertainment. Film Quarterly, 55(3), 68-70.
Riley, L. (2004). Building a Hong Kong martial arts film collection. Collection Building, 23(1), 24-33.

Other Commonly Used Referencing Styles

HARVARD

APA (American Psychological Association)

CHICAGO (University of Chicago Press)

ACM (Association for Computing Machinery)

IEEE (Institute of Electrical and Electronics Engineers)

…

Example: HARVAR Style

Dobrian, F., Awan, A., Joseph, D., Ganjam, A., Zhan, J., Sekar, V., Stoica, I. & Zhang, H. 2013, 'Understanding the impact of video quality on user engagement', *Communications of the ACM*, vol. 56, no. 3, pp. 91-99.

Other Commonly Used Referencing Styles

HARVARD

Dobrian, F., Awan, A., Joseph, D., Ganjam, A., Zhan, J., Sekar, V., Stoica, I. & Zhang, H. 2013, 'Understanding the impact of video quality on user engagement', *Communications of the ACM*, vol. 56, no. 3, pp. 91-99.

APA

Dobrian, F., Awan, A., Joseph, D., Ganjam, A., Zhan, J., Sekar, V., Stoica, I., & Zhang, H. (2013). Understanding the impact of video quality on user engagement. *Communications of the ACM*, *56*(3), 91-99.

CHICAGO

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ACM

1. Dobrian, F., Awan, A., Joseph, D., Ganjam, A., Zhan, J., Sekar, V., Stoica, I. and Zhang, H. 2013. Understanding the impact of video quality on user engagement. *Communications of the ACM*, Vol. 56, No. 3, pp. 91-99.

IEEE

[1] F. Dobrian, A. Awan, D. Joseph, A. Ganjam, J. Zhan, V. Sekar, I. Stoica, and H. Zhang, "Understanding the impact of video quality on user engagement," *Communications of the ACM*, vol. 56, no. 3, 2013, pp. 91-99.

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