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HOW TO WRITE AN ABSTRACT FOR RESEARCH PAPER

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DEFINITION AND PURPOSE OF ABSTRACTS

What is abstract of a research paper?

- An abstract is a short summary of your (published or unpublished) research paper, usually about a paragraph (c. 6-7 sentences, 150-250 words) long.

Purposes of abstract:

- an abstract lets readers get the gist or essence of your paper or article quickly, in order to decide whether to read the full paper;
- an abstract prepares readers to follow the detailed information, analyses, and arguments in your full paper;
- and, later, an abstract helps readers remember key points from your paper.

Key points to an abstract

- An abstract briefly explains the salient aspects of the content.
- Abstracts should be accurate and succinct, self-contained, and readable.
- The abstract should paraphrase and summarize rather than quote from the paper.
- Abstracts should relate only to the paper to be presented/assessed.

Structuring your Abstract

- The “ideal” structure for an abstract as abstract writing varies between academic disciplines, genres and styles of writing.
- The abstract should normally 200 - 350 words, include 4-8 keywords and cite between 2-4 references.
- There are tree styles of structuring the abstract

Abstract Structure Example #1

The abstract for empirical articles (qualitative or quantitative) should usually reflect the **IMRAD** format:

- Introduction
- Method
- Results
- Analysis
- Discussion

Abstract Structure Example #2

Structure Example #2

- Research questions or hypothesis
- Theoretical Frame underpinning the questions/hypothesis
- Methods used to address the research question/hypothesis
- Results of the investigations
- Conclusions, applications, or implications

Abstract Structure Example #3

- Context
- Research questions
- Aims
- Summary of content
- Conclusions/Significance

The simple structure

1. Your research problem and objectives
2. Your methods
3. Your key results or arguments
4. Your conclusion

Research question

A good research question is essential to guide your research paper, project or thesis. It pinpoints exactly what you want to find out and gives your work a clear focus and purpose. You will usually write a single research question to guide your reading and thinking

All research questions should be:

- **Focused** on a single problem or issue
- **Researchable** using primary and/or secondary sources
- **Feasible** to answer within the timeframe and practical constraints
- **Specific** enough to answer thoroughly
- **Complex** enough to develop the answer over the space of a paper or thesis
- **Relevant** to your field of study and/or society more broadly

Types of research questions

Research question type	Formulation
Descriptive research	*What are the characteristics of X?*
Comparative research	*What are the differences and similarities between X and Y?*
Correlational research	*What is the relationship between variable X and variable Y?*
Exploratory research	*What are the main factors in X? What is the role of Y in Z?*
Explanatory research	*Does X have an effect on Y? What is the impact of Y on Z? What are the causes of X?*
Evaluation research	*What are the advantages and disadvantages of X? How well does Y work? How effective or desirable is Z?*
Action research	*How can X be achieved? What are the most effective strategies to improve Y?*

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Consider the type of research

There are many different types of research.
It's a good idea to start thinking about what kind of approach you'll take to your topic.

Will you mainly focus on:
•Collecting original data (e.g. experimental or field research)?
•Analyzing existing data (e.g. national statistics, public records or archives)?
•Interpreting cultural objects (e.g. novels, films or paintings)?
•Comparing scholarly approaches (e.g. theories, methods or interpretations)?

What makes a strong research question?

Focused and researchable

Feasible and specific

Complex and arguable

Relevant and original

Types of research aims

Type of research	What's the difference?	What to consider?
Basic vs applied	Basic research aims to develop knowledge, theories and predictions, while applied research aims to develop techniques, products and procedures.	Do you want to expand scientific understanding or solve a practical problem?
Exploratory vs explanatory	Exploratory research aims to explore the main aspects of an under-researched problem, while explanatory research aims to explain the causes and consequences of a well-defined problem.	How much is already known about your research problem? Are you conducting initial research on a newly-identified issue, or seeking precise conclusions about an established issue?
Inductive vs deductive	Inductive research aims to develop a theory, while deductive research aims to test a theory.	Is there already some theory on your research problem that you can use to develop hypotheses, or do you want to propose new theories based on your findings?

Types of research data

Type of research	What's the difference?	What to consider
Primary vs secondary	Primary data is **collected directly by the researcher** (e.g. through interviews or experiments), while secondary data **has already been collected by someone else** (e.g. in government surveys or scientific publications).	How much data is already available on your topic? Do you want to collect original data or analyze existing data (e.g. through a literature review)?
Qualitative vs quantitative	Qualitative research methods **focus on words and meanings**, while quantitative research methods **focus on numbers and statistics**.	Is your research more concerned with measuring something or interpreting something? You can also create a mixed methods research design that has elements of both.
Descriptive vs experimental	Descriptive research gathers data **without controlling any variables**, while experimental research **manipulates and controls variables to determine cause and effect**.	

Type of sampling

Type of research	What's the difference?	What to consider
Probability vs non-probability sampling	Probability sampling allows you to **generalize your findings to a broader population**, while non-probability sampling allows you to draw conclusions **only about the specific subjects of the research**.	Do you want to produce generalizable knowledge that applies to many contexts or detailed knowledge about a specific context (e.g. in a case study)?
Cross-sectional vs longitudinal	Cross-sectional studies **gather data at a single point in time**, while longitudinal studies **gather data at several points in time**.	Is your research question focused on understanding the current situation or tracking changes over time?
Field vs laboratory	Field research takes place in **a natural or real-world setting**, while laboratory research takes place in **a controlled and constructed setting**.	Do you want to find out how something occurs in the real world or draw firm conclusions about cause and effect? Laboratory experiments have higher internal validity but lower external validity.
Fixed vs flexible	In a fixed research design the subjects, timescale and location are **set before data collection begins**, while in a flexible design these aspects may **develop through the data collection process**.	Do you want to test hypotheses and establish generalizable facts, or explore concepts and develop understanding? For measuring, testing and making generalizations, a fixed research design has higher validity and reliability.

Methods of analysis: **Quantitative or Qualitative**

Quantitative	**Qualitative**
Analysis will be based on numbers. • How you prepared the data before analyzing it (e.g. checking for missing data, removing outliers, transforming variables) • Which software you used to analyze the data (e.g. SPSS or Stata) • Which statistical methods you used (e.g. two-tailed t-test, simple linear regression)	Analysis will be based on language, images and observations (often involving some form of textual analysis). • Content analysis: categorizing and discussing the meaning of words, phrases and sentences • Thematic analysis: coding and closely examining the data to identify broad themes and patterns • Discourse analysis: studying communication and meaning in relation to their social context

Results research

In a quantitative survey	**In qualitative research,**
• For each question or hypothesis, present the relevant results, including details of how they were analyzed. • If you calculated validity and reliability, include these results too. • Observe how each result relates to the question or whether the hypothesis was supported.	• the results might not all be directly related to specific questions or hypotheses. • structure your results section around key themes or topics that emerged from your analysis of the data. • For each theme, make general observations about what the data showed. • For example, you might mention recurring points of agreement or disagreement, patterns and trends, and individual responses that were particularly significant to your research question. You can clarify and support these points with direct quotations.

Conclusion

Its main purposes are to:

- Clearly state the answer to the main research question
- Summarize and reflect on the research
- Make recommendations for future work on the topic
- Show what new knowledge you have contributed

Title of abstract

- The search engines and bibliographic databases use abstracts, as well as the title, to identify key terms for indexing your published paper
- title is crucial for helping other researchers find your paper or article.

THE CONTENTS OF AN ABSTRACT ARE

1. the **context** or background information for your research; the **general topic** under study; the **specific topic** of your research
2. the **central questions** or statement of the **problem** your research addresses
3. **what's already known** about this question, what **previous research** has done or shown
4. the main **reason(s)**, the exigency, the **rationale**, the **goals** for your research—Why is it important to address these questions? Are you, for example, examining a new topic? Why is that topic worth examining? Are you filling a gap in previous research? Applying new methods to take a fresh look at existing ideas or data? Resolving a dispute within the literature in your field? . . .
5. your research and/or analytical **methods**
6. your main **findings**, **results**, or **arguments**
7. the **significance** or **implications** of your findings or arguments.

CHOOSING VERB TENSES WITHIN YOUR ABSTRACT

- The **social science** uses the present tense to describe general facts and interpretations that have been and are currently true, including the prevailing explanation for the social phenomenon under study.
- That abstract also uses the present tense to describe the methods, the findings, the arguments, and the implications of the findings from their new research study.
- The authors use the past tense to describe previous research.

- The **humanities** uses the past tense to describe completed events in the past (the texts created in the pulp fiction industry in the 1970s and 80s) and uses the present tense to describe what is happening in those texts, to explain the significance or meaning of those texts, and to describe the arguments presented in the article.
- The **science** uses the past tense to describe what previous research studies have done and the research the authors have conducted, the methods they have followed, and what they have found. In their rationale or justification for their research (what remains to be done), they use the present tense. They also use the present tense to introduce their study (in Sample 3, "Here we report . . .") and to explain the significance of their study (In Sample 3, This reprogramming . . . "provides a scalable cell source for. . .").

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SAMPLE ABSTRACT OF SOCIAL SCIENCE FROM Gonalons-Pons, Pilar, and Christine R. Schwartz. "Trends in Economic Homogamy: Changes in Assortative Mating or the Division of Labor in Marriage?" *Demography*, vol. 54, no. 3, 2017, pp. 985-1005.

"The growing economic resemblance of spouses has contributed to rising inequality by increasing the number of couples in which there are two high- or two low-earning partners. The dominant explanation for this trend is increased assortative mating. Previous research has primarily relied on cross-sectional data and thus has been unable to disentangle changes in assortative mating from changes in the division of spouses' paid labor—a potentially key mechanism given the dramatic rise in wives' labor supply. We use data from the Panel Study of Income Dynamics (PSID) to decompose the increase in the correlation between spouses' earnings and its contribution to inequality between 1970 and 2013 into parts due to (a) changes in assortative mating, and (b) changes in the division of paid labor. Contrary to what has often been assumed, the rise of economic homogamy and its contribution to inequality is largely attributable to changes in the division of paid labor rather than changes in sorting on earnings or earnings potential. Our findings indicate that the rise of economic homogamy cannot be explained by hypotheses centered on meeting and matching opportunities, and they show where in this process inequality is generated and where it is not." (p. 985)

The first sentence introduces the **topic** under study (the "economic resemblance of spouses"). This sentence also implies the **question** underlying this research study: what are the various causes—and the interrelationships among them—for this trend?

These next two sentences explain what **previous research** has demonstrated. By pointing out the limitations in the methods that were used in previous studies, they also provide a **rationale** for new research.

The data, research and analytical **methods** used in this new study.

The major **findings** from and **implications** and **significance** of this study.

"From the mid-1970s through the mid-1980s, a network of young urban migrant men created an underground pulp fiction publishing industry in the city of Dar es Salaam. As texts that were produced in the underground economy of a city whose trajectory was increasingly charted outside of formalized planning and investment, these novellas reveal more than their narrative content alone. These texts were active components in the urban social worlds of the young men who produced them. They reveal a mode of urbanism otherwise obscured by narratives of decolonization, in which urban belonging was constituted less by national citizenship than by the construction of social networks, economic connections, and the crafting of reputations. This article argues that pulp fiction novellas of socialist era Dar es Salaam are artifacts of emergent forms of male sociability and mobility. In printing fictional stories about urban life on pilfered paper and ink, and distributing their texts through informal channels, these writers not only described urban communities, reputations, and networks, but also actually created them." (p. 210)

The first sentence introduces the **context** for this research and announces the **topic** under study.

The remaining sentences in this abstract interweave other essential information for an abstract for this article. The implied **research questions**: What do these texts mean? What is their historical and cultural significance, produced at this time, in this location, by these authors? The **argument** and the **significance** of this analysis in microcosm: these texts "reveal a mode or urbanism otherwise obscured . . ."; and "This article argues that pulp fiction novellas. . . ." This section also implies what **previous historical research** has obscured. And through the details in its argumentative claims, this section of the abstract implies the kinds of **methods** the author has used to interpret the novellas and the concepts under study (e.g., male sociability and mobility, urban communities, reputations, network. . .).

SAMPLE ABSTRACT FROM THE SCIENCES

"Several studies have reported reprogramming of fibroblasts into induced cardiomyocytes; however, reprogramming into proliferative induced cardiac progenitor cells (iCPCs) remains to be accomplished. Here we report that a combination of 11 or 5 cardiac factors along with canonical Wnt and JAK/STAT signaling reprogrammed adult mouse cardiac, lung, and tail tip fibroblasts into iCPCs. The iCPCs were cardiac mesoderm-restricted progenitors that could be expanded extensively while maintaining multipo-tency to differentiate into cardiomyocytes, smooth muscle cells, and endothelial cells in vitro. Moreover, iCPCs injected into the cardiac crescent of mouse embryos differentiated into cardiomyocytes. iCPCs transplanted into the post-myocardial infarction mouse heart improved survival and differentiated into cardiomyocytes, smooth muscle cells, and endothelial cells. Lineage reprogramming of adult somatic cells into iCPCs provides a scalable cell source for drug discovery, disease modeling, and cardiac regenerative therapy." (p. 354)

The first sentence announces the **topic** under study, summarizes what's **already known** or been accomplished in **previous research**, and signals the **rationale and goals are for the new research and the problem** that the new research solves: How can researchers reprogram fibroblasts into iCPCs?

The **methods** the researchers developed to achieve their goal and a description of the **results**.

The **significance** or **implications**—for drug discovery, disease modeling, and therapy—of this reprogramming of adult somatic cells into iCPCs.

SAMPLE A STRUCTURED ABSTRACT FROM THE SCIENCES

ABSTRACT "*Reporting results about the effectiveness of antibiotic therapy in managing acute bacterial sinusitis, from a rigorously controlled study"*

"OBJECTIVE: The role of antibiotic therapy in managing acute bacterial sinusitis (ABS) in children is controversial. The purpose of this study was to determine the effectiveness of high-dose amoxicillin/potassium clavulanate in the treatment of children diagnosed with ABS.

METHODS: This was a randomized, double-blind, placebo-controlled study. Children 1 to 10 years of age with a clinical presentation compatible with ABS were eligible for participation. Patients were stratified according to age (<6 or ≥6 years) and clinical severity and randomly assigned to receive either amoxicillin (90 mg/kg) with potassium clavulanate (6.4 mg/kg) or placebo. A symptom survey was performed on days 0, 1, 2, 3, 5, 7, 10, 20, and 30. Patients were examined on day 14. Children's conditions were rated as cured, improved, or failed according to scoring rules.

RESULTS: Two thousand one hundred thirty-five children with respiratory complaints were screened for enrollment; 139 (6.5%) had ABS. Fifty-eight patients were enrolled, and 56 were randomly assigned. The mean age was 6630 months. Fifty (89%) patients presented with persistent symptoms, and 6 (11%) presented with nonpersistent symptoms. In 24 (43%) children, the illness was classified as mild, whereas in the remaining 32 (57%) children it was severe. Of the 28 children who received the antibiotic, 14 (50%) were cured, 4 (14%) were improved, 4(14%) experienced treatment failure, and 6 (21%) withdrew. Of the 28children who received placebo, 4 (14%) were cured, 5 (18%) improved, and 19 (68%) experienced treatment failure. Children receiving the antibiotic were more likely to be cured (50% vs 14%) and less likely to have treatment failure (14% vs 68%) than children receiving the placebo.

CONCLUSIONS: ABS is a common complication of viral upper respiratory infections. Amoxicillin/potassium clavulanate results in significantly more cures and fewer failures than placebo, according to parental report of time to resolution." (9)

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