

Editorial

Writing an eye-catching and evocative abstract for a research article: A comprehensive and practical approach

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Abstract: It is an important and difficult job to write an eye catching abstract. A large percentage of the manuscripts that are submitted to academic journals are rejected because their abstracts are poorly written. This paper provides a new and step by step approach for writing a good structured abstract.

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1. Why is the abstract important?

Writing an abstract properly is one of the most highly-specialized forms of academic writing. The abstract, which is a very vital part of a journal article, comes first in the article, but it is the last part to be written (1). The abstract is read more frequently than any other part of the article, and it must cover all the major points of the article (2). Since prospective readers decide whether or not to read the entire article by reading the abstract (1), the abstract functions as an advertisement for your work. Unfortunately, many researchers think that writing an abstract is an easy and trivial task, so they do not expend the time, energy, or effort required to produce a good abstract. As a result, abstracts frequently are full of errors (Table 1) and do not match the original text of the article (3). After reading an abstract, the reader should know the following:

- Why the study was conducted.
- What the findings of the study were.
- How the findings can be applied.

The present paper provides a detailed discussion of the features of a good abstract. Some practical guidelines for writing a very sophisticated abstract are provided. This paper is focused on the elements of structured abstracts for research articles, because such abstracts are preferred by most journals, and they have been demonstrated to be of higher quality than alternative approaches (1).

2. A practical approach

A structured abstract for an original research article is an abstract with different, labeled parts to facilitate the reader's comprehension. This helps the readers who wish to identify and investigate further only journal articles that are focused on a specific issue and that are valid from a methodological perspective (3, 4). This method of organizing an abstract also instructs writers in summarizing the content of their research accurately (Table 2) and facilitates the peer-review process (4, 5). Writing an effective structured abstract is difficult, but it is not an impossible task. Such an abstract must be well designed, well organized, and concise (Table 3); however, the format required for a structured abstract is not the same in all journals. Their lengths and structures vary by discipline and by the publisher's requirements. Most journals mention the specific criteria they require for abstracts in the "Instructions for Authors" section. A widely-accepted format for structured abstracts in a research article includes the following sections: Introduction, Methods, Results, and Conclusions (3).

Table 1. Common mistakes in writing an abstract

| |
|--|
| Using an inappropriate writing style |
| Addressing irrelevant information that is not mentioned in the original text |
| Including unnecessary words or phrases |
| Using the first line of the Introduction as the first sentence of the abstract |
| Compiling the abstract by selecting some sentences from the main text |
| Including references in the abstract |
| Writing long sentences (recommended maximum = 25 words) |
| Writing incomplete sentences |
| Using inappropriate tense of verbs (and improper subject-verb agreement) |
| Using exaggerated, overblown and grandiose words |
| Using non-required synonyms and repetitive words |
| Using "Tables" in the abstract |
| Using "Figures" in the abstract |
| Using non-essential jargons |
| Plagiarism |
| Grammatical mistakes |
| Mixing "results" and "inferences (Discussion/Conclusion)" |

2.1. Writing the Introduction

This section is actually a brief summary of the Introduction of the article. It may consist of three short sentences, with the first sentence specifically mentioning the core content, the second its context i.e. the background and the third addressing the objectives of the research.

2.1.1. Writing the first and second sentences

The first sentence should provide the background of the study, address the research focus, and point out the importance of the problem or the gap in the knowledge (Table 2). Usually, a good background sentence states the problem that the study addressed, provides the context for the study, and indicates the importance of the study, each of which provides information that the reader needs to know. Make sure you address the most important aspect of the research and express the restrictions of previous studies, if possible; but BE CONCISE and encapsulate all of these components in two short sentences.

2.1.2. Writing the third sentence

Here, you should quickly address the main research question or hypothesis in the form of a research objective (Table 4). You may present the overall objective of the study or address one specific, key objective. After you have formulated your research objective, be sure to write it in the appropriate form based on the type of study (e.g., qualitative vs. quantitative) and the variables that were investigated. In expressing research objectives, it is essential to use infinitives, i.e., the combination of "to" and a verb, such as "to develop", "to determine", and "to assess" (Table 4).

2.2. Writing Methods

In this section, you should state the methods that were used to answer the research questions. Three to four sentences should express the research design; the study population; the subject selection process; and the instruments, measurement tools, and statistical techniques that were used. In other words, you should precisely summarize the process and the fundamental procedures you used to answer your questions. A practical approach for writing this section is to begin with an explanation of the study design and its structure (Table 2). After that, you should discuss the study population, sampling methods, and the setting (e.g., hospital, clinic, university, or company) and explain the selection procedure (e.g., the selection criteria, the number of subjects selected, and the demographic characteristics of the subjects). If you are writing about an experimental study, you should explain the characteristics of any interventions that were necessary. At the end of this part, you should mention the statistical analyses that were used in the study. It is a prudent practice to mention how was acceptable validity and reliability ensured.

Table 2. Questions that should be answered before writing each part of the abstract

| Sections | Approach | |
|---------------------|---|--|
| Introduction | 1 st & 2 nd Sentences (The What & Why) | Ask yourself: What is the core content of your manuscript/thesis (about WHAT?) Why were the problem and the results important? What problems did you aim to solve? What was the main gap(s) in knowledge that your research was intended to fill? |
| | 3 rd Sentence (The “What for”) | Ask yourself: What was the general objective of the study? What was the key, specific objective of the study? Was there a major hypothesis? |
| Methods | Ask yourself (The “How”): What was the study design? What was the population and who were the subjects of the study? What were the key variables? What were the entry criteria that subjects had to meet? What measurement tool(s) did you use? What steps did you follow and how? What kind of statistical analyses did you use? What steps did you use to ensure acceptable reliability & validity? | |
| Results | Ask yourself (The “So What”): What were the major results of the research? Were the results significant? How were they significant? Did you find any meaningful changes? If so, what were the magnitudes of the effects? Any consideration of effect size? If so, is it statistical significance or clinical significance? | |
| Conclusions | Ask yourself (The “Then What”) : What do your findings actually mean? What are the implications of your findings? Can the findings be generalized to other situations? Are the results specific and limited to a particular case or situation? Did the research findings fill the gap(s) of knowledge identified earlier in the Introduction section? How comparable are your findings relative to those of other studies? Did the results point towards developing a new hypothesis? | |

Table 3. Main rules for developing a good abstract - a recommended “to-do” list

| | |
|------------------------------|---|
| Structure and grammar | Follow an appropriate writing style. |
| | Use the appropriate tense for verbs. |
| | Use active voice rather than passive voice whenever possible. |
| | Use complete sentences. |
| | Use correct punctuation and spaces. |
| | Use figures and numbers appropriately. |
| | Use past tense to report “Method” & “Results” |
| Content | Highlight the main points of the article. |
| | Include all of the notable findings and points of the article. |
| | Create a distinct image of the content of the article. |
| | Reflect the purpose and content of the main text. |
| | Include precise information. |
| | Only report your findings; do not evaluate, review, or comment on them. |
| | Be concise, accurate, and clear. |
| | Never present new information; just summarize the content of the article. |
| Include key terms. | |

2.3. Writing Results

In this section, you must describe your major findings, and you can use a word count that is similar to that used in the Methods section. You should clearly define the primary outcome of your research and the key information provided in the article. Confidence intervals, P-values, odds ratios, relative risks, and effect sizes are among the most common kinds of information that authors usually present in this section. You should resist the temptation to include peripheral or irrelevant information that is not included in the main text (Table 1).

2.4. Writing Conclusions

In this section, you have the opportunity to inspire your colleagues in one or two great sentences in which you state your main conclusions and recommendations. Only new, important, and major findings and their implications should be included; but, be careful to ensure that all of your conclusions are supported fully by the findings of the research; it is essential that you avoid exaggerating your findings or making rash overgeneralizations about their significance. PLEASE, don't flash neon lights that say "I am a beginner" in the Conclusions section by using grandiose, exaggerated, and overblown descriptions of the importance of your findings! A good approach in writing the Conclusions section is to outline the key findings (but not directly pasting phrases or sentences from the "Results") from the research and present a rational statement about their potential for beneficial applications (Table 2).

Table 4. Examples of some bad sentences and good sentences in an abstract

| Bad | Good | Reason? |
|--|--|---|
| This paper discusses three issues. The first issue is X. The second and thirds issues are Y and Z. | This paper discusses X, Y and Z. | Use as few words as possible. |
| The main hypothesis of this study was: "There is a positive relationship between X and Y." | The purpose of this study was to determine the relationship between X and Y. | Write the "hypothesis" in "objective" form. |
| The purpose of this study was to investigate the relationship between X and Y. | The purpose of this study was to determine the relationship between X and Y. | Use the appropriate verbs to describe the objectives of the quantitative and qualitative research. |
| According to Author et al. (2009), there is a significant relation between X and Y. | There is a significant relationship between X and Y. | Do not use a reference in the abstract. |
| There is an extreme relationship between X and Y. | There is a significant relationship between X and Y. | Use words that are statistically meaningful, and avoid using words that have general meanings, such as extreme, extremely, very, outstanding, and huge. |
| There was a huge difference between the mean ages of the two groups. | There was a significant difference between the mean ages of the two groups ($P \leq 0.05$). | <ol style="list-style-type: none"> 1. Use P-values, confidence intervals, and Odds ratios whenever possible. 2. Use statistically-meaningful words and avoid using words that have general meanings, such as extreme, extremely, very, outstanding, and huge. |
| It was examined by the study ... | The study examined ... | Avoid using the passive voice whenever possible. |
| I examined ... | <ol style="list-style-type: none"> 1. The study examined X, Y, and Z. 2. We examined X, Y, and Z. 3. In the study, X, Y, and Z were examined. | Avoid using the first person whenever possible (Use the alternative form No.1). If you really need to do so then using "We" is much better than "I" (the alternative form No.2). Even using the passive voice (the alternative form No.3) is much better than using "I". |

3. Ask the expert

Writing a good succinct abstract is difficult, because your goal is to convey as much content as possible in the fewest words possible. Therefore, using scientific writing services (6) and asking an expert to review the abstract (or the entire manuscript) before submission are often good ideas. It is recommended that you add this article to the reference section of your manuscripts and place the appropriate citation in the text if you use the approach recommended in this article. For example, you can cite this article using the following sentence at the end of the Methodology section of your article: "The report of the study was prepared based on the journal format and other guidelines provided in this reference (Jalalian, 2012)".

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