




How to read a scientific article

Based on the work of Dr. Jennifer Raff.

You have a question and you are using a research article to get credible information to answer that question. This worksheet will help you to pull out the relevant information from the article so that you can have an informed understanding related to your question of interest. In addition to gaining the information, you will be lending a critical eye to what you are reading. Ultimately you want information that is valid and reliable as it will inform your decision making. Plan on reading each article at least twice. As you read your source for the first time, highlight key information (Highlight parts of sentences instead of whole sentences or paragraphs. This will help avoid plagiarism as you write your paper). Plan on reading each article at least twice.

The following are suggested steps on how to read a research article with a critical eye. Prior to reading your article, you must be certain that it is a peer-reviewed report of new research. The article will be divided into the following sections: abstract, introduction, methods, results, and conclusions, and/or discussion. Be prepared to read the article several times and to take notes. At first, it will take you a very long time to read the paper, but you will find that you will go much faster as you gain experience. Look up words you do not understand. Note the  which indicates that the step involves critical evaluation (which you may or may not include in your summary).

STEP 1.

Read introduction

Begin by reading the introduction, not the abstract. The abstract is that dense first paragraph at the very beginning of a paper. Read the abstract last, because it contains a succinct summary of the entire paper, and you may be inadvertently becoming biased by the authors' interpretation of the results.

STEP 2.

Identify the big question

Not "What is this paper about?" but "What problem is this entire field trying to solve?" This helps you focus on why this research is being done.

STEP 3.

Summarize the background in five sentences or less

Summarize the background in five sentences or less. What work has been done before in this field to answer the big question? What are the limitations of that work? What, according to the authors, needs to be done next? You need to be able to succinctly explain why this research has been done in order to understand it. Summarize the background in five sentences or less.

STEP 4.

Identify the research questions.

What exactly are the authors trying to answer with their research? There may be multiple questions, or just one. Write them down. Look at their hypothesis?

STEP 5.

Identify the approach.

What are the authors going to do to answer the specific question(s)?

STEP 6.

Read the methods section

It may be helpful to draw a diagram for the study showing exactly what the authors did. Include as much detail as you need to fully understand the work. However, in your summary do not use the names of measures because they have no meaning for the reader. Rather write that they used such as a questionnaire, interview, or observation that reflected the construct of interest. In other words, explain what was done. Include main information about the sample including gender, ethnicity, sample size, and other defining characteristics (e.g., psychiatric status, country)

STEP 7.

Read the results section.

Try to write one or more paragraphs to summarize the results, each figure, and each table. Don't yet try to decide what the results mean; just write down what they are. You'll often find that results are summarized in the figures and tables. Pay careful attention to them! Also pay attention to: The words "significant" and "non-significant." These have precise statistical meanings.

STEP 8.

Determine whether the results answer the specific questions.

What do you think the results mean? Don't move on until you have thought about this. It's OK to change your mind in light of the authors' interpretation – in fact, you probably will if you're still a beginner at this kind of analysis – but it's a really good habit to start forming your own interpretations before you read those of others



STEP 9.

Read the conclusion/discussion/interpretation section.

What do the authors think the results mean?

Do you agree with them? Can you come up with any alternative way of interpreting them? Do the authors identify any weaknesses in their own study? Do you see any that the authors missed? (Don't assume they're infallible!) What do they propose to do as a next step? Do you agree with that?

STEP 10.

Go back and read the abstract.

Does it match what the authors said in the paper?



Does it fit with your interpretation of the paper?

Suggestions (source: Dr. Traci Giuliano)

Never skim or read articles without taking notes and assume that you will remember what was said in a 2 given article later; you won't remember, and you might also accidentally commit plagiarism. Instead, be sure to highlight important sections and take notes in the margins for each article you read. Once you've read and highlighted an article, open a file on your computer and type up notes on the article, including its complete reference in APA style (which you'll need for the reference section anyway); bullet points that summarize the purpose, method, results, and conclusion; and why you think this article is important for your paper and where it will fit (e.g., "good for the introduction because it's a study with similar findings," "good for the discussion section because it's a suggestion for future research").

IMPORTANT: (1) Never write down (or cut and paste) information from an article verbatim (even if you use quotes); always paraphrase in your own words from the very beginning, which will make it easier to write your paper (and help you avoid plagiarism; sometimes students accidentally write down words too close to the article if they are working from a quote rather than their paraphrase). (2) Never cite an article based on reading the abstract alone (it is scientifically unethical and a violation of the honor code); be sure to read the entire article for any article cited in your paper