



Chapter 3 Article Summaries and Critiques

When trying to summarize an article published in the primary literature it is important not to recreate the abstract. You should be able to succinctly state in your own words the following elements of the article:

- ❖ what did they set out to do and why? (context and hypotheses)
- ❖ how did they do it? (methodology)
- ❖ what were their main findings? (results)
- ❖ how do their findings relate to previous ones and to future questioning? (interpretations and conclusion)

It should be possible to address those four questions in 4-6 sentences to form a reasonable summary of the article.

When critiquing an article, it is an exercise that is similar to the process of peer review, during which unpublished manuscripts are evaluated (and sometimes ripped apart) on their worthiness for publication in particular journals. Given that the articles that we will be critiquing in class have already passed through the peer-review process and have been published, we may not necessarily be in a position to claim them to be complete rubbish. Also, critiquing does not merely imply finding faults in something, as the simple undertaking of the process of analyzing articles and their data allows us a better perspective on how to interpret them, as well as how present data of our own.

At first glance you can ask yourself what kind of article this is. Is it a manuscript detailing a hypothesis driven study or a descriptive one? In the former case, what are the hypotheses and predictions? In the latter case, how is the context for such a descriptive study justified? Is the goal of the article to develop a model? If so, is it to be a predictive model or one meant to explain observed co-variation in nature?

Each article is written in its own style, with its authors' own points of view on their field and with data presented in a particular manner, giving plenty of opportunities to ask questions on whether or not it is the only perspective possible or if there is perhaps another way to interpret some data. Alternatively, was there an element of the study's methodology that was absent or another that seemed superfluous? Keep in mind that no study aims to identify the answers to all unknowns in science but that each one may add a certain kernel of information to our overall understanding of its specific subject. Much in the same way that a wall is made up of many individual bricks, our understanding of any branch of science is built of individual units of knowledge that come from published studies in peer-reviewed journals. For this reason, do not expect any study to address all possible questions on the subject, but rather ask yourself if they asked the right questions and how they fared at attempting to answer them. What new understanding does this manuscript contribute to its particular field of science?

Experimental design and data analysis are important aspects of article review. In the case of the former, ask yourself about the integrity of the set-up of the treatments and controls in this study, for example, in their physical layout with respect to one another or in the choice of manipulations. Does the experimental design flow deductively from the stated hypotheses and predictions? Are the procedures used well accepted within their field of study and if not, how might that impact upon the interpretation of the results? Are the sample sizes large enough to have confidence in particular tendencies within the results of the study? In the latter's case, the authors of the study will have chosen to present their data in a number of possible ways (e.g. tables, scatterplots, histograms, statistical results etc.) in order to convey a review of the patterns in their results. In some instances, some presentation formats may be more appropriate than others and in other circumstances a tendency or pattern in the results may not have been apparent to the authors but may merit some discussion upon review. In your opinion, how strong is the relationship between the evidence presented and the conclusions that were drawn? How much extrapolation was involved in the article's logical justifications?

Lastly, you could turn your attention in an editorial manner to the layout, structure and language used in the article. Is the format, order or tone the most appropriate one for this context? Noting that scientific articles are usually written for submission to journals that are specialized on a specific sub-branch of a scientific discipline, they usually have a specialized target audience in mind. Given the target audience, is the specificity of the language accessible to other scientists that are non-specialists in that field? If not, you might want to find some scientific glossaries that can help to define whatever terms are not already part of your own scientific lexicon. Part of reading articles is in the learning of discipline specific terminology in order to fully understand the expressed implications of the manuscript from its authors.