

Journal Article Reading Comprehension Strategy

1. Begin by reading the introduction, not the abstract

- When choosing papers to read, decide what's relevant to your interests based on a combination of the title and abstract
- But when you have papers assembled for deep reading, read the abstract last because you may inadvertently become biased by the authors' interpretation of the results

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. Look closely for evidence of agenda-motivated research.

3. 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?
- The five sentences part is a little arbitrary, but it forces you to be concise and really think about the context of this research

4. Identify the SPECIFIC QUESTION(S)

- What exactly are the authors trying to answer with their research? There may be multiple questions, or just one. Write them down.
- If it's the kind of research that tests one or more null hypotheses, identify it/them.

5. Identify the approach

- What are the authors going to do to answer the SPECIFIC QUESTION(S)?

6. Now read the methods section

- Draw a diagram for each experiment, showing exactly what the authors did
- Include as much detail as you need to fully understand the work. If you don't understand some aspect about the methods, look it up
- You don't need to understand the methods in enough detail to replicate the experiment, but you're not ready to move on to the results until you can explain the basics of the methods to someone else

7. Read the results section

- Write one or more paragraphs to summarize the results for each experiment, each figure, and each table. Don't yet try to decide what the results mean, just write down what they are.
- Things to pay attention to in the results section:
 - Any time the words "significant" or "non-significant" are used. These have precise statistical meanings.
 - If there are graphs, do they have error bars on them? For certain types of studies, a lack of confidence intervals is a major red flag.
 - The sample size. Has the study been conducted on 10, or 10,000 people? (For some research purposes, a sample size of 10 is sufficient, but for most studies larger is better).

8. Do the results answer the SPECIFIC QUESTION(S)?

- What do you think they mean?
- Don't move on until you have thought about this. It is okay to change your mind in light of the authors' interpretation, but it's a really good habit to start forming your own interpretations before you read those of others.

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?

10. Now, go back to the beginning and read the abstract

- Does it match what the authors said in the paper? Does it fit with your interpretation of the paper?

Journal Article Evaluation Checklist

Checklist for the methods section of a paper

- Was the study original?
- Who is the study about?
 - How were subjects recruited?
 - Who was included in and who was excluded from the study?
 - Were the subjects studied in “real life” circumstances?
- Was the design of the study sensible?
 - What intervention or other maneuver was being considered?
 - What outcome(s) were measured and how?
- Was the study adequately controlled?
 - If a “randomized trial” was randomization truly random?
 - If a cohort, case-control, or other non-randomized comparative study were the controls appropriate?
 - Were the groups comparable in all-important aspects except for the variable being studied?
 - Was assessment of outcome (or, in a case-control study, allocation of caseness) “blind”?
- Was the study large enough and continued for long enough, and was follow up complete enough, to make the results credible?

Checklist for the statistical aspects of a paper

- Have the authors set the scene correctly?
 - Have they determined whether their groups are comparable and, if necessary, adjusted for baseline differences?
 - What sort of data do they have and have they used appropriate statistical tests?
 - If the statistical tests in the paper are obscure, why have the authors chosen to use them?
 - Have the data been analyzed according to the original study protocol?
- Paired data, tails, and outliers:
 - Were paired tests performed on paired data?
 - Was a two-tailed test performed whenever the effect of an intervention could conceivably be a negative one?
 - Were outliers analyzed with both common sense and appropriate statistical adjustments?
- Correlation, regression and causation:
 - Has correlation been distinguished from regression and has the correlation coefficient (r value) been calculated and interpreted correctly?

- Have assumptions been made about the nature and direction of causality?
- Probability and confidence:
 - Have P values been calculated and interpreted appropriately?
 - Have confidence intervals been calculated and do the authors' conclusions reflect them?
- Have the authors expressed their results in terms of the likely harm or benefit that an individual patient can expect, such as:
 - Relative risk reduction
 - Absolute risk reduction
 - Number needed to treat
 - Odds ratio

Checklist for a Qualitative Research Paper

- Are the results valid?
 - Does the article describe an important clinical problem examined via a clearly formulated question?
 - Was the qualitative approach appropriate?
 - How were the setting and the subjects selected? Were participants relevant to the research question and was their selection well-reasoned
 - What was the researcher's perspective and has this been taken into account?
 - What methods did the researcher use for collecting data ---and are these described in enough detail?
 - What methods did the researcher use to analyze the data—and what quality control measures were implemented?
 - Was the data collection comprehensive enough to support rich and robust descriptions of the observed events?
- What are the results?
 - Are the results credible and, if so, are they clinically important?
 - What conclusions were drawn and are they justified by the results?
 - How comprehensive and relevant are the theoretical conclusions?
- Will the results help me in caring for my patients?
 - Does this study help me to understand the context of my practice?
 - Does this study help me understand my relationships with my patients and their families?
 - Are the findings of the study transferable to other clinical settings?