

How to Accurately Read a Scientific Paper

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Just because an article cites a scientific study, it doesn't necessarily mean that the science is high quality. Of course, scientific publications can seem intimidating to read, with their specific and technical language but we can train ourselves to spot unreliable studies. Here are seven things to look for to spot sound science.

CONFUSED ABOUT NUTRITION NEWS?

Tips for spotting sound science

Strength of evidence: (strongest to weakest)

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1 **SYSTEMATIC REVIEWS / META-ANALYSES**
Gather and summarise all relevant studies on a particular topic, lowering the chance of bias. This is the strongest available evidence.
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2 **INTERVENTION STUDY**
For instance, in a randomised controlled trial, study participants are split into two random groups. 1 group is exposed to a treatment (intervention), 1 group is not exposed (control). These studies can prove causation but remember not to generalise too readily!
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3 **OBSERVATIONAL STUDY**
These studies are used to identify correlations and develop hypotheses for further testing, they can't prove cause and effect.
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4 **LABORATORY STUDY**
Remember that whilst the results from animal or cell studies may provide an indication of the likely effects, they can't be directly applied to us!
- We are not mice!
- Isolated cells in a laboratory behave differently than cells in our body.

Sample

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1 **HOW LARGE WAS THE STUDY?**
The more people involved in a study, the more reliable and representative the results will be of the population.
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2 **IS THE STUDY POPULATION GENERALISABLE?**
If a study was only carried out on a specific group of people (for example, middle-aged women suffering from diabetes), this study may not be applicable to the wider population.
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3 **HOW WERE STUDY PARTICIPANTS CHOSEN?**
Random sampling avoids bias. With this method everyone in a population has an equal chance of being chosen, this ensures a generalisable set of results.

Duration



- HOW LONG DID THE STUDY LAST?**
Short-term studies may not be representative of the long-term effects of dietary patterns and changes. Longer studies will provide more realistic data.

Potential confounding



- DID THE STUDY ADJUST FOR POTENTIAL CONFOUNDING EFFECTS?**
The result of the study may be affected by hidden factors that researchers did not anticipate. Therefore, the effect of the study may be attributed to the wrong factors/causes.

Control group



- DID THE STUDY HAVE A CONTROL GROUP?**
The effect of an intervention is determined by comparing the results of the experimental group (treated) with the control group (not treated). Without a control group, we can't tell what caused the effect.

Correlation doesn't equal causation!



- Just because there is a connection between two study variables, doesn't mean that one is caused by the other. Think twice when you see big headlines stating that 'eating carrots causes cancer in smokers'. It's more likely due to smoking itself!

Sources of potential bias



- Self-reported data, for instance, through the use of food frequency questionnaires, can introduce response bias. People tend to over/under-report, or simply forget.
Read the 'conflicts of interest' section towards the end of the paper to judge if there was any potential bias.