Module 8: Lifelong Health and Wellness
Topic 1 Content: Tips for Analyzing Scientific Research Studies

Introduction

It is important to be an informed consumer when it comes to choosing food and nutrition products for purchase. Part of being an informed consumer is analyzing current scientific research studies to interpret nutritional principles and find what works best for you. In this interactivity, click each of the tabs below to learn more about tips for analyzing research.

Module 8: Lifelong Health and Wellness
Topic 1 Content: Tips for Analyzing Scientific Research Studies

How current is the research?

The more current the research is, the more likely it is be valid and up to date. Older research studies may no longer be valid as advances in scientific tools enable researchers to measure results with greater accuracy. As scientific research uncovers more accurate data, former conclusions will be replaced by updated findings that reshape understanding of nutritional principles. When analyzing a research study, be aware of how long ago the research was conducted, and compare it with newer studies if they are available.

Module 8: Lifelong Health and Wellness
Topic 1 Content: Tips for Analyzing Scientific Research Studies

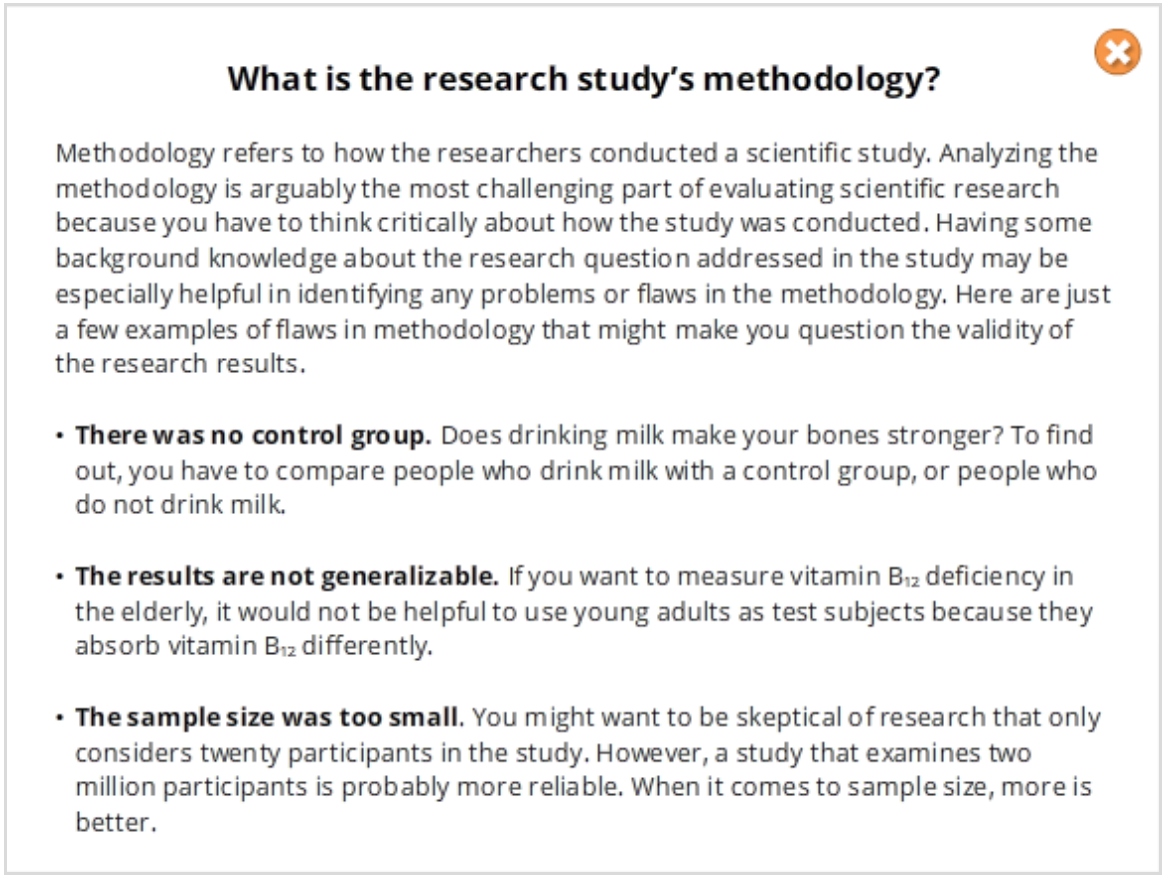
Who are the authors or sponsors of the research?

As with any type of content or media, you should consider who the authors of a research study are. Ideally, the researchers are experts in the field and their research is peer-reviewed by other scientists of the same field. You should also be aware that research studies are frequently biased. Usually the bias is unintentional. Other times, researchers might cherry-pick data, meaning that they pick only the data they want and ignore the rest, a practice more common when research is sponsored by a third party who has an agenda.

As a hypothetical example, a company that sells vitamin supplements might fund research that suggests that supplements are beneficial to health. On the other hand, it would not be in the company's financial interest to support research that indicates that supplements are harmful.

Module 8: Lifelong Health and Wellness
Topic 1 Content: Tips for Analyzing Scientific Research Studies

What is the research study's methodology?



What is the research study's methodology?

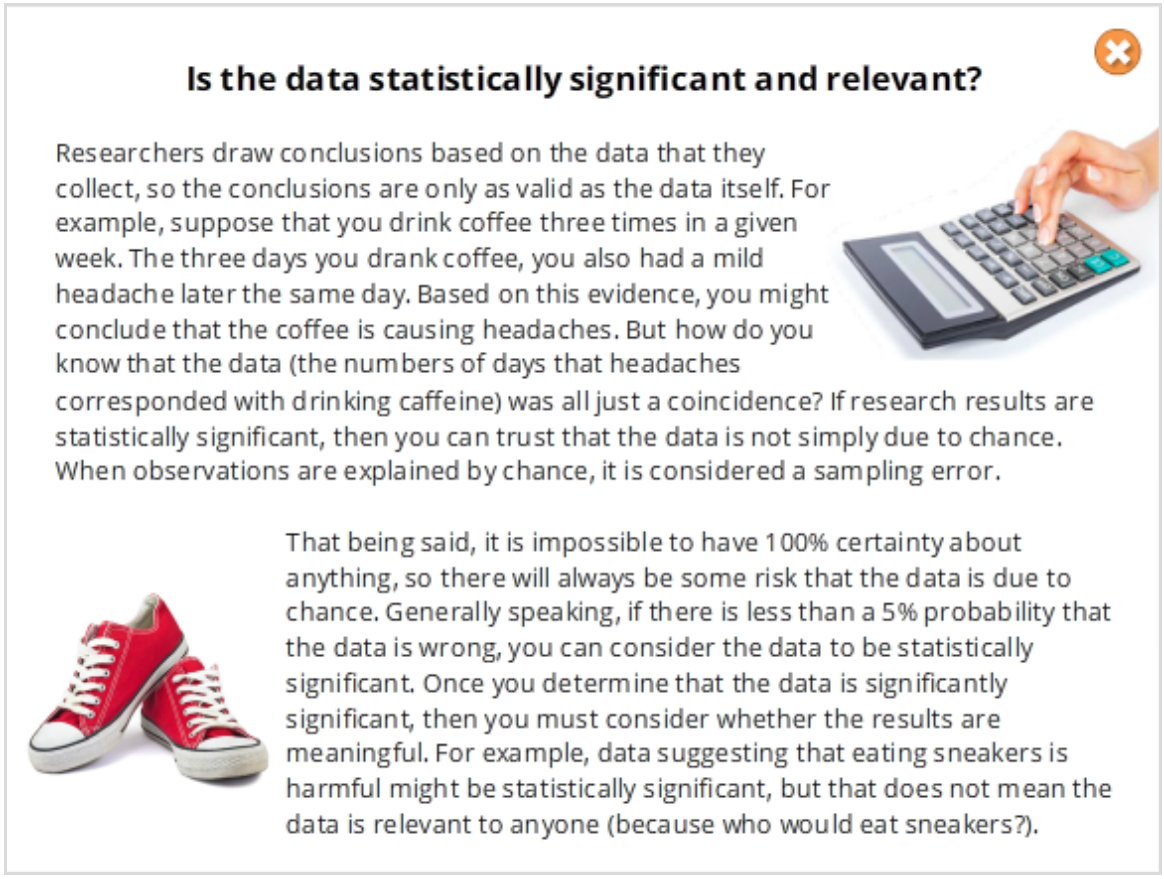
Methodology refers to how the researchers conducted a scientific study. Analyzing the methodology is arguably the most challenging part of evaluating scientific research because you have to think critically about how the study was conducted. Having some background knowledge about the research question addressed in the study may be especially helpful in identifying any problems or flaws in the methodology. Here are just a few examples of flaws in methodology that might make you question the validity of the research results.

- **There was no control group.** Does drinking milk make your bones stronger? To find out, you have to compare people who drink milk with a control group, or people who do not drink milk.
- **The results are not generalizable.** If you want to measure vitamin B_{12} deficiency in the elderly, it would not be helpful to use young adults as test subjects because they absorb vitamin B_{12} differently.
- **The sample size was too small.** You might want to be skeptical of research that only considers twenty participants in the study. However, a study that examines two million participants is probably more reliable. When it comes to sample size, more is better.

Methodology refers to how the researchers conducted a scientific study. Analyzing the methodology is arguably the most challenging part of evaluating scientific research because you have to think critically about how the study was conducted. Having some background knowledge about the research question addressed in the study may be especially helpful in identifying any problems or flaws in the methodology. Here are just a few examples of flaws in methodology that might make you question the validity of the research results.

- **There was no control group.** Does drinking milk make your bones stronger? To find out, you have to compare people who drink milk with a control group, or people who do not drink milk.
- **The results are not generalizable.** If you want to measure vitamin B_{12} deficiency in the elderly, it would not be helpful to use young adults as test subjects because they absorb vitamin B_{12} differently.
- **The sample size was too small.** You might want to be skeptical of research that only considers twenty participants in the study. However, a study that examines two million participants is probably more reliable. When it comes to sample size, more is better.

Is the data statistically significant and relevant?



Researchers draw conclusions based on the data that they collect, so the conclusions are only as valid as the data itself. For example, suppose that you drink coffee three times in a given week. The three days you drank coffee, you also had a mild headache later the same day. Based on this evidence, you might conclude that the coffee is causing headaches. But how do you know that the data (the numbers of days that headaches corresponded with drinking caffeine) was all just a coincidence? If research results are statistically significant, then you can trust that the data is not simply due to chance. When observations are explained by chance, it is considered a sampling error.

That being said, it is impossible to have 100% certainty about anything, so there will always be some risk that the data is due to chance. Generally speaking, if there is less than a 5% probability that the data is wrong, you can consider the data to be statistically significant. Once you determine that the data is significantly significant, then you must consider whether the results are meaningful. For example, data suggesting that eating sneakers is harmful might be statistically significant, but that does not mean the data is relevant to anyone (because who would eat sneakers?).