

Lesson 3 Think Critically

The Danger of Fake News

The idea of the tongue map has been widely shared for a long time. The tongue map illustrates that different tongue sections are exclusively sensitive to different tastes: sweet in the front, salty and sour on the sides, and bitter at the back. However, it was proven incorrect by scientists long ago. The truth is that all tongue regions participate in sensing all tastes.

Where did the tongue map come from? The well-known but inaccurate map has its roots in a 1901 paper by German scientist David P. Hänig. To measure the thresholds for taste perception, Hänig dropped stimuli corresponding to salty, sweet, sour, and bitter tastes in intervals around the edges of the tongue. He found that some tongue areas were slightly more sensitive to a particular taste than others. Hänig presented the results with the tongue map showing the regions with the maximum taste sensation. His map, however, was later misinterpreted to imply that different tongue parts are exclusively responsible for detecting specific tastes. As his paper was written in German and contained technical terms, people might have easily misunderstood the content by looking at only the visual aids.

On the occasion of International Fact-Checking Day, the tongue map is examined as an example of misinterpreted information. Whereas some examples of fake news seem innocent or just an attempt at humor, a lot of fake news is damaging and even dangerous. For example, fake health news is a serious threat to the public since it can lead people to make decisions that are harmful to their well-being. To raise awareness of the danger of fake news, our fact-checking team met with famous psychologist Dr. Rosa Ray and discussed the issue.

Q. What is fake news?

Dr. Ray: Fake news is false information published and promoted as true. The use of "false information" instead has been recommended by experts because "fake news" is associated with the narrow focus of political news stories. False information can be broken down into misinformation and disinformation. Both are false, misleading, or out-of-context information. To distinguish misinformation from disinformation, it is essential to see if the content is meant to harm others. While misinformation is not intended to deceive or harm any person or group, disinformation is intentionally false and designed to cause harm. Disinformation is typically motivated by a wish for political influence, a desire for profit, or an urge to stir chaos and confusion.

Q. Why do people believe false information?

Dr. Ray: There are many reasons, but the crucial one is the way we think. Humans have cognitive biases that make it difficult to accept reality. Confirmation bias is one of them. Confirmation bias is the tendency to search for, interpret, favor, and recall information to support one's own beliefs while ignoring conflicting data. Due to confirmation bias, even if two individuals receive the same information, how they interpret it varies widely.

Q. Could you please give an example of confirmation bias?

Dr. Ray: If you already believe that left-handed people are smarter than right-handers, for instance, you may not feel the need to doublecheck that story or read research that backs up this claim. The story must be true because it confirms your belief. On the other hand, if you come across a story stating that right-handers are smarter, you may dismiss it as fake without verifying its authenticity. Your confirmation bias may convince you the story cannot be true, even if it cites reliable studies and data.

Q. Besides internal factors such as confirmation bias, what external factors make people victims of false information?

Dr. Ray: The echo chamber effect is one such external factor. False information often bounces within echo chambers where people repeatedly hear their own opinions echoed back to themselves, with no one to challenge the accuracy of them. For example, just watching one channel can trap a viewer in an echo chamber. Moreover, due to the algorithms employed in social media, people may be exposed to only content they like, which limits their experience with diverse perspectives. This effect contributes to forming groups of users with similar views and reinforcing shared narratives. Being in an echo chamber can make people more susceptible to unproven rumors and boost the creation and spread of false information.

Q. How can we protect ourselves from false information?

Dr. Ray: First, we must acknowledge that cognitive biases, like confirmation bias, can influence everybody, including ourselves. To reduce confirmation bias, we should actively seek information that contradicts our beliefs instead of only looking for information that reinforces our beliefs. It's also essential to double-check sources of information and verify them before accepting them as trustworthy. Another cognitive trap we should avoid is the echo chamber effect. We should actively expose ourselves to different perspectives and opinions. This can be done by diversifying our information sources such as subscribing to multiple channels. We live in a time when false information is getting more sophisticated, which makes it harder to catch. Therefore, staying informed and being critical of the information we receive is crucial to avoid becoming a victim of false information. With this knowledge at hand, we are better prepared to identify incorrect information and not fall for it.

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Misleading Graphs

Graphs have been used to present information visually and enhance the credibility of data. It is essential for readers to interpret them critically, as they can be misrepresented to support the writers' arguments. Here are two of the most common ways some writers use graphs to mislead.

Cherry-Picking

Misleading graphs can be created by cherry-picking, which selectively presents evidence that supports writers' points of view while ignoring conflicting data. This kind of distortion is used when writers desire specific outcomes from the data. For example, the top graph on the right suggests that the global average temperature has been stable for years, but it is highly misleading as it cherry-picks a 10-year period from 2002 to 2012. When all average temperatures from 1900 to 2020 are considered, a very different view emerges, as shown in the lower graph.

Leaving Out the Baseline

In most cases, the baseline for a graph is zero. Writers, however, may manipulate the perception of the data by setting a different baseline. This misleading approach is frequently used to create an illusion of a significant difference, which can make one group look better than another. For example, the upper graph on the right was from an advertisement made by Company A. It shows the percentage of trucks sold in the last ten years that are still on the road. At first glance, Company A's trucks appear almost twice as reliable as Company C's and ten times more reliable than Company D's. However, a closer look shows that the y-axis scale ranges from 95% to 100%. In contrast, the lower graph accurately shows the insignificant difference between the companies.