

# "Post-Truth" Phenomena: Definitions, Consequences, and Solutions

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## **Executive Summary**

The outbreak of COVID-19 in 2020 has brought the term "infodemia" to the forefront of public discourse. Infodemia refers to an epidemic of false and misleading information that spreads rapidly in the online space. It is a manifestation of the phenomenon known as "post-truth", a term that describes a reduction or negation of the role of facts in public life. In the online world, fake news, rumors, and conspiracy theories have become prevalent, challenging the public, who often lacks the time, motivation and knowledge required to evaluate information, to form a fact-based understanding of the world (Baram-Tsabari & Schejter, 2019). The distribution of false and misleading information is not a new phenomenon; however, the online space has expanded the spreading of post-truth phenomena to unprecedented levels, particularly in politics, international relations, as well as science and health, which this report focuses on.

The 2016 US presidential elections highlighted the widespread use of fake news and the impact that post-truth phenomena can have, including a decrease in public trust in democratic institutions and the media. In the fields of science and health, groups opposing vaccines and denying climate change have formed around post-truth phenomena, affecting both individuals and society. The COVID-19 pandemic has further drawn attention to the issue of the post-truth phenomena and its consequences worldwide.

Three post-truth phenomena have become prominent in the online space: fake news, rumors, and conspiracy theories (Zannettou et al. 2019; Wardle & Derakhshan, 2018). Despite their centrality, there is a lack of clarity regarding the definitions of these terms, making it challenging for stakeholders and policymakers to engage in productive discussions (Mahl et al., 2022). To better understand and address these phenomena, it is necessary to clarify their conceptual basis. Therefore, the first aim of this report is to provide clarity on the concepts. The second aim is to present the main research, benefiting decision-makers at all levels and researchers from related fields. Finally, the third aim is to examine the solutions proposed by social science researchers to assist policy-makers in addressing the widespread post-truth phenomena in the online space. We address post-truth phenomena, their potential consequences, the factors driving their spread, and the characteristics of susceptible audiences. In conclusion, the report offers potential educational solutions to handle the post-truth phenomena prevalent in the online space in the 21st century. The report is organized into five parts:

## **Part One: Different Post-Truth Phenomena**

Misinformation refers to false information that is spread due to a lack of understanding, and not out of malicious intent (Petratos, 2021). On the other hand, disinformation refers to misleading information that is spread with the intention of causing harm (Lazer et al., 2018). The motivation of the content distributor is what distinguishes the two terms.

Three major post-truth phenomena have become prevalent online: fake news, rumors, and conspiracy theories. Although these are different phenomena, many studies often confuse them. To better

understand and address post-truth phenomena, it is crucial to clarify the conceptual core and boundaries between these various phenomena:

**Rumor:** A story or statement that is widely circulated even though the information is not verified or substantiated. A rumor is not necessarily false, and it can be tested and verified (Wang & Song, 2020).

**Fake news:** Disinformation, often sensational, disseminated under the guise of news reporting (Wang, 2020).

**Conspiracy theories:** False narratives about widely accepted events, which claim that powerful actors in society conduct secret malicious plots with the aim of misleading or controlling the general public. Conspiracy theories are characterized by a repeated narrative, alleging secret and malicious plots behind various events or situations (Banas & Miller, 2013).

Post-truth phenomena threaten society in various ways. Rumors, by definition, are not necessarily false and can be tested and verified, hence they pose a relatively low threat compared to the other phenomena. Conspiracy theories pose the greatest threat, because they undermine the legitimacy of accepted social institutions, which contribute to the proper functioning of society, and they disparage epistemological verification processes. Conspiracy theories also claim that the elites (such as the political leadership, the press, or the medical system) have malicious intentions, which undermines public trust in official institutions and experts and may cause instability. Fake news may spread conspiracy theories in the form of news, alongside less threatening disinformation. One of the most prominent damages of fake news is undermining public trust in the media, which is one of the most prominent tools of democracy.

### **Part Two: The Consequences of Post-Truth Phenomena**

The effects of post-truth phenomena can impact both individuals and society. At the individual level, accepting post-truth phenomena as true can result in a lack of trust in government and public institutions, increase racist attitudes and fear of others, and lead to harmful decision-making. This can result, for example, in a reluctance to get vaccinated, fuel anti-Semitism or Islamophobia, or cause the use of dangerous substances with the expectation of a cure. On a societal level, the widespread adoption of post-truth phenomena can weaken the functioning of necessary institutions and cause harm to public health, potentially leading to higher mortality rates. This becomes even more concerning when post-truth phenomena affect the health of vulnerable populations such as children or those with special needs, and thus the erroneous decision-making directly harms other members of society.

### **Part Three: Producers and Distributors of Post-Truth Phenomena Online**

Social media platforms are often primary distributors of post-truth phenomena on the Internet. This can be done by bots, human distributors who share misleading information for personal or financial gain (trolls), or users who do not have malicious intent.

**Disinformation Producers:** Disinformation producers can be official bodies, such as political parties and governments. But disinformation producers can also be informal producers, such as impromptu groups organized around common interests. Human users who benefit from misleading information, which are referred to in the online space as "trolls," create it for personal and financial gain or their amusement (Tucker et al., 2018; Zhang & Ghorbani, 2020).

**Social Media Platforms and Bots:** Social media platforms are often pointed to as the leading distributors of post truth phenomena on the Internet (Lima et al., 2022). Bots are one of the primary tools used to spread disinformation, using software that controls fake accounts to spread misleading information quickly and widely, often for profit or political motives (e.g., anti-vaccination bots used by Russia to undermine social fabric in the US).

**Human Users with Malicious Intentions:** People who are paid by politicians, political parties, and others to spread post-truth phenomena online (Tucker et al., 2018).

**Users Without Malicious Intent:** Most misinformation spread on social media platforms is due to human users who do not have malicious intent. Sharing content on social media is a daily activity, and most users participate in the process without investing much thought. Information is shared out of a desire to inform, entertain, and engage with friends, family, and acquaintances. However, the quick and easy nature of sharing information on these platforms means that misinformation can be spread relatively quickly (Marin, 2021).

#### **Part Four: Consumers of False Information**

Post-truth phenomena can negatively impact decision-making and lead to negative outcomes in education, health, and the economy. The belief in post-truth phenomena is rooted in the psychological need to simplify complex events and regain a sense of control. Studies indicate that the emotional content of those phenomena plays a key role in its spread and acceptance. The way messages are conveyed can also impact their reception, especially if they elicit negative emotions such as fear, anger, or disgust.

People's interpretations of information are shaped by their social and cultural background, as well as their political views. The sources and methods of information consumption are also influenced by one's identity. For example, when conflicting information challenges identity, cognitive biases are activated to reconcile the contradiction, affecting the evaluation of information. These biases arise from the way memory functions and shape new information based on previous attitudes.

This report discusses the following cognitive biases: the availability bias, the confirmation bias, the bandwagon bias, motivated reasoning, and the boomerang effect. The *availability bias* states that people are more likely to believe claims that are easily retrievable from memory, such as those repeated frequently (van der Linden, 2022). *Confirmation bias* leads individuals to pay more attention to information that confirms their beliefs and ignore information that contradicts them, leading to the formation of echo chambers (Britt, 2019). The *bandwagon bias* causes people to judge information based on its popularity, a hallmark of group thinking (Hadlington et al., 2023). *Motivated reasoning* plays a role in the information people consume and how they interpret it, as the need for information that challenges their worldview can be uncomfortable (Wardle & Derakhshan, 2017). The *boomerang effect* occurs when a message intended to influence behavior has the opposite effect, often due to a threat to one's identity (Pavić et al., 2022).

Studies have uncovered numerous demographic characteristics and personal traits that predict a person's tendency to believe in post-truth phenomena. For instance, research shows that older individuals are more likely to embrace post-truth phenomena. Furthermore, studies have also revealed that people with a more extreme political stance are more susceptible to post-truth phenomena, regardless of the subject matter. Education level and critical thinking ability have been consistently found to correlate negatively

with the likelihood of falling for misinformation. Education may equip people with the tools to potentially reduce their susceptibility to post-truth phenomena (van Prooijen, 2017).

### **Part Five: The Significance of Science Education in a Post-Truth World**

Science education scholars and teachers explore how education can address post-truth phenomena and increase preparedness for them. Barzilai and Chinn (2020) present a roadmap featuring four "lenses" for analyzing the challenges posed by post-truth thinking: inability to evaluate information, incorrect ways of knowing, disregard for truth, and disagreement over how to know. Science education has a duty to equip students with the necessary knowledge and strategies to tackle the challenges of post-truth phenomena (Osborne et al., 2022; Allchin, 2023).

**Science Literacy:** Osborne and Pimentel (2022) argue that scientific literacy is critical in addressing science-related misinformation. The US National Academies Report (2016) defines science literacy as encompassing foundational literacy, knowledge of scientific content, understanding of scientific practices, identification and evaluation of scientific expertise, epistemic knowledge, cultural understanding of science, and thinking dispositions such as curiosity and open-mindedness. To effectively evaluate post-truth phenomena related to science, various elements of scientific literacy are necessary, including knowledge of scientific content, understanding of scientific practices, and understanding of scientific expertise (Osborne and Pimentel, 2022). According to Howell & Brossard (2021), science literacy includes two additional essential dimensions: digital literacy and critical thinking skills.

**Digital Literacy:** The capacity to employ information and communication technologies for diverse educational objectives and purposes in daily life in a responsible, efficient, and proper manner, to rapidly adjust to transformations and advancements, and to minimize hazards and prevent vulnerability in the online sphere. Digital literacy can assist individuals in navigating complex and dynamic science issues such as the Coronavirus, climate change, vaccines, and more, which significantly impact society and individuals (Howell and Brossard, 2021).

**Critical thinking:** Critical thinking is the ability to examine and assess information, opinions, or ideas in an informed and independent manner. PISA international tests recognize its importance, emphasizing the need for young people to be critical consumers of scientific knowledge in an era where information sources are abundant but not always reliable (OECD, 2020). With the Internet being a major source of information about science in the 21st century, the ability to critically evaluate information is of utmost importance.

To tackle the widespread prevalence of post-truth phenomena online, publics need to identify and distinguish trustworthy and pertinent information. Different literacies may help an individual to face this challenge. Along with science literacy, digital literacy, and critical thinking, linguistic literacy, mathematical literacy, creative thinking, and information literacy play a crucial role in helping individuals combat post-truth phenomena. This chapter emphasizes the significance of these cognitive skills and explains how they can assist in addressing post-truth issues.

## **Part Six: Proposed solutions**

The literature presents various approaches to address post-truth phenomena online. These include technological solutions, such as AI-powered browser add-ons that can detect disinformation, and regulatory measures, such as government laws and fines for disinformation distributors. These approaches may help curb the spread of post-truth, but they cannot eliminate it. Since users are the leading distributor of misinformation and often without their knowledge, this part of the report focuses on solutions at the individual level, which can play a significant role in combating post-truth phenomena.

### The Vaccine Theory

The vaccine theory is gaining popularity as an approach to combat the post-truth phenomena (Roozenbeek & van der Linden, 2022, Roozenbeek et al., 2022). According to this idea, suggested by McGuire in 1964, people can be psychologically "immunized" against disinformation "attacks" in the same way that people can be immunized against infectious diseases. The vaccine options can be divided into two categories: "debunking" and "prebunking".

**Debunking:** This approach involves correcting misinformation after exposure, which is only marginally effective. Simply labeling post truth phenomena as untrue may not be sufficient, as it leaves gaps in people's understanding of why the information is false and what is true instead.

**Prebunking:** According to this approach a preventive act before a person is exposed to false information, is more effective. The "vaccination" approach involves two parts: motivational threat and refutational pre-emption. Motivational threat entails being alert to an incoming threat, such as through early warning for the possibility of deception. Refutational pre-emption aims to foster critical thinking skills, such as skepticism and the habit of checking sources, to help individuals identify and challenge the post-truth phenomena. These can be applied to specific issues or tactics commonly used in such situations (van der Linden, 2022). An example of prebunking is the game "Bad News," developed by the researcher Sander van der Linden, in which players take on the role of a disinformation producer and are exposed to strategies used to spread disinformation. Studies have shown that playing this game reduces individuals' openness to misinformation, increases their ability to identify it, and reduces their willingness to share it with others.

### Cognitive Skills to Tackle Post-Truth Phenomena: Practical Examples

The skills outlined in Chapter 5 are crucial in addressing challenges posed by post-truth phenomena. In this section, we demonstrate how a wide range of literacies is necessary to provide a comprehensive solution (Dabran & Baram- Tsabari, 2022).

In summary, the online environment contains a mixture of reliable and unreliable information, including fake news, disinformation, and conspiracy theories. It is essential to distinguish between these phenomena, as using vague terminology can affect the assessment of the threat they pose. Accurate use of terms, along with an understanding of the complexity of these phenomena and previous efforts to address them, will aid in developing and testing new initiatives to combat post-truth issues in the online realm.

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