

# Impartiality and cognitive bias in the fact-checking process: an overview

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# Introduction

The EMIF funded project “[Leverage argument technology for impartial fact-checking](#)” brings the Analysis of Competing Hypotheses (ACH) methodology to the fact-checking domain to counter and control for cognitive bias in the fact-checking process. The project will develop a new generation of digital tools based on ACH to empower and improve fact-checking organisations’ decision-making processes. The project begins with an investigation of the meaning of impartiality for news-making and fact-checking. It then provides a qualitative assessment of fact-checkers’ understanding and identification of cognitive bias. The project will then leverage these insights to inform the design of a digital infrastructure to improve fact-checkers’ decision making processes towards impartiality (de-bias fact-checking tool). The usefulness of these tools will be then assessed through feedback provided by the fact-checkers and observing potential changes in public visibility of the enhanced fact-checks combining qualitative and quantitative methodologies. The overall objectives of the project are the following:

1. Investigate the meaning of impartiality for the fact-checking process
2. Identify cognition biases which might affect the fact-checking process
3. Develop digital tools with structured argumentative techniques to de-bias fact-checking
4. Develop digital tools considered trustworthy by fact-checkers
5. Pilot a methodology to assess the impact of impartial fact-checking on public consumption.

In this report, we describe the research carried out to achieve O1 and O2. More specifically, in section 2 we report upon the study of the notion of impartiality for news-making and fact-checking across stakeholders and we summarize the key points that emerged. In section 3 we delve into cognition biases for fact-checking, reporting on corpus and focus groups analysis. On the basis of the results we then propose a set of recommendations to improve the fact-checking process.

# Towards a definition of impartiality in journalism practice

## 1 Context

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The lack of impartiality is increasingly used as an argument to attack the credibility of news media outlets, as well as to undermine the trustworthiness of fact-checkers. The impartiality of news, regardless of the source, in a polarized social media world, is not common ground knowledge, but it constitutes a standpoint that has to be constantly argued for. To evaluate the impartiality of news making and news checking is, however, first necessary to define its meaning when applied to the journalism practice.

This is not an easy task. Across dictionaries and lexical databases, impartiality is defined as a normative principle, without taking into account the domain. The Cambridge English dictionary, for example, defines impartiality as “The **fact** of not **supporting** any of the **sides involved** in an **argument**” (<https://dictionary.cambridge.org/dictionary/english/impartial>). Framenet, a lexical database based on frame semantics, defines the frame of (im)partiality as “This frame has to do with the bias or lack of bias of a Judge making an assessment concerning two or more sides” (<https://framenet.icsi.berkeley.edu/frameIndex>). But how many sides are there in the news-making process? What are the biases that a journalist/fact-checker might encounter?

In the Networked Society, news-making/checking is a process ultimately aimed at gaining /verifying the acceptance of a certain interpretation of a news event. To put it in argumentative terms, it is “a discourse aimed at convincing a reasonable critic of the acceptability of a standpoint by giving reasons that justify the standpoint” (Van Eemeren & Grootendorst, 2004). In other words, news-making/checking are decision making processes that have to be continuously negotiated with a wider audience. But what steps have to be taken to guarantee impartiality in news/making/checking? Is there a standard definition or is it possible to build one? To answer these questions, we investigated how different stakeholders (news media agencies, fact-checking organizations, scholars, and practitioners) conceive and talk about impartiality.

## 2 Methodology: a mixed-methods approach

Social constructionism (Schiappa, 2003) considers the act of defining as that of describing how people collectively develop meanings of social constructs. According to this view, a large-scale analysis of the mentions of the word “impartiality” concerning journalism across stakeholders helps to surface key criteria for its definition. To this goal, we have focused both on news media/fact-checkers’ codes of principles and on scholarly articles. As to the former, we have retrieved and read the codes of principles from 5 organizations, including the BBC, the European Broadcasting Union, Gruppo GEDI, The Guardian and the International Fact-checking Network, to check whether they contain an explicit definition of impartiality.

As to the latter, we have automatically collected through the Scopus API, all the scholarly articles since 1996 filtered through the keywords “impartiality + “news”/ “journal\*”/ “media”, amounting to 532 articles. We zoomed in on the 51 most cited scholarly articles (2 articles had the same number of citations) and manually checked their relevance to avoid potential noise. Leveraging social network analysis, we have mapped them to visualize where the issue of impartiality in news-making has been most discussed and has acquired the most visibility. Finally, we have applied natural language processing techniques (bigrams, word sketches) to understand what other notions are discussed when impartiality is talked about, in line with the well-known principle “you shall know a word by the company it keeps” (Firth, 1957).

This methodology offers insights as to the meaning of impartiality for news making/checking in context: it sheds light on who has engaged in the matter and on the linguistic contexts of use. It might, however, happen that different actors have foregrounded conflicting aspects about impartiality while leaving others in the background due to institutional commitments, research interests and other non-linguistic reasons. The definition of principles such as impartiality calls for an analysis of the “contextual meaning [...] which captures a range of meaning effects that share, as a common denominator, the fact that they are determined in context”(Depraetere, 2014). Drawing from this awareness, we designed a suite of 11 questions and discussed them with 4 practitioners (journalists and fact-checkers) to deep dive and make sense of the results from the quantitative analysis (questionnaire available in Appendix). The discussion has been recorded, transcribed and analysed through discourse analysis (content analysis and argumentative analysis).

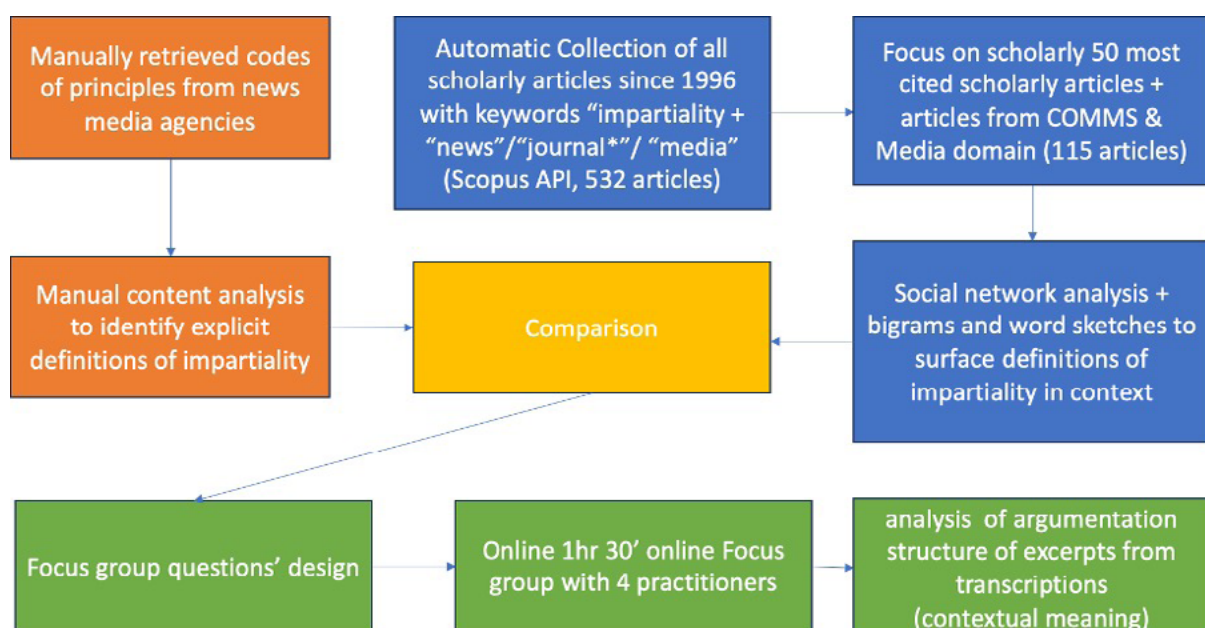


Fig. 1: Overview of the mixed-methods approach

### 3 Key Findings: the meaning of impartiality in context

**Codes of principles:** The analysis of the 5 codes of principles, has shown that 2/5 organizations provide an explicit definition for impartiality, while the others either completely evade the burden of proof, or focus on cognate notions:

Sources	Is impartiality explicitly mentioned?
<a href="#">BBC</a>	YES
<a href="#">European Broadcasting Union (EBU)</a>	YES
<a href="#">Gruppo GEDI</a>	No
<a href="#">The Guardian</a>	No, but FAIRNESS
<a href="#">International Fact-checking Network</a>	No, but FAIRNESS and NON PARTISANSHIP

Table 1: Explicit mentions of impartiality in codes of principles

The EBU features the attribute “impartial and independent” as one of their 4 main editorial values. However, the description of the value does not offer a definition:

*We are completely impartial and independent from political or commercial interests and any other influences and ideologies. Trust underpins our existence.*

Differently, the BBC devotes an entire section of its editorial guidelines to the notion of Impartiality, but it resorts to due impartiality as a guiding notion:

*The BBC is committed to achieving due impartiality in all its output. This commitment is fundamental to our reputation, our values and the trust of our audiences. The term ‘due’ means that the impartiality must be adequate and appropriate to the output, taking account of the subject and nature of the content, the likely audience expectation and any signposting that may influence that expectation.*

The use of the modal adjective ‘due’ highlights the context-bound nature of the concept which entails that guidelines for its achievement constitute best practices rather than black-and-white behaviors. Interestingly, both codes of principle frame impartiality as a *conditio sine qua non* to achieve and maintain audiences’ trust.

**Scholarly articles:** The distribution of the top 51/532 cited scholarly articles across disciplinary areas and locations are visualized in the interactive map News impartiality for scholars, publicly available at: <https://public.flourish.studio/visualisation/13613070/>

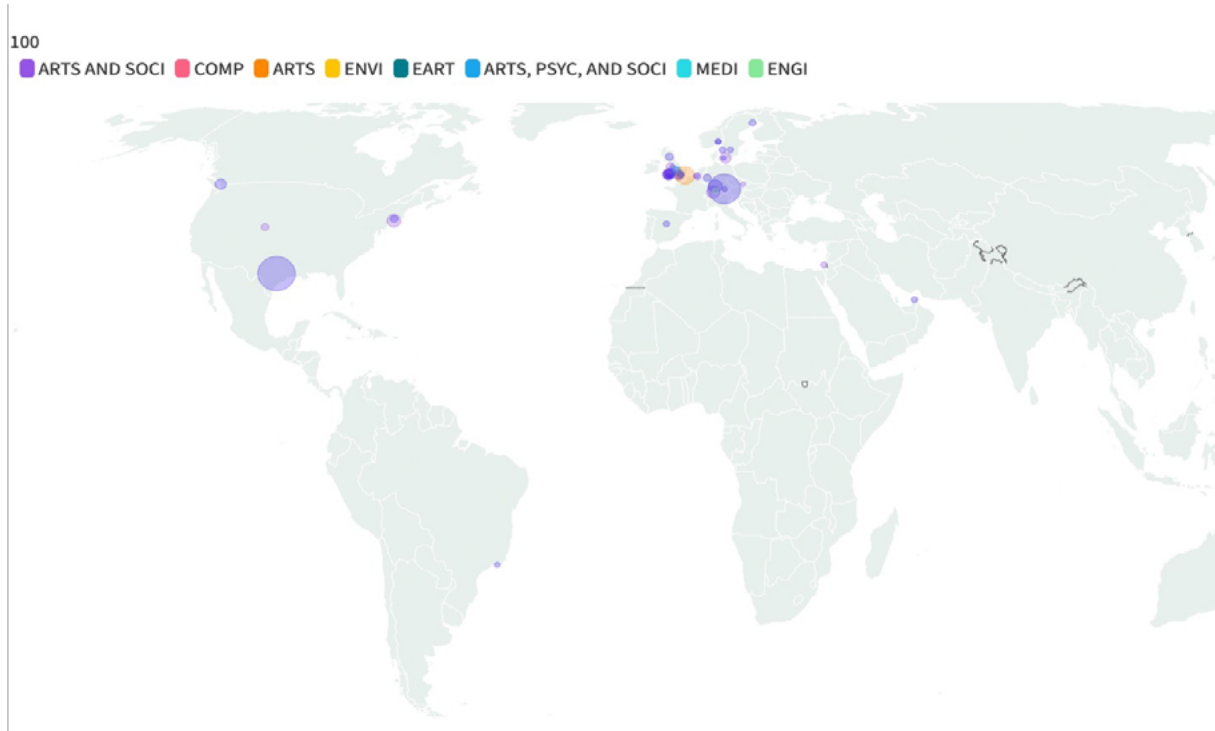


Fig. 2: Snapshot of the News impartiality for scholars' map

The 51 most influential articles were written by a total of 88 authors (total frequency, not considered if the same author wrote more than one article), affiliated with 30 different countries. The countries hosting authors of the most influential papers are the United Kingdom (37.50%), the United States (10.23%) and Germany (6.82%). The 22 most cited works have been written by 33 UK-affiliated authors, out of which 12 are based at the University of Cardiff. The role played by the UK as an epicentre of the scholarly reflection around impartiality in journalism is likely to be related to the BBC: Prof. Stephen Cushion, who features as an author in 8 out of the 12 Cardiff-based papers, has been PI on three BBC Trust Impartiality Reviews and Co-I on one. Furthermore, he was commissioned by Ofcom in 2019 to carry out a [large study of the BBC's range and depth of news and current affairs](#).

Turning to the lexicon analysis, we have compared the most frequent bigrams, pairs of adjacent words, containing 'impartiality' in the Communication and Media subcorpus (115 articles) and in the top 51 cited articles subcorpus:

**COMMS & Media subcorpus**

impartiality objectivity

balance impartiality

due impartiality

objectivity impartiality

accuracy impartiality

impartiality fairness

independence impartiality

**TOP 50 cited subcorpus**

impartiality objectivity

impartiality fairness

balance impartiality

objectivity impartiality

value impartiality

notion impartiality

impartiality bbc

impartiality applied	impartiality balance
impartiality empathy	accuracy impartiality
impartiality balance	impartiality balance

Table 2: Top 10 bigrams including ‘impartiality’

The results show that *objectivity*, *fairness*, *balance* and *accuracy* are co-occurring tokens in both subcorpora, suggesting that they might constitute neighbour notions used to define (or anyway to discuss) *impartiality*. The notions of *due impartiality* and *independence*, echoed in the codes of principles, are prominent exclusively in the *Comms and Media* subcorpus. An equivalent situation is achieved looking at wordsketches, word’s collocates with other words in its surroundings according to grammatical relations, of ‘impartiality’ with nouns and modifiers using Sketch Engine.

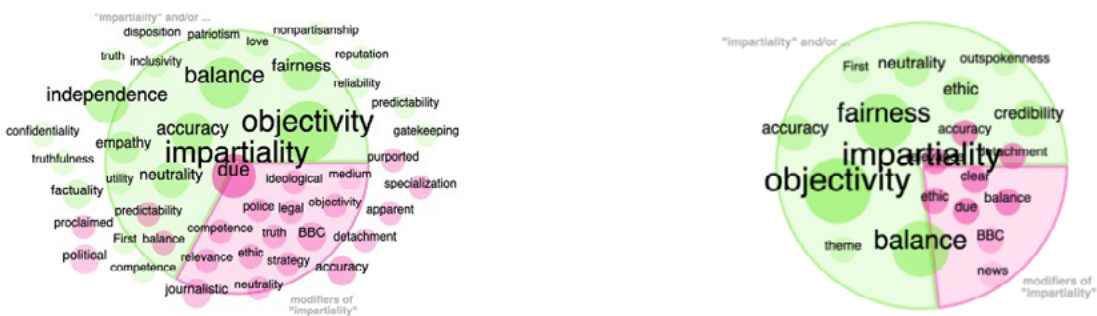


Fig. 3: Word-sketches “impartiality” with nouns and modifiers

Furthermore, the central role played by the BBC as a privileged actor in the discussion around impartiality is confirmed, next to the presence of terms semantically close to the notion of “trust” (*reliability*, *credibility*, *reputation*).

A thorough analysis of the body of articles from the *Comms and Media* subcorpus with at least 50 citations, reveals that three articles only contain an explicit definition for impartiality:

- Lasorsa, Lewins & Holyon (2012): “Non partisanship and Impartiality. To determine the extent to which journalists who microblog express personal opinions, each tweet was coded for its primary purpose, whether to convey information, seek information, or convey opinion.” --- Impartiality as a measure of non-partisanship
- Urban & Schweiger (2014): “Impartiality. Different opinions are covered in equal depth. Everybody who has something to say on the events is covered in equal depth. The article is neutrally written, meaning the journalist does not give his own valuations of the event.” --- impartiality as a measure of objectivity, neutrality and balance
- Hermida (2009): “Same rules apply as on air – impartiality is the watchword. Which means bloggers have to tread a careful line – they can be engaging and judgmental, but must not take sides.” --- impartiality as a measure of non-partisanship

**Key points:** To summarize, the analysis of the meaning of impartiality in context reveals a scarcity of explicit definitions of impartiality for the news-making/checking context both in codes of principles and



in scholarly articles. When available, the definitions revolve around independence, balance and non-partisanship, without drawing a clear line between these notions. A cluster of other notions --- objectivity, fairness and accuracy --- are frequently mentioned in co-occurrence with impartiality, but their relevance to guarantee an impartial process is underspecified. Finally, the BBC constitutes a major actor in both institutional and scholarly discussion around impartiality. The implications of their view of impartiality as due impartiality raise questions as to the feasibility of an absolute test for impartiality and call for further investigations outside the BBC remit.

## 4 Key Findings: the contextual meaning of impartiality

To better understand whether and how the principle of impartiality impacts practitioners in their daily work, we have organized a focus group with 4 journalists/fact-checkers, mixed as to age, country and the host institution. The focus group has been carried out on Zoom for 1h and 30' during which participants were asked to collectively answer a suite of 11 questions (see Appendix) pointing both to their own and their organizations' views around impartiality. From the content and argumentative analysis of the transcriptions, 6 main standpoints supported by a variety of arguments have been identified:

- **Impartiality is a topical issue across organizations:** all participants agreed that *impartiality* is of primary importance to their organizations for different reasons. For charities, it is a controversial issue since lack of impartiality is used as an argument to attack them because voicing problems that counter, for example, legislations: “So it’s something we’re aware of in terms of when we’re supporting charities that campaign that criticising current legislation could lead them to be, you know, it could lead to an attack on them as an organisation”. For national news media outlets, such as the BBC, impartiality is a core editorial principle that the organization must abide by: “[...] it’s a legal obligation and it’s also how can I put it I think it’s at the heart of our culture. I’m not sure what it’s like in other organizations, but the question of you know, are we being impartial is something that will come up pretty much every day”. For fact-checking organizations it is a regulatory principle guiding what pieces of disinformation are selected.
- **Impartiality is not equally defined across organizations:** from the participants’ answers it emerged that fact-checking organizations view *impartiality* as a principle which guides the process of verification of information that needs to be “in a balanced and unbiased manner” and seek to “maintain whatever level of objectivity and distance from the topic that you can have”. The BBC, in view of the complexity of the concept, calls for “due impartiality”, which means that adherence to fact and “keeping an open mind” are differently weighted depending not only on the situation, but also on the type of journalism at stake: “Whereas a campaign, a journalist group, or a charity, or newspaper or guardian, you know, any kind of other broadcaster doesn’t necessarily have to do everything, something for everybody in the UK, but we do because everybody pays for it”. As clarified by one of the participants, “with charities we’re more probably the correct term is political neutrality rather than impartiality because no charity is impartial about its cause”.
- **Objectivity is not a useful term to define impartiality:** participants have identified a radical difference between *objectivity*, which “implies that there is one actual truth out there” and impartiality which is more “An attempt to try and establish what the truth is”. They have provided as an example the lack of objective truth about the fact that wealth inequality is unjust, explaining that there are no factual truths about ethics and morals. They propose to conceive impartiality as a process or as an ideal and a “standard eye” that shall guide the process.

- **Independence, partisanship and impartiality are non-overlapping topics:** *independence* has been conceived by the participants as key to achieving impartiality, but difficult to define out of context. However, they agreed that being partisan (having a political stance) does not entail not being independent. According to one of the participants, for example, Corbin supporters during Corbin years were critical of *The Guardian* and *The New Statement* since they thought they were not partisan enough.
- **Being perceived by the audience as impartial is paramount:** all the participants agreed that being considered impartial is critical to winning readers' trust and not being dismissed as disseminators of disinformation rather than fact-checkers. In the case of charities, audiences include members of those minorities whose stories are voices and who, thus, have to trust the organization to tell their experiences.
- **The advent of digitalization and AI poses new challenges for impartiality:** when left free to add further information relevant to the discussion, all the participants pointed to struggles and challenges imposed by AI and digital media. More specifically, they argued that i) the echo-chambers created by social media make it difficult for the audience to read the news that do not align with their views ii) lies are circulating much faster than beforehand due to advancements in AI (deepfakes) and the lack of a gatekeeping process iii) audiences do not read print media but privilege images and videos with multimodal content.
- **Key points:** to summarize, the analysis of the *contextual meaning of impartiality* confirms that a common definition of impartiality across organizations is missing, opening doors for *due impartiality* as a more realistic notion. This is not only due to the existence of different types of news, but also to the presence of various types of journalistic practices, encompassing, for example, campaign journalism, fact-checking, broadcasting and investigative journalism. Furthermore, (due) impartiality has to be conceived as an ideal to which journalists shall tend, through approximations which depend on context. As such, guidelines towards impartiality shall focus on the process of news-making/checking rather than its outcome. While notions such as *independence, non-partisanship and objectivity* are relevant for processes to be impartial, they represent facets which do not exhaust the meaning of *impartiality*. We thus propose to investigate what biases might hinder fact-checking as a decision-making process.

# Mapping cognitive biases in the fact-checking process

## 1 Context

Cognitive biases are systematic patterns of thinking or decision-making errors that humans tend to exhibit in various situations. These biases result from mental shortcuts and heuristics that our brains employ to process information and make judgments quickly. While these cognitive shortcuts can be helpful in many cases, they can also lead to errors and deviations from rational and objective decision-making.

Cognitive biases can affect various aspects of our lives, including how we perceive information, interpret events, and make choices. These biases can occur in diverse settings, from everyday interactions to complex decision-making processes in business, politics, and other fields. The fact-checking process involves a series of decision-making processes. The high volume and continuous stream of information – fueled by the real-time updates on social media platforms - contributes to the generation of a constant flow of news. A preliminary step for fact-checkers is to decide what news are candidates to convey mis- and dis-information and which ones among those shall be prioritized. The actual process of fact-checking then entails a series of further decisions to identify best sources to check the accuracy of the news (e.g. where to look for evidence? How to behave in case of conflicting information?), compare them with what reported in the news and assign a rating. Each of these steps can be affected by cognition biases triggered by external factors such as time constraints, lack of knowledge etc. However, their identification is not straightforward: since the introduction of the concept of cognitive biases in 1972 (Kahneman & Tversky, 1972), there has been a steady increase in interest in their study, leading to the proliferation of types of cognitive biases. A recent endeavor, the Cognitive Bias Codex (Benson & Manoogian, 2017), aims to present a well-structured taxonomy of the cognitive biases encountered in the literature. The codex organizes the biases on the basis of potential triggers: too much information; not enough meaning; needing to act fast; what to remember.

According to the codex, more than 180 cognitive biases have been identified during the years.

But which ones are relevant in the fact-checking process? We answered this question using a mixed-method approach.

## 2 Method

We adopted a three-tiered methodology. First, we focused on biases potentially associated with the process of information seeking and retrieval (ISR) (Ingwersen & Järvelin, 2005). We assumed that looking for evidence to verify the truth value of the news is a form of ISR. We took as a benchmark Azzopardi’s review (2021). We then qualitatively assessed what ISR biases are relevant for the fact-checking process. To ensure comprehensiveness, we then scoped scholarly literature to identify what cognitive biases has so far been associated to the process of news-making and fact-checking. To this goal, we automatically retrieved through the Scopus API all the scientific papers published since 1996 that explicitly mentioned the word *bias* associated with *journali\** OR news. We then extracted from the retrieved 3407 abstracts all bigrams, sequences of adjusted tokens, containing the term “bias”. We conflated those that count as cognitive biases with those emerging from ISR, obtaining a “bias cheatsheet”. To bridge the divide between theory and real-world implementation, we carried out a focus group with practitioners to critically evaluate our taxonomy. The focus group encompassed a simulation of the fact-checking process and a post hoc discussion. To keep track of their decision-making process we relied upon the “think aloud” method (Eccles & Aarsal, 2017).

## 3 Cognitive bias for fact-checking: a scholarly perspective

**Biases and information retrieval:** A recent review (Azzopardi, 2021) suggests that 14 main biases may affect Information Seeking and Retrieval (ISR) These biases are reported in Table 3 and the ones included in our final list are defined in Fig. 4.

Ambiguity effect	Confirmation bias	Framing Effects	Priming Effects
Anchoring Bias	Decoy Effects	Less is more effect	Reinforcement effect
Availability bias	Dunning-Kruger Effect	Order effects	
Bandwagon effect	Exposure Effects	Peak End Rule	

Table 3: Cognitive biases connected to ISR.

We excluded from this list those biases that were not applicable to fact-checking at a professional level:

- **Dunning-Kruger and Decoy effects:** they do not apply to people who are competent in a task, while our audience are professional fact-checkers.

- **Peak end rule:** it refers to how experiences are recalled. It describes the tendency to weight more those events that are charged as positive or negative according to people’s experiences. We excluded this since the role played by the journalists’ personal experience would apply to a minority of news.
- **Order effects:** its states that the order in which the information is presented affects their interpretation. We did not consider it since redundant with anchoring bias.

**Cognitive biases and journalism:** Our analysis of the 3407 abstracts retrieved from search in the literature showed that 16 biases were mentioned as linked to the journalism practice:

Anchoring Bias	Framing Effects	Intergroup bias	Racial bias
Association bias	Gender bias	Media bias	Selection bias
Availability bias	Ideological bias	Partisan bias	Source bias
Confirmation bias	Ingroup bias	Political bias	Stereotyping

*Table 4: Cognitive biases in news-making and checking according to scholarly literature*

**Our examination revealed that the emphasis was on journalism practices in a general sense, rather than specifically targeting the fact-checking process. By comparing the Cognitive Biases codex and this list, it resulted that most of the biases listed (gender bias, ideological bias, racial bias, ingroup/intergroup bias, media bias, source bias, ideological bias, partisan bias, political bias) could not be considered as cognitive biases.** We then decided to add only those biases which may have a direct impact on the fact-checking process. We thus added source bias and selection bias, since they both affect the use of certain sources rather than others. This may lead to partial views or even partisanship. We also excluded stereotyping (i.e., the attribution of particular qualities by an individual to a member of some social out group). We reflected on the impact that it may have on the fact-checking process, and we concluded that it would be difficult to build guidelines and procedure to avoid it, since highly dependent on individual culture/state of mind.

## 4 Key findings – cognitive bias cheatsheet

The final list of biases is depicted in Fig. 4.

<p><b>Availability bias</b></p> <p>Tendency to overestimate the likelihood of an answer or stance based on how easily it can be retrieved and recalled.</p> <p><i>e.g., A piece of info appears on your news feed and it is shared on your social media walls, making you assume it is accurate.</i></p>	<p><b>Confirmation bias</b></p> <p>Tendency to prefer confirmatory information and to discount information that does not conform to existing beliefs</p> <p><i>e.g., You trust evidence that points to despicable behavior of a politician belonging to a party you would never vote for.</i></p>	<p><b>Less-is-more effect</b></p> <p>When many options are presented, people find it harder to make comparisons, and often will not make any decisions.</p> <p><i>e.g., You feel overwhelmed by the amount of info about ChatGPT and you decide to avoid reading any news about it.</i></p>	
<p><b>Ambiguity effect</b></p> <p>Tendency to avoid options in which there is high uncertainty in the outcome, even if they are favourable.</p> <p><i>e.g., You do not believe that an earthquake is gonna happen since scientific evidence cannot predict it with certainty higher than 60%.</i></p>	<p><b>COGNITIVE BIASES</b></p>	<p><b>Reinforcement effect</b></p> <p>Tendency to develop a positive attitude towards a stimulus if it is seen multiple times</p> <p><i>e.g., You believe that a celebrity is dead because the search results page shows many results purporting it.</i></p>	
<p><b>Anchoring bias</b></p> <p>Tendency to focus too much on the first piece of information learnt, or observed, even if that information is not relevant or correct.</p> <p><i>e.g., The first entry emerging from a Google search is deemed more important than the entries which follow, regardless their relevance.</i></p>		<p><b>Selection bias</b></p> <p>How events are either selected into the media record or left unreported.</p> <p><i>e.g., Out of 10 polls, the results of three are reported and the other one are neglected.</i></p>	
<p><b>Bandwagon effect</b></p> <p>Tendency to take on a similar opinion or point of view because other people voice that opinion or point of view.</p> <p><i>e.g. A tweet went viral; thus it must convey true content.</i></p>		<p><b>Framing</b></p> <p>Tendency to make different decisions given the same information because of how the information has been presented.</p> <p><i>e.g., The investments of a company in net-carbon are presented as green-washing without touching upon positive outcomes</i></p>	<p><b>Source bias</b></p> <p>The selection of who is to speak for or about an event, how and where they are filmed, and what they are asked to and allowed to say</p> <p><i>e.g., You rely solely on news from the New York Times to report on American polls results.</i></p>

Fig. 4: cognitive biases – final list

## 5 Focus group

We organized a focus group with six practitioners having experience in news-making and fact-checking. Participants were recruited through the research team network. To maximize the variety in perspectives and give voice to different experiences, participants differed in their affiliation, age, gender, and years of work in the field. The focus group was conducted face-to-face and lasted 2 hours. The session was audio-recorded and then transcribed.

The activity was divided into two parts. During the first part we asked our participants to conduct a fact-checking simulation, thinking aloud and recording their thoughts. The second part was dedicated to a joint conversation about the activity performed and the biases we had identified. The fact-checking simulation was divided into 3 phases: news selection, evidence retrieval, and fact-check report writing.

- News selection.** During this phase, we provided our participants with eight fictive news pieces (Appendix) about Artificial Intelligence (AI) or Climate Change. We designed them to represent the (mis)information ecosystem: we kept them varied as to source, presence of multimodal features (4/8 contained images) and truth values (W true news – N = 2; most frequent tactics of misinformation drawing from Musi et al. 2022l, X – N = 4; fake news – N = 2). After having let them consider all the news, we asked them to choose one of them to fact-check and provide three reasons underlying their selection.
- Evidence retrieval.** This phase was dedicated to the information seeking and retrieval. We asked our participants to behave as they were in their day-to-day work and find information to fact-check the news. We asked them to keep track of their queries (e.g. keywords used in a browser) and of the sources they were looking at, commenting aloud about their decisions.

- **Fact-check report writing.** Finally, we asked our participants to provide a score on the fakeness of the news on a 5-point Likert scale and to write a fact-check report composed by three paragraphs to support their rating.

During all the phases, we provided our participants with specific time constraints to trigger prioritization strategies. In addition, we asked the participants to think out loud by expressing their thoughts and commenting on their choices while recording them.

After the simulation we asked them the following question: “What are the main differences and similarities between how you perform the activity today and how you would have done it in your day-to-day life?”

Finally, we asked them to read our bias cheatsheet and point to the two biases that they considered most relevant for journalism practices.

## 6 Key findings – Selection of the news

**Selection of the news:** we did not observe any preference for news on the basis of truth values, levels of popularity, or digital sources, with the exception of news “published” on Twitter that no participant selected. One participant explained the rationale as follows: “**The first one is a very short tweet.** So, I think that it’s very difficult to find sources that may be useful to debunk this”. The results of our thematic analysis suggested that participants chose the news to debunk according to three main factors: news aspects, procedural aspects, and their interest in the topic:

- **News aspects.** These motivations were connected to features of the news. For instance, our participants considered whether the news was timely (e.g., P03: [I chose this news because] **the image is current**) and how the claim was formulated (e.g., P01: [I chose this news because] **the claim is pretty nuanced**).
- **Procedural aspects.** Participants considered practical aspects related to the fact-checking task, such as availability and the number of facts and sources to be checked (e.g., P07: [I chose this news because] **I think I have more sources to check**), and their skills (e.g., P06: [I’m choosing this news because] **it’s something I’m more confident with** because that’s the kind of news that we usually cover in the newspaper). In this regard, the presence of images made a difference. One of the news was characterized by being an image with just a caption as text. One participant explained they did not choose this news item due to their lack of skills in checking images. However, the same participant selected a news piece that included text and images.
- **Interest.** Most participants (4/6) mentioned their personal interest in the topic as one of the three main reasons why they chose a piece of specific news (e.g., P01: [I’m choosing this news] **because I’m quite interested in climate change**).

**Evidence retrieval: during this phase three main patterns emerged:**

- **Source selection.** When the news didn’t explicitly mention sources underpinning their claims, participants debunked the facts reported by relying on other news (e.g., by using Google News as a search engine), rather than institutional websites, scholarly papers etc. The selected news

were sources from official media outlets: even when the news were “published” on social media, participants did not check other news on social media supporting a similar claim.

- **Multimodality.** When the news presented both text and images, participants tended to prioritize the textual content during the fact-check. The images included in the news were either considered after debunking the information in the text or not considered at all.

**Risks in practice and bias intervention.** Through the activity, it was possible to identify some potential weaknesses in the fact-checking practice that could lead to biased behaviors. Some instances were related to **confirmation bias**, while others to **reinforcement effect and availability bias**.

- **Source bias:** this bias can lead to cherry pick sources and ignore other relevant ones, influencing the decisions made during the process. For example, one news we presented was related to wildfires in Siberia. One of the possible sources to check was a Russian newspaper. One participant avoided it even if they **“consider local news an important source”**. This decision was made since they **“feared manipulation of the news due to lack of freedom in Russia”**. Nonetheless, that specific news media agency is notorious for not supporting the current political strategy (its headquarters moved to Europe, and its website was banned from Russia).
- **Reinforcement effect and availability bias:** irrelevant information repeatedly retrieved during the search (reinforcement effect) and the easiness with which they were retrieved (availability bias) could change the perception of the news truth value. For instance, one participant who was debunking a news about artists’ strikes against AI, decided to google the hashtag **“#SupportArtist”** to read other news on the topic. They concluded that the news must be false since the phrase was automatically corrected into **“SupportArrest”** in the browser (**“I realise it is a fake news because after typing the the keywords mentioned in the news six, every time artist, the word is changed in arrests”**), and since it happened many times (**“So, the first time I thought it was my mistake. But then, after two, three, four times, I realised that all are distorted”**). These irrelevant pieces of information made them change their mind: at first, the participant thought the news was true after having retrieved a BBC article on the topic (**“I realized the movement exists”**).

**Risks for biases in practice vs. fact-checkers’ perceptions.** The biases intervening during the practice partially overlapped with the ones pointed out from our participants during the final discussion, when reinforcement effect and availability biases were pointed out. In addition, anchoring bias (N = 3), confirmation bias (N = 2), and ambiguity effect (N = 2) were flagged among those most “risky”.

### Main recommendations, limits, and future work

Drawing from our results, we suggest five main recommendations:



Finding	Reality check	Recommendation
Short contents (e.g., tweets) are sometimes ignored because of their length	Misinformation and disinformation are frequently spread through short social media posts	News selection shall be balanced in terms of sources and shall take into account popularity
Popularity metrics are not taken into account when selecting the news to fact-check	Popular posts reach a wider audience potentially spreading misinformation faster compared to other posts	Multimodal aspects shall be given the same importance as text while fact-checking
Images in the news are neglected in debunking	Misleading images constitute an effective misinformation strategy	Various types of trustworthy sources shall be considered other than news (e.g., official reports, scholarly articles)
Official news media outlets are more likely to be used when retrieving pieces of evidence	Official News media outlets are considered as information gate-keepers but they might be subject to misinformation	Include cognition biases in the debate around impartiality

Table 5. Recommendations to enhance the fact-checking process

### Limits and future work.

Despite the insights that our work brought, some limitations exist. During our study, we had the opportunity to discuss with a group of six practitioners and gain insights from their experiences and perspectives. Nonetheless, repeating the experience with larger groups of experts will enrich our findings and shed light on aspects that did not emerge during this first study. For this reason, we are planning to run other rounds of focus groups, employing the same methodology and procedure described in this report.

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# Appendix

## A1 Impartiality - focus group questions

1. How is the notion of impartiality included among the codes of principle of your organization?
2. How is impartiality defined by your organisation?
3. How is it distinguished from the notion of “due impartiality”?
4. How would you define:
  - Impartiality
  - Non-partisanship
  - Independence
  - Objectivity
    - How do you see these concepts overlap?
5. How, if at all, do you discuss impartiality in your day-to-day work?
6. Can you provide an example of how you made a decision about impartially?
7. The BBC has advocated for a “FROM SEESAW TO WAGON WHEEL” change to safeguard impartiality in the 21st century.
  - What do you understand by these metaphors of the “see-saw” and the “wagon wheel”?
  - How much does your organization care about being seen impartial by the audience?
8. In your opinion, does diversity of sources entail diversity of views? Is diversity of sources a form of impartiality?
9. Imagine you need to check a news such as “53% of parents say climate change affects their decision to have more kids”.
  - What aspects (voices reported, type of evidence, suggested inferences) would you focus on to evaluate the impartiality of the news?
10. Consider the news “Asylum-seekers flown to California say they were ‘deceived’ by people promising them jobs and housing”.
  - What aspects (voices reported, type of evidence, suggested inferences) would you focus on to evaluate the impartiality of the news?
11. Is there anything you did not have the chance to say that you would like to add?

## A2 Cognitive biases

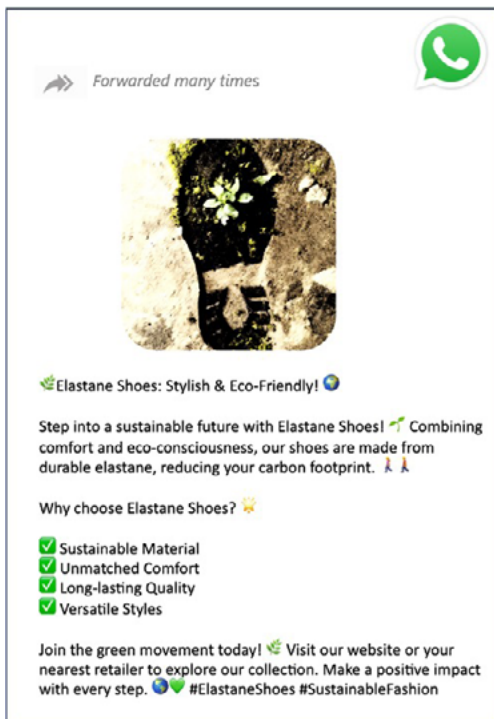
### A2.1 Focus group questions

1. What are the main differences and similarities between how you perform the activity today and how you would have done it in your day-to-day life?
2. Overall, this project is looking at cognitive bias, Please, go through this list of cognitive biases. In your opinion which one or two might have the most influence on the news making/fact-checking process activity?

### A2.2 News



News 1






News 2

 **Breaking News!** Dr. Geoffrey Hinton resigns from Google. He urged stepping back from AI experiments but faced refusal: "AI is becoming super intelligent. It will take over control from us" 🤖🌍 Time to reflect on the future. [#AI](#) [#StopTheMadness](#) [#GlobalSecurity](#)

528 234 4.868 315.665

News 3

 **Environment Alert: Let's help Siberia!** 🌲🔥

Hold up, folks! Siberia, once a breathtaking paradise, risks to become a desert! In just three years, more than 10 million acres have gone up in smoke. Climate change ain't playing games—it's here, wreaking havoc on our planet.


We gotta take action, y'all:

- 🔥 Be the Change: Embrace sustainable practices, and let our leaders know it's time for action!
- 🔥 Spread the Word: Share this far and wide, let's raise awareness and tackle climate change head-on.
- 👉 Stand Together: Support organizations fighting wildfires and protecting precious ecosystems.

Our planet's future is at stake. Will we let Siberia's inferno be a wake-up call, or sit back and watch the world burn? It's up to us to make a difference! 🌍🔥❤️  
#SiberiaEnvironmentAlert #ClimateCrisis #SaveOurPlanet

120 68 comments 134 shares

News 4

 **529 Climate Change: Challenging the Assumptions**

In a surprising twist, a recent poll published by the Office of National Statistics website reveals that nearly half of adults in the UK are not concerned about climate change. But what if they are right? Let's see what science says.



NASA reports that increased levels of carbon dioxide in the air actually benefit plants by making them more efficient at absorbing the gas. This leads to reduced water loss during the process, ultimately promoting better plant growth. As a result, crop production has been on the rise, challenging assumptions about the negative impact of climate change on agriculture.


Furthermore, the Environmental Protection Agency (EPA) highlights a noteworthy trend: unusually cold winter temperatures, particularly very cold nights, have become less common in the contiguous 48 states in recent decades. Interestingly, as winter temperatures increase, extreme cold waves are expected to decrease, potentially reducing the number of direct cold-related deaths. This shift in climate dynamics challenges conventional notions regarding the severity of winter weather conditions.

Additionally, experts concur that the receding Arctic ice has opened up the Northwest Passage for longer periods. This development presents novel opportunities for shipping commerce, as travel distances are reduced and lucrative trade routes are unlocked. The changing Arctic landscape unveils potential benefits that disrupt the narrative of environmental harm caused by climate change.

194 Comments Award Share Save ...

News 5

 **Artists Unite Against AI** 🗣️🚫

Artists are standing across continents against the rising influence of Artificial Intelligence (AI) in creative domains. 🎨🗣️

Join the movement and spread the word! Let's stand with artists, preserve the integrity of their work, and ensure that their rights as creators are safeguarded.

Remember, supporting artists is not just about buying their artwork, but also about advocating for their rights and protecting their work in our increasingly digital world. Together, we can ensure that AI remains a tool to enhance, not replace, the artistic journey. 🙌

Keep the flame of human creativity burning bright! 🎨🔥🌈  
#SupportArtists #RespectCreativity #HumanTouchInArt #ArtistsAgainstAI

500 127 comments 201 shares

News 6

## WIRED

### The Paradox of Trust: Revealing the Impact of Information in AI Evaluation

A [study](#) published in the last volume of the scientific journal "International Journal of Human-Computer Interaction" has shed light on an intriguing paradox in the evaluation of artificial intelligence (AI).

The authors, presenting the Desert Survival Problem (DSP) as an experimental scenario, examined participants' trust in an AI decision-supporting device in a life-or-death situation. Participants, assuming the role of a survivor stranded in the desert, had to rank 15 items based on their importance for survival. The results indicated that providing no information about the AI's performance led users to trust the systems more. Participants displayed higher levels of trust in the AI's suggestions when they were unaware of its limitations.

In this brief editorial, we use these results as a starting point to discuss the progress of AI and its implications.

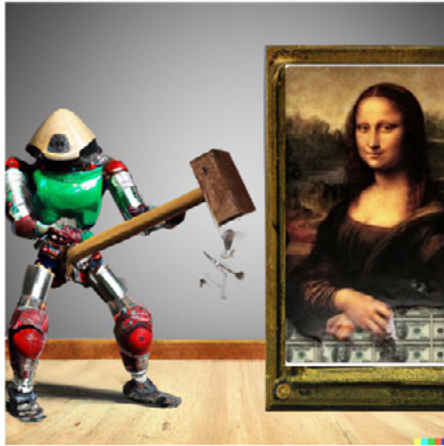
The advent of ChatGPT3 and other AI technologies has undeniably ushered artificial intelligence into our daily lives. Its potential impact is awe-inspiring. The hype surrounding AI has sparked a surge in investments with organizations racing to capitalize on its transformative capabilities - Microsoft alone announced an investment in OpenAI worthy [\\$10 billion](#) at the beginning of this year. AI has been deemed as [magic](#), capturing imaginations and captivating industries. However, beneath the surface of this AI revolution lies a critical challenge: transparency.

While discussions abound on AI's awareness and intelligence, algorithms powering AI systems remain opaque, hidden within black boxes. This lack of transparency raises pressing questions about accountability, ethics, and the potential biases embedded within these algorithms.

Recent statistics suggest the presence of a paradoxical phenomenon - as AI algorithms remain shrouded in mystery, [people's trust in them is growing](#). Consequently, a crucial question arises: can a disclaimer stating that the AI may produce [inaccurate information](#) suffice to increase users' awareness of the implications?

News 7

## Instagram



**Aigadesign:** GAI is destroying human creativity. Stop it!

News 8