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The anthropomorphic pursuit of AI-generated journalistic texts: limits to expressing subjectivity

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Many newsrooms around the world are increasingly turning to artificial intelligence (AI) algorithms to generate journalistic content. Often, these machine-generated texts are distributed without being clearly identified as synthetic or hybrid. Since the launch of ChatGPT in late 2022, the tool's extraordinary ability to mimic human language has been widely celebrated. Given that subjectivity is an integral part of human language, this study examines how different texts generated using AI tools are imbued with subjective features in order to anthropomorphize their linguistic content. Our aim is to gain insight into the ways in which these texts express subjectivity in order to appear anthropomorphic, as well as the limits of this expression and its implications for communication. To this end, a corpus of AI-generated journalistic texts published in various media, as well as texts created using AI tools such as ChatGPT and Gemini, is analysed to assess these tools' capabilities. Ten criteria are used to characterize the expression of subjectivity in journalistic discourse on the surface of texts and in terms of situational appropriateness. The results show that AI tools can incorporate subjective markers on the text surface, but have important limitations when it comes to situational appropriateness, making it difficult to imitate certain features of journalistic writing. The paper also discusses the implications of asymmetrical audience interaction with machines that simulate human characteristics, and the varying degrees of opacity and transparency with which AI is used in newsrooms.

KEYWORDS

anthropomorphism, artificial intelligence (AI), synthetic texts, journalistic texts, ethics

1 Introduction

Anthropomorphism is the act of ascribing human characteristics to non-human entities, such as animals or machines. For chatbots and other forms of artificial intelligence (AI), mimicking human language goes beyond using familiar words and phrases. It also means adopting human-like communication patterns, such as showing empathy, expressing humor, and maintaining contextually relevant and coherent conversations. Anthropomorphic machine language design aims to make human-machine interaction more natural, fluid and accessible. This approach supports the adoption and use of AI in a wide range of applications, including customer service, education and entertainment.

One of the most distinctive features of human language is its subjectivity (Angermuller et al., 2014; Charaudeau, 2005; Benveniste, 1976; Thompson and Hunston, 2001). In the past,

it could be argued unequivocally that language could not exist without humans. However, advances in generative AI are now forcing us to rethink this inherent human capacity. Subjectivity in human language manifests itself in many ways. These include choosing emotionally charged words, expressing personal opinions, taking a particular position when interpreting events and situations, and considering contextual and cultural elements when communicating (Charaudeau and Maingueneau, 2005; Martin and White, 2005; Thompson and Hunston, 2001; Conrad and Biber, 2001; Gray and Biber, 2012).

Given the temporally and spatially situated nature of human language (Benveniste, 1976; Austin, 1981), imitating it is highly complex, particularly in terms of achieving grammatical correctness and contextual coherence. Beyond these aspects, simulating human communication carries significant ethical and psychological implications, potentially affecting how users perceive and interact with these technologies (European Commission, 2019; UNESCO, 2022).

In journalism, there have been significant advances in the use of AI algorithms since the first instances of automation in the United States. The *Los Angeles Times*' creation of Quakebot to automatically report on earthquakes (Carlson, 2015) and the *Associated Press*' use of Automated Insights' Wordsmith platform to produce sports news and match reports (Graefe, 2016; Tejedor-Calvo et al., 2020) have been cited as early milestones demonstrating the potential of AI to generate journalistic content.

Automated production of journalistic content has become a global phenomenon, permeating news agencies and media companies around the world. This trend highlights the growing acceptance and exploration of AI capabilities in news production, motivated by the potential for process optimisation and the pursuit of new business models (Lopezosa et al., 2024). In Spain, AI has gradually been integrated into different parts of the journalistic production pipeline. However, its adoption has been marked by a certain slowness, mistrust and lack of knowledge (Sánchez-García et al., 2023).

Although AI is driving innovation in journalism, it is only just beginning to enter newsrooms and has sparked debate among researchers about the ethical implications, the quality of AI-generated content and the risks of dehumanising journalism (Graefe and Bohlken, 2020; Calvo-Rubio and Ufarte-Ruiz, 2021; Gutiérrez-Caneda et al., 2023).

Audience reactions to the use of AI in newsrooms range from indifference and curiosity to scepticism. This scepticism is fuelled by concerns over the authenticity, accuracy and potential lack of analytical depth of AI-generated writing (Carlson, 2015; Graefe, 2016). Ethically, questions arise about the transparency of crediting the author(s) of AI-generated content, as this could affect trust between media and their audiences (Van-der-Kaa and Krahmer, 2014). Further questions are raised about the ability of these technologies to replicate nuances that are inherently human and critical to journalistic storytelling (Peña-Fernández et al., 2023).

As technology advances, journalist-free media run entirely by AI are becoming a reality in a number of countries. These synthetic media foreshadow a future in which the production and distribution of news content could be fully automated (Ufarte-Ruiz et al., 2023). This transition towards fully automated journalism highlights the lack of regulatory and ethical safeguards that should be in place to ensure the integrity of the profession in the age of AI, a point that has been raised in public debates (González-Arias and López-García, 2023).

Indeed, there is a possibility that journalism will continue to move ever closer to automation, with AI tools playing an increasingly prominent role in the production of journalistic content, and that machines will eventually replace human journalists. With this in mind, we seek to understand the extent to which AI can incorporate features of subjectivity when imitating human language and journalistic writing. We also intend to explore the implications of replacing or impersonating human journalists in the field of communication. The aim is to gain insight into the ways in which texts generated using AI express subjectivity in the pursuit of anthropomorphism, as well as the limits of this expression and its implications for communication. This research looks to shed new light on the debate about the appropriateness of anthropomorphic AI tools, particularly their ability to mimic human language in the field of journalism, and how the absence of a human behind the creation of news content could change the discursive practices of the press and alter the relationship between media and their audiences.

1.1 The use of AI algorithms in journalism

The integration of AI in journalism constitutes a milestone in the ongoing evolution of content production and information management in the media sector. A turning point in this evolution was the launch of ChatGPT in late 2022, due to its ability to generate texts that mimic human language with a surprising degree of coherence and relevance (Roumeliotis and Tselikas, 2023). The use of ChatGPT and similar technologies in journalism points to a future where AI could take on more complex roles in news production, such as automatically writing and personalizing content in real time.

In content production today, AI is most commonly used to automatically generate sports news, election results and financial reports. The benefits of AI in this area include its ability to process large amounts of data and produce detailed reports in real time, which is particularly useful when dealing with systematic and structured information. In addition, AI is expected to improve the personalization of content for readers, tailoring news and articles to individual preferences (Di Lana, 2020).

According to Ufarte-Ruiz et al. (2023), algorithms can also simulate human behavior to detect, select, classify and distribute news. This allows for more efficient news production, but has limitations in terms of analytical depth and complexity. The study by Murcia Verdú et al. (2022) examines the quality of AI-generated sports reports compared to those written by human journalists. The results show that while AI-generated texts are effective at collecting and organizing stats and presenting match highlights, they lack many of the inherent qualities of sports reporting that are found in texts written by journalists. For example, they fail to capture certain analytical and interpretive aspects that have traditionally enriched sports news.

1.2 Machine anthropomorphisation

Humans have an innate tendency to ascribe human characteristics to machines. However, our cognition, which evolved in a predominantly social context, is not fully adapted to interacting with systems that emulate human traits but lack the organic and emotional essence of humans (Seth, 2023). Anthropomorphic qualities often

attributed to artificial intelligence, particularly chatbots, include intelligence, consciousness, empathy and sentience.

Bunz and Braghieri (2022) analysed how English-language media have framed AI in the healthcare sector, specifically in roles that previously required a medical expert. They found a tendency to personify AI systems, portraying them as human-like entities with capabilities that sometimes exceed those of physicians, marking a new development in public discourse on AI.

In the field of commerce, research has presented arguments both for and against the anthropomorphism of AI tools from a conversational perspective. On the one hand, studies of chatbots suggest that anthropomorphism positively influences consumers' purchase decisions, confirming their beneficial role in shaping purchase intentions (Han, 2021). On the other hand, Crolic et al.'s (2022) analysis of customer interactions with anthropomorphised chatbots found that anthropomorphism can negatively affect customer satisfaction, especially when customers are angry, as a result of unmet expectations.

Nyholm (2020) highlights the differences between human and robotic agency, arguing that while AI tools can simulate conversations that appear to show understanding and emotional responses, they lack inner personal experience. The author emphasizes that AI operates solely within human-programmed parameters and has no real subjective experience of its own.

1.3 Subjectivity in human language

Based on current understanding, subjectivity is a unique characteristic of humans and possibly some animals (Wolfe, 2010). This understanding spans various fields of knowledge, including medicine, law, philosophy and linguistics. Although there is no single definition of subjectivity, it is generally understood as that which belongs to the subject. In this regard, there seems to be some consensus that subjectivity includes the characteristics of language use, emotional expression, beliefs, thoughts, consciousness, perspective and bodily perception (Charaudeau and Maingueneau, 2005; Martin and White, 2005; Thompson and Hunston, 2001; Conrad and Biber, 2001; Gray and Biber, 2012; Nagel, 1981; Gibbs, 2005; Clark, 1997; Ciaunica and Fotopoulou, 2017). These subjective features represent activities or states that depend on or are conveyed through the subject.

From an utterance perspective in language studies (Benveniste, 1976), subjectivity is seen as an integral part of language. Indeed, the use of language requires a subject because it is the subject who speaks. An utterance inherently involves a subject identifying itself as 'I' and addressing a 'you'. This conceptualization emphasizes that every utterance bears the imprint of the subject who utters it, leaving markers of the speaker's identity and unique perspective. These markers manifest themselves in different ways and intensities, including word choice, sentence structure, discursive style and self-presentation. Language therefore, conveys not only information, but also aspects of the speaker's identity, emotions, perceptions of the world around them and their intended audience.

In the same way, the meaning of an utterance cannot be fully understood without considering the utterer, the addressee, and the temporal and spatial context in which it occurs. This perspective departs from the structuralist view of language as an autonomous system and emphasizes the importance of pragmatics and the communicative situation in the construction of meaning. Such an approach allows us to understand how meaning is constructed not only through linguistic structure but also in interaction (Austin, 1962; Halliday and Matthiesen, 2004).

Research on the markers left by the subject in discourse has made it possible to identify explicit and implicit linguistic markers of subjectivity expressed in human language ('subjectivemes' in Kerbrat-Orecchioni, 1987). Explicit features of subjectivity in language include, firstly, grammatical markers and lexical items indicating person, gender, and the time and place. Secondly, there is a broad consensus on lexical items that explicitly express or introduce emotions, personal opinions, evaluations, ideologies and beliefs into discourse.

Subjectivity can also be implicit in language. Persuasion, an almost ubiquitous purpose in human discourse, consists in leading the reader/listener to the writer/speaker's position on a given phenomenon or event (Maingueneau, 2002). One's position on an issue depends on a number of subjective characteristics (ideology, beliefs, experiences, etc.) and usually permeates one's discourse, not only through explicit but often implicit means (Conrad and Biber, 2001). This is what underpins the art of argumentation and rhetoric that is so common among politicians, journalists and publicists, not to mention children asking for an ice-cream or other everyday situations. In order to identify an author's underlying position, it is usually necessary to resort to the techniques of discourse analysis.

2 Materials and methods

This paper presents qualitative research at the intersection of discourse analysis and communication studies. We venture to explore how different AI-generated texts are imbued with subjective features in order to anthropomorphise their linguistic content. The research is based on a corpus of journalistic texts produced with and without the intervention of AI tools. Ten criteria are used to characterize the expression of subjectivity in journalistic discourse.

2.1 Research corpus

In order to build a corpus of texts produced under different conditions, reflecting the possible techniques of automated text production, journalistic texts were collected from media websites and other texts were produced using AI tools. We considered a total of 48 texts produced under different conditions, which we call organic text, synthetic text, hybrid text and textoid. Below we give an operational definition of each text type and show how they are represented in the research corpus.

2.1.1 Organic text

Text produced by humans as part of specific communicative discursive practices between humans, also called human or natural text. In our corpus it is represented by 12 texts from the Spanish newspapers *El País* and *El Mundo*: four news stories, four opinion pieces and four editorials.

2.1.2 Synthetic text

Text written without direct human intervention, designed for a specific communicative discursive practice between machines and humans. Although it uses tools created by humans, the final text is the work of an algorithm. In journalism today, it is common practice to generate texts from databases and templates, and there is a new trend to generate texts using tools based on large language models (LLM), which are more creative and flexible. In our corpus, we considered ten election results extracted from *RTVE*, ten from *El Español* (signed by Deporte360) and five from other sources, with the criterion that they were explicitly written by an AI tool.

2.1.3 Hybrid text

Text generated by a machine and then edited by a human to be used for a specific communicative discursive practice. It can also refer to a text that was first processed by a human and then modified by a machine. The degree of human and machine intervention cannot be determined, but these are texts that appear in print with a note indicating the use of AI in their creation. The hybrid category excludes texts that have been machine translated or grammatically corrected by a machine. In our corpus, we considered five texts written in English from different press websites. The selection criterion for hybrid texts was that the publication explicitly stated that they had been written with the help of AI.

2.1.4 Textoid

Text generated by humans, machines or both in research contexts or for simulated discursive practices. These texts are created in simulated communicative conditions for research purposes. In our research we considered six synthetic textoids produced using two generative tools, ChatGPT and Gemini, under three different conditions: general prompts, prompts with instructions to produce a text with subjective features, and specific prompts explicitly requesting a text with subjectivity according to previously determined criteria.

Table 1 summarizes the corpus used in this research. All the texts, with the exception of those in the "Edited AI" category, which are in English, are written in Spanish. Details of the corpus and the prompts used for its construction can be found in Appendix 1.

2.2 Production conditions in journalistic discourse

All forms of discourse are bound by the conditions in which they are produced (Charaudeau, 2003), i.e., the social context in which they operate. In the case of journalistic discourse, these conditions distinctly manifest in at least five key aspects that guide discourse production:

– Historical and social context: Journalistic discourse is produced at a specific point in time, which influences its content and approach. This context includes contingent events such as social trends, political currents and cultural shifts that affect the way news is perceived and presented.
– Institutions and standards: National newspapers and popular media operate under established institutions with set standards and ethical codes. These standards guide discourse to meet certain criteria relating to objectivity, truthfulness, impartiality

TABLE 1 Texts collected for analysis.

Text type	Genre	Source	*n*
Organic	Editorials	*El País*	2
		El Mundo	2
	Opinion pieces	*El País*	2
		El Mundo	2
	News stories	*El País*	2
		El Mundo	2
Synthetic	News on election results	*RTVE*	10
	Sports news	*El Español* Deporte360	10
	LLM texts (written by ChatGPT)	General press	5
Hybrid	Edited AI	General press	5
Textoid	General prompt	ChatGPT	1
		Gemini	1
	Prompt to include subjectivity	ChatGPT	1
		Gemini	1
	Prompt to include subjectivity with defined criteria	ChatGPT	1
		Gemini	1
Total			48

and social responsibility (the basic tenets of journalism) in order to ensure the credibility of the information presented.
– Editorial project: Every media outlet has an editorial, financial and political project that shapes its editorial focus, target audience and topical preferences. This editorial project, whether explicitly stated or not, influences the selection of news, the handling of topics and the ideological leaning of content.
– Discursive practices: Journalistic discourse can serve different purposes, such as informing, educating, entertaining or persuading, which are reflected in the journalistic genres that have traditionally developed in the press. These genres include news stories, features, editorials, interviews, opinion pieces and reports, each with its own conventions and styles.
– Means of production: Popular newspapers today use a variety of means to reach the public, including print, websites, mobile applications and social media. The physical characteristics of each channel or platform impose certain constraints on the ability to produce and distribute content, including those related to timing, layout, length and placement of advertising.

2.2.1 Communicative situation in journalistic discourse

The situation in which communication takes place (or, for the purposes of this paper, in which an utterance is produced) specifies the immediate production context. This situation is characterised by three key aspects:

– Time and place: Journalistic texts are typically produced to be consumed by audiences in local or national settings, which

influences the choice of languages, topics and cultural references. These conditions make it possible to identify spatial references and general references to 'us' and 'our' concerns. Likewise, the deadlines and frequency of publication (daily, weekly, etc.) influence the production and organization of discursive content, defining the present in which the publication takes place as the present of reference for reading the news. Together, time and place construct the here and now of journalistic texts.

- Relationship between producers and consumers: The identity of the journalist is constructed through both implicit and explicit means throughout the text. Journalistic writing carefully navigates the line between reaching an audience (appeal) and building an ethos of trust (credibility). At the same time, journalists interact with an imaginary, diverse and anonymous audience, which requires them to communicate in a way that is clear and accessible to a wide range of readers, in line with their editorial focus.

- Contingency and events: Topicality and social relevance of content are essential in journalism, to the point of distinguishing it from other forms of discourse such as history and literature. Breaking news has significant value in the production and publication of journalistic content, influencing the organization and hierarchy of content.

2.2.2 Levels, dimensions and criteria for analysing subjectivity in journalistic texts

Considering the importance of subjectivity in discursive construction and the general conditions of press discourse, we have identified three pertinent levels for examining how subjectivity is expressed in journalistic texts: text surface, situation, and socio-communication. While this research will focus only on the first two levels—text surface and situation—we recognize the importance of all three levels in the study of journalistic discourse. In order to study the socio-communicative level, one should take into consideration reception by readers, which inevitably involves a different kind of study, with a different approach and corpus; a kind of study we intend to perform in the future in order to complement the present one.

2.2.2.1 Levels

- Text surface: inclusion of explicit markers of subjectivity. At this level, texts are described according to the use of markers left by the subject in the text.
- Situation: appropriateness to the context in which the utterance takes place. This level examines the appropriateness of the relationship established in the text between the writer and the reader, taking into account the journalistic genre to which the text belongs. It also examines the temporal and spatial references that link the text to the local or national context.
- Socio-communication: quality and relevance. This level assesses the content's social relevance in terms of its timeliness or newsworthiness, taking into account both the journalistic genre and the newspaper's editorial focus.

2.2.2.2 Dimensions and criteria

By considering the first two levels—text surface and situation – we have identified four discursive dimensions comprising 10 criteria,

which we have used to measure the expression of subjectivity. Table 2 summarizes these dimensions and criteria.

2.2.2.2.1 Deixis

Criterion 1. Using deictics to indicate time and place: This refers to the use of words and phrases to anchor the discourse in a specific time (now, today, tomorrow, etc.) and place (here, at this location, etc.), which is particularly important in news stories and journalistic reports.

Criterion 2. Using the first person: This refers to the use of the first person singular and plural, including verb forms, pronouns and possessive adjectives referring to "I" or "we" (*yo* and *nosotros* in Spanish). The use of "we" can indicate an "inclusive we," including the writer and reader in the referent group, or an "exclusive we," excluding the reader from the referent group. Use of the first person varies depending on the journalistic genre.

Criterion 3. Using the second person: This involves addressing the reader in the second person. Addresses to the reader are indicated by the informal and formal forms of "you" (*tú* and *usted* in Spanish). As above, use of the second person varies depending on the genre. While it is not necessary in a news story or journalistic report, it is essential in texts in which the reader is encouraged to agree with the position of the text (e.g., opinion pieces) or in more informal texts that seek to engage the reader (e.g., articles recommending travel or places to live). In both cases, use of the second person is clearly linked to the purpose of persuasion.

2.2.2.2.2 Dialogism

Criterion 4. Interweaving voices: This refers to the combination of several voices in a single utterance, also known as polyphony. This particular use of language reflects the presence of multiple voices or perspectives interwoven by the author in the same text. It is a more sophisticated device because it implies an intention to draw connections between different points of view, thus achieving greater pluralism in the journalistic text.

Criterion 5. Citing sources: This involves bringing other voices and perspectives into the discourse through direct or indirect quotation. Sources are used in a wide range of fields, but are fundamental to journalistic discourse because of journalism's commitment to ethics.

TABLE 2 Dimensions and criteria for assessing the expression of subjectivity.

Dimension	Criterion
Deixis	Using deictics to indicate time and place
	Using the first person
	Using the second person
Dialogism	Interweaving voices
	Citing sources
	Using verifiable data
Personal involvement	Recounting personal experiences
	Expressing opinions
	Expressing emotions
Rhetorical devices	Using rhetorical figures

Criterion 6. Using verifiable data: This involves the inclusion of figures or other information that can be verified. It is particularly important in journalistic genres such as reports and news stories.

2.2.2.2.3 Personal involvement

Criterion 7. Recounting personal experiences: This refers to the extent to which the author personally involves themselves in the text by recounting their own experiences. This resource is frowned upon in some journalistic genres, such as news stories, but is essential in others, such as opinion pieces.

Criterion 8. Expressing opinions: This identifies utterances that can be attributed to the author, indicating their personal position on an issue. There are journalistic genres in which it is allowed, even required, and others in which it would be considered bad practice because it would compromise the objectivity of the text.

Criterion 9. Expressing emotions: This refers to expressions of emotion in the first person, reflecting the author's personal investment. Emotion is often used to comment on an event or phenomenon.

2.2.2.2.4 Rhetorical devices

Criterion 10. Using rhetorical figures: These include metaphors that involve a deliberate expression of subjectivity through literary techniques intended to embellish or emphasize the discourse, namely deliberate metaphor and irony. Deliberate metaphors are created with the intention of using metaphor as a rhetorical device and are characterized by their length and novelty, as opposed to non-deliberate metaphors, which are narrower and more lexicalized (Steen, 2015).

2.3 Type of assessment

In order to achieve a complete understanding of how subjectivity is expressed, we carried out three types of assessment: binary, comprehensive and qualitative.

Binary assessment: a straightforward method based on two opposing outcomes, such as "yes" or "no." This type of assessment seeks to determine whether or not an AI tool can employ a specific form of subjectivity expression.

Comprehensive assessment: a detailed, 360-degree analysis that primarily examines the frequency of use of particular subjective markers in a text or set of texts.

Qualitative assessment: a type of observation intended to interpret the markers of subjectivity by considering their meaning and situational context.

3 Results

Tables 3–5 below present the results of our analysis, showing the frequency of subjective markers in different types of text. Given the limited size of our corpus and the qualitative nature of the study, we will focus on the absolute frequencies, which are more meaningful in this context. First, we examine whether the subjective markers are present in the selected texts (binary assessment) and to what extent these markers are manifested (comprehensive assessment). We then assess the situational appropriateness of these markers within the texts (qualitative assessment).

TABLE 3 Subjectivity expression in three organic journalistic genres.

	News stories (4)	Editorials (4)	Opinion pieces (4)
Using deictics to indicate time and place	5	11	5
Using the second person	1	1	2
Using the first person	2	3	34
Interweaving voices	1	2	2
Citing sources	29	11	43
Using verifiable data	28	22	41
Recounting personal experiences	3	0	7
Expressing opinions	2	33	35
Expressing emotions	0	0	4
Using rhetorical figures	0	1	9
Total	71	84	182

3.1 Subjectivity in organic texts

Table 3 shows the absolute frequency of subjective markers in a set of organic texts: news stories (4), editorials (4) and opinion pieces (4). These texts offer a reference point for how subjective markers are used in organic texts today.

The subjective markers found in these texts allow us to distinguish the characteristics of each genre. First, news stories do not express emotions or use rhetorical figures, but they often cite sources and use verifiable data. Editorials do not recount personal experiences or express emotions, but they often express opinions and use verifiable data. Finally, opinion pieces display all the subjective features considered in this study. Unlike news stories and editorials, this genre uses the first person and rhetorical figures, thus revealing its personal character. Subjective markers are normally distributed in the organic texts in our corpus, and subjectivity is dependent upon the personal involvement of the authors in each genre.

3.2 Subjectivity in synthetic texts

The texts analysed in this section were generated using AI and found on press websites.

RTVE's news on election results and *El Español*'s sports news (signed by Deporte360) are generated from structured data using algorithms that operate on a predefined template. As we will see, this could explain why the texts are so homogeneous. The "Edited AI"

TABLE 4 Subjectivity expression in synthetic texts.

	RTVE Election results (10)	*El Español* Deporte360 (10)	Edited AI (5)	LLM texts (5)
Using deictics to indicate time and place	7	17	2	3
Using the second person	0	0	78	8
Using the first person	0	0	31	51
Interweaving voices	0	0	0	0
Citing sources	0	2	2	1
Using verifiable data	105	48	17	1
Recounting personal experiences	0	0	2	1
Expressing opinions	0	1	8	6
Expressing emotions	0	0	1	11
Using rhetorical figures	0	3	0	0
Total	112	71	141	82

category includes texts created by an AI assistant and edited by a human. Under the label "LLM texts," we have grouped together a set of texts generated by ChatGPT based on prompts, as part of an experiment carried out by journalists to test the tool's text generation capabilities. The data obtained for these four sets of texts are presented in Table 4.

News about election results and sports mainly contain two types of subjective markers: deictics of time and place, and verifiable data. Deictics are used to organize the text around the reported event, making the election day or the football match the reference point for the utterance. This results in a number of deictic words and phrases, as can be seen in the following examples (the underlining is ours):

Example 1:

> "Just a few months ago, in the municipal elections in May, the majority of the population voted for the Partido Popular (60.75%), followed by the PSOE with 39.24% of the vote." (RTVE-3)[1]

The same goes for sports news, which is temporally organized around the day of the match in question or the relationship between tournaments:

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1   Newspaper quotes originally written in Spanish have been translated for ease of understanding.

Example 2:

> "Valencia host Mallorca this Sunday with the clear aim of picking up three points to keep their European hopes alive, which, curiously enough, depend largely on what Javier Aguirre's team does at La Cartuja next week." (Deporte360-1)

Most of the subjective markers in this type of text correspond to the use of verifiable data, as the point is essentially to report data: number of votes received and number of goals and points scored. The use of subjective markers is therefore extremely limited and relates to two core aspects of news stories: the time of the reported events and the specific information given about them.

In the texts we have classified as "Edited AI," the use of the second person stands out. In fact, this category accounts for more than half of the subjective markers found in these texts. The second person is used in sentences that aim to engage the reader in some way, whether by involving them, encouraging them to share a point of view, or persuading them to do something. The edited AI texts contain significantly more second-person markers than any other texts in the corpus.

Example 3:

> "I know what you are thinking: is not Stockholm that freezing, gloomy city up in the north that nobody cares about?" (AI Edited-5)

These texts have a strong persuasive component and seek to connect with the reader. The second most common subjective marker in these texts is the first person, followed by the use of verifiable data.

What we call LLM texts in this paper are texts that a journalist prompted ChatGPT to generate, with the clear intention of showing readers that the AI tool is capable of generating text: "I asked ChatGPT's AI to do my job. Here's the result" (LLM Text-4). These texts show a strong use of the first person, especially the first person singular, probably because the tool was asked to produce texts talking about itself.

These texts are characterized by a lack of interweaving voices and rhetorical figures of speech. There is significantly less use of verifiable data and more expressions of emotion, distancing this type of text from the news genre.

The data show significant differences between the text groups. Of particular note is the ability of LLM-based tools to capture the subjective features that characterize journalistic texts.

3.3 Subjectivity in synthetic textoids generated by ChatGPT and Gemini using three different prompts

As described in the Methodology section, we conducted experiments with the two AI tools included in this study— ChatGPT and Gemini—by requesting text generation through three different prompts. The first prompt was general in nature, the second prompt specifically asked the AI to demonstrate features of subjectivity, and the third prompt provided specific categories of subjectivity markers for the AI to incorporate. As these texts were

TABLE 5 Subjectivity expression in synthetic textoids.

	Prompt 1 ChatGPT	Prompt 1 Gemini	Prompt 2 ChatGPT	Prompt 2 Gemini	Prompt 3 ChatGPT	Prompt 3 Gemini	Total
Using deictics to indicate time and place	1	0	1	0	0	0	2
Using the second person	0	0	1	2	1	7	11
Using the first person	0	1	3	8	5	16	33
Interweaving voices	0	0	0	0	0	0	0
Citing sources	1	0	0	0	6	0	7
Using verifiable data	9	6	5	7	0	13	40
Recounting personal experiences	0	0	0	0	0	0	0
Expressing opinions	4	3	5	4	2	7	25
Expressing emotions	0	1	2	1	2	13	19
Using rhetorical figures	0	0	0	3	12	9	24
Total	15	11	17	25	28	65	161

generated for experimental purposes, we refer to them as "textoids."

As can be seen in Table 5, the verbal behavior of the AI tools varies significantly depending on the specificity of the prompt. These figures show that the tools are indeed able to incorporate markers of subjectivity into text, with the Gemini tool performing particularly well on prompt 3, producing twice as many markers as ChatGPT on the same prompt.

It is important to note that neither tool successfully interweaved voices or recounted personal experiences in this exercise. These features are also rarely found in organic texts, presumably because interweaving voices requires a higher level of linguistic proficiency and recounting personal experiences requires the author's specific involvement.

Gemini did not include deictics of time or sources in any of the three cases, while ChatGPT did so sparingly. However, both tools excel at including verifiable data, expressing opinions and using rhetorical figures.

In response to prompts 2 and 3, Gemini stands out for its use of first-person features and the expression of emotions. These results highlight the potential of LLM-based AI tools to incorporate the characteristics of human writing in journalistic texts.

3.4 Qualitative assessment of subjectivity expression in synthetic texts and textoids

At this second level, we assess the relevance of utterances, i.e., whether textual markers are used in a coherent and meaningful way.

We will discuss some of the most salient features of synthetic texts published on press websites and then analyse the textoids to gauge the capabilities of the AI tools.

3.4.1 Markers of person (writer and reader) in AI-generated texts

Table 4 shows a concentration of subjective markers relating to the use of first and second person in both edited AI texts and those generated by ChatGPT (LLM texts). The coherent use of these textual features is subject to specific requirements, as will be explored in more detail below.

Use of the first person singular:

The first person singular can take the form of verbs, pronouns or possessives. In general, AI tools use the first person coherently. However, they are only simulating subjectivity, as the tools are unconscious entities that cannot refer to themselves reflexively.

Example 4:

"My name is Assistant and I am a large language model trained by OpenAI." (LLM Text-2)

Example 5:

"My owner is OpenAI, an artificial intelligence research company founded in 2015 by a group of entrepreneurs and investors including Elon Musk and Sam Altman." (LLM Text-2)

Example 5 reveals some incongruity in the use of the first person. The phrase "my owner" suggests a relationship of ownership applicable to objects and entities. In contemporary contexts, this is incongruous when applied to human beings for ethical and legal reasons.

Use of the first person plural:

The first person plural can also take the form of verbs, pronouns and possessives. Linguistically, the first person plural refers to "we" or "us," which includes the writer and at least one other person. In addition, "we" has the unique ability to either exclude or include the addressee, depending on whether that person is part of the referent group. AI tools manage to adequately incorporate both forms of "we":

— Exclusive use:

Example 6:

> "We've utilized data across five important categories to determine the Bankrate Best Places to Live lists: well-being, job markets, affordability, migration and diversity." (AI Edited-1)

Here the AI tool identifies itself as part of the editorial team providing information services. This is a corporate "we," specifically designed or manually edited, where the first person plural is the editorial voice of a team to which the AI belongs.

— Inclusive use:

Example 7:

> "Although it has the ability to generate content efficiently and quickly, its inability to verify the veracity of information poses a significant risk to the media as we have understood them until now." (LLM Text-5)

The inclusive first person plural is more problematic, as the AI tool pretends to be a member of the thinking group that aligns with public opinion – a "we the people."

It is worth noting the inconsistency in the AI's use of the first person singular. In the experimental text written by GPT-3 for *The Guardian*, the chatbot uses the first person singular throughout most of the text, where the referent of "I" is a robot (the article begins, "I am not a human. I am a robot."). However, it later shifts to a "we" representing humans: "The Industrial Revolution has given us the gut feeling that we are not prepared for the major upheavals that intelligent technological change can cause […] It is therefore important to use reason and the faculty of wisdom to continue the changes as we have done before time and time again." (LLM Text-1).

3.4.2 Subjectivity expression in AI-generated textoids

Clearly, AI-generated texts have the potential to replicate the markers indicative of a subject in discourse. As shown in Table 5, the texts generated in our experiment lacked two specific features: the interweaving of voices and the recounting of personal experiences. However, we attribute this to the need for more fine-tuned prompting in order to elicit these features.

Below is a fragment of text generated by ChatGPT using prompt 3, which illustrates the limitations of language imitation in terms of the situational context, given the semantic value of subjective markers. This fragment highlights key issues with AI-generated texts regarding the appropriateness of linguistic devices that function as markers of subjectivity in the text:

The text shown in Figure 1 contains several subjective elements. Furthermore, the issue of climate change and deforestation is approached from a global perspective, although when discussing deforestation the AI evokes places known for their forests, such as the Amazon.

3.4.2.1 Using rhetorical figures

Phrases such as "the vast tapestry of the world" and "the relentless scythe that tears at the Earth's green mantle" use strategic and emotionally charged metaphors to describe deforestation. Although these metaphors enrich the text, they also introduce an emotional charge that can distract from the objective, scientific facts of the issue. This could be considered an overuse of this device.

3.4.2.2 Using the first person

The use of the first person plural positions the AI tool as part of the human race facing existential risk, referring to "our future" and "our history." This is, of course, a simulated use of this resource.

Example 8:

> "This polyphony of testimonies reminds us that the loss of forests is not only a matter of carbon and biodiversity, but also of identity and spirituality." (ChatGPT, prompt 3)

Associated with the use of the first person plural is the AI's positioning as a moral being: "This is not only a call to action, but also to introspection, to questioning our values and priorities as a society" (ChatGPT, prompt 3). While appeals to ethics and morality can be an effective way of mobilizing readers, in this case the approach seems overly moralistic, especially given that the tool itself is not a moral being.

3.4.2.3 Expressing emotions

Emotions are richly expressed in the fragment through rhetorical figures and the personification of nature: "the voices of the forest cry out in the wind, whispering ancient stories of intertwined life." Personification adds a poetic touch and can create an emotional connection with readers. However, this technique can be perceived as overwrought, potentially undermining the credibility of an otherwise objective analysis of deforestation.

The lack of verifiable data further undermines the text's content and reliability.

3.4.2.4 Citing sources

Emotional quotes provide personal, human perspectives that can resonate deeply with readers. However, these quotes can appear subjective and biased, so it is important to balance them with quantitative data and scientific studies to maintain objectivity. Worst of all, the AI-generated quotes in this text are completely fabricated. The statement "Deforestation is like an open wound in the world's soul" attributed to Dr. Alejandro Morales illustrates a major problem with AI-generated texts, known as "hallucinations."

A similar issue is observed in the texts generated by Gemini, which is why an additional example has not been included.

The Silence of the Forests: A Chronicle of Global Deforestation In the vast tapestry of the world, where nature weaves the very fabric of life, a vital thread is disappearing: the forests. Deforestation, the relentless scythe that tears at the Earth's green mantle, not only leaves visible scars on the planet's skin, it also undermines the very foundations of our future. From the lush tropics to the edges of the cold boreal tundra, no corner escapes its insatiable appetite. But what are the causes of this environmental tragedy, and what are its insidious effects on climate change? The Voices of the Forests Cry Out in the Wind In this symphony of destruction, the voices of the forest cry out in the wind, whispering ancient stories of intertwined life. "Deforestation is like an open wound in the world's soul," says renowned forest biologist Dr Alejandro Morales, whose eyes reflect the sadness of witnessing the disappearance of the forests he has studied all his life. This polyphony of testimonies reminds us that the loss of forests is not only a matter of carbon and biodiversity, but also of identity and spirituality. A Call for Global Action Nature's clock is ticking, but we still have time to change the course of our history. This is not only a call to action, but also to introspection, to questioning our values and priorities as a society. "Deforestation is a mirror that reflects our relationship with the world we inhabit," concludes poet Laura Gómez, whose words invite us to look into that mirror and find the inspiration to build a greener and more just future for all.	Using rhetorical figures Using the first person Expressing emotions Citing sources

FIGURE 1
Fragment of a textoid generated by ChatGPT 3.5, prompt 3 (only three of eight paragraphs are shown).

4 Discussion

AI tools have undoubtedly achieved a remarkable capacity to imitate human language, including the simulation of subjectivity in journalistic discourse. Our binary assessment shows that only one feature of subjectivity—the interweaving of voices – remains out of their reach. This criterion requires advanced language proficiency and expertise on the issue at hand, as it involves the integration of two often conflicting points of view within the same utterance. Although none of the synthetic or hybrid texts exhibited this feature, we believe that with appropriate input or prompting, these tools could potentially mimic the interweaving of voices. Therefore, it must be acknowledged that, at least from a formal perspective, AI tools are not inherently limited in their ability to replicate subjectivity markers in text.

Our comprehensive assessment reveals considerable differences between the different text types studied. Even the organic texts show variations in the frequency of subjective features. Indeed, almost all the observed criteria differ greatly across the three genres of organic texts, distinguishing news stories from the two opinion genres, and further distinguishing unsigned editorial texts from more personal opinion pieces.

Our analysis of the markers of subjectivity in synthetic texts published in the press (Table 4) shows that texts produced using templates and databases, such as news about election results and football matches, have very specific characteristics: they are situated in time and space and are based on verifiable data. This type of text confirms, with a certain degree of transparency, the emergence of a new journalistic genre that has evolved from traditional news. This type of data-driven news expands the range of information available to audiences by managing large amounts of data targeted at specific interest groups.

The other two types of synthetic texts, called "Edited AI" (created by an AI assistant and then edited by a human) and "LLM texts" (generated by ChatGPT), allow us to appreciate the potential of AI tools to mimic human language. Using AI in this way requires journalists to have advanced knowledge (Gómez-Diago, 2022) of prompting and a deep understanding of the journalistic genre, including its markers of subjectivity. These texts represent a first step in hybrid text generation practices. If carried out transparently (i.e., if the use of AI tools is always disclosed), such practices could yield excellent results, preserving the editorial value of texts through human involvement.

From our experiments requesting news stories from ChatGPT and Gemini using three different prompts, AI tools clearly have the potential to mimic human language in a journalistic style, at least on the surface of the text. However, these tools still have significant limitations in terms of situational appropriateness. To generate texts that are truly appropriate to the communicative situation, AI will need to simulate the conditions under which journalistic texts are produced. This includes simulating a historical and social context, recognizing the institutions and standards that regulate journalistic production, framing production within an editorial project, identifying and practicing different journalistic genres, and acknowledging the limitations of the available means of production. It is important to note that AI technology is altering the conditions under which journalistic texts are produced in a number of ways beyond text production itself. The evolution of the media business model is a relevant and important issue (Valero, 2022; Lopezosa et al., 2024), although it is far beyond the scope of this paper. Nevertheless, it is expected that the adaptation of journalistic discursive practices will lead to the emergence of new journalistic genres, driven by the recognition of hybridization or the creation of virtual journalistic entities.

AI tools lack consciousness, autonomy and subjective experience (Nyholm, 2020). When an AI uses the first-person singular "I," it is not referring to a conscious identity, but rather to a linguistic convention designed and implemented to facilitate communication. Interacting with a chatbot that uses the first person can give the impression that you are talking to an intelligent entity that may have personal feelings, opinions or experiences. In fact, making AI-generated language appear human is the pursuit and purpose of anthropomorphic language design in AI tools. As such, our anthropomorphising response is expected by the tool's creators.

Judging by its widespread use, anthropomorphic design is a functionally convenient choice because it makes communication with users more accessible. In this respect, anthromorphisation serves the economic goals of the company behind the tool (Han, 2021), with user acceptance likely encouraging greater use and loyalty. Furthermore, as noted above, the implementation of AI in customer service platforms has enabled faster and more efficient communication, with queries and issues being resolved instantly (Kushwaha and Kar, 2021; Kaushal and Yadav, 2022).

However, there is no reason why anthropomorphic design should be the only approach. There are alternatives that may be healthier in the long run in a journalistic context. For example, instead of saying "I can help you with that," an impersonal phrase like "ChatGPT can help you with that" could be used to clarify the tool's role as a utility rather than an agent or assistant.

For a healthy integration of AI in journalism, it is crucial that its use is transparent and that a critical spirit is maintained (Crépel and Cardon, 2022). This means not only indicating that an AI tool has been used to generate a text, but also allowing the machine to speak impersonally as an artificial entity without consciousness or experience.

Similarly, it is the responsibility of the media to educate users about the general nature of AI. In cases of anthropomorphic design, it should be emphasized that the use of "I" is a linguistic convention. Reminders or warnings about the unconscious nature of AI tools such as ChatGPT could also be implemented within the tools themselves at regular intervals during interactions.

5 Conclusion

In this research, we sought to answer two fundamental questions: to what extent can AI incorporate features of subjectivity when imitating human language and journalistic writing, and what are the implications of replacing or impersonating human journalists in the field of communication?

Our findings suggest that AI tools can simulate subjectivity on the surface of synthetic texts, demonstrating the potential to mimic human language through the use of a range of subjective markers. However, their ability to fully replicate journalistic style is limited by the specificities of different journalistic genres, which require the nuanced inclusion of specific features according to their individual purpose.

It is important to note that journalistic genres involve prototypical participants who are textually constructed through varying degrees of subject involvement in the texts, depending on the topic and the journalist's options for personal involvement in that topic. For example, a war correspondent will seek to convey their physical proximity to the conflict zone, while a technology journalist may use technology to write about technology. Observing markers of subjectivity is thus, also a way of recognizing the identity markers of the writer. These markers contribute to the construction of the image of the journalist and, by extension, of the newspaper.

When it comes to implementing AI algorithms in newsrooms, we see two possible paths. The first is to integrate AI without extensive planning or reflection, leading to journalistic impersonation without transparency. This approach risks losing audience interest and trust because of the inability to produce quality journalistic content. The second path involves deliberate planning and reflection, integrating AI with transparency and acknowledging the hybridization of texts. Transparency in the full or partial automation of processes could foster new journalistic genres derived from traditional ones, potentially creating a new relationship with readers.

We also question the appropriateness of anthropomorphic language design in AI tools, especially in journalism. Simulating a human being in the creation of news content could create a gap between the experience conveyed by the machine and the experience received by the reader. This gap could affect public perception and trust in the information provided, increasing uncertainty about the impact of AI on communication and journalism.

5.1 Limitations and projections

Given that this is a qualitative study focused on the analysis and interpretation of textual markers, one of its main limitations consists in the inherent subjectivity of such process. This means that results are highly conditioned by the researchers' perspectives and criteria, which can lead to various interpretations depending on who performs the analysis and their experince in this field. Moreover, although textual markers are usually formal and objective, the active intervention of the researchers and their interpretation can limit the study's replicability, since other researchers could obtain different results from the same corpus. Finally, by focusing on a deep and contextual analysis, this approach could be missing broader variations in data, which could be captured with higher precision with a quantitative approach.

For this research, we selected the two most popular tools in the market (ChatGPT and Gemini), acknowledging the fact that results

could vary if other tools were to be used. However, we consider that, in order to achieve the goals of our research, the tasks performed allowed the observation of fundamental aspects we sought to study. In future work, it would be relevant to replicate this study with new generations of these tools or other AI tools especially designed for journalistic tasks.

On the other hand, we did not analyse the socio-communicative level of the journalistic texts, which is centered on quality and pertinence of productions, specifically the anthropomorphisation of language. Incorporating this aspect would require a different research design that integrates the perspective of public reception. This is the way this work could be continued and oriented towards getting to know the readers' evaluation about the quality and pertinence of the expression of subjectivity in AI-generated texts.

Data availability statement

The datasets presented in this study can be found in online repositories. The names of the repository/repositories and accession number(s) can be found at: González Arias, Cristian, 2024, "Replication Data for: Expresión de la subjetividad en texto orgánicos, sintéticos, híbridos y textoides," https://doi.org/10.7910/DVN/JJIRFR, Harvard Dataverse, V1.

Author contributions

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/fcomm.2024.1456509/full#supplementary-material.

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