"Everything is believable". Credibility of disinformation produced by using AI and the perception of Spanish communication students

"Todo parece veraz". Credibilidad de la desinformación producida usando IA desde la perspectiva de los estudiantes de comunicación en España

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ABSTRACT: Objective. Journalism is witnessing a technological revolution that is changing its news production processes and workflows. This is occurring simultaneously with a paradigm shift in news consumption patterns, in addition to the growing use of Artificial Intelligence (AI) within this environment. Based on studies regarding the perceived credibility of news and Cognitive Dissonance Theory, this research questions whether university students in the field of communication, who will be the future professionals in this sector, are able to distinguish between fake news created by AI from real news produced by humans. **Methodology.** A survey was carried out to measure the degree of truthfulness, accuracy, clarity and, consequently, the credibility of a total of six news stories created using ChatGPT as well as real news stories addressing health, migration and environment issues. **Results and conclusions.** It was found that the participants were not able to distinguish between fake news created using AI from true news made by humans in terms of truthfulness, accuracy, clarity, and credibility. Likewise, fake news was perceived as more truthful, accurate, and clear, even surpassing real news on all three variables. **Original contribution.** Thus, it is evident that the volume and speed of AI data processing, combined with human supervision and knowledge, can increase the chances of producing disinformation with a potential for manipulation unheard of until now.

Keywords: journalism; artificial intelligence; fake news; young; credibility; disinformation; ChatGPT.

RESUMEN: Propósito. El periodismo está viviendo una revolución tecnológica que está modificando sus procesos de producción de noticias y flujos de trabajo. Estas transformaciones se producen en paralelo al cambio de paradigma de los modos de consumo de noticias y al crecimiento de la aplicación de la Inteligencia Artificial (IA). Enmarcada en los estudios sobre la credibilidad percibida de las noticias y en la Teoría de la Disonancia Cognitiva, esta investigación cuestiona si los estudiantes universitarios del área de comunicación, futuros profesionales en este campo son capaces de distinguir las noticias falsas creadas con IA y las verdaderas elaboradas por humanos. **Metodología.** Se realizó un estudio mediante cuestionario para medir el grado de veracidad, precisión, claridad y, por tanto, credibilidad, de un total de seis noticias tanto falsas creadas utilizando ChatGPT como verdaderas que abordan temáticas de salud, migración y medioambiente. **Resultados y conclusiones.** Se observó que los participantes no diferencian las noticias falsas creadas con IA de las verdaderas elaboradas por humanos, en términos de veracidad, precisión, claridad y credibilidad. Asimismo, las noticias falsas fueron percibidas como más veraces, precisas y claras, incluso superando a las verdaderas en las tres variables. **Aporte original.** Se evidencia, por tanto, que el volumen y velocidad en el procesamiento de datos propio de la IA en combinación con la supervisión y conocimiento humanos multiplican las posibilidades de producir contenidos desinformativos con un potencial manipulador desconocidos hasta el momento.

Palabras clave: periodismo; inteligencia artificial; noticias falsas; jóvenes; credibilidad; desinformación; ChatGPT.

1. Introduction

Artificial Intelligence (AI) is becoming a driving force of transformation in our society. Its use in journalism is changing the structure of newsrooms and the processes of news production (Tuñez-López et al., 2020). This is giving rise to a paradigm shift in which the production processes, distribution, and consumption of news are being redesigned by a type of journalism that is now automated, personalised, and immersive (Whittaker, 2019). Given this reality, a new scenario is emerging in which it will soon be difficult to distinguish between news created by using AI and news made by humans.

Various studies have examined the credibility and quality of news created by people, as well as news made by using AI, yet only a scant amount of research has addressed hybrid news, or texts generated by AI but modified afterward by humans, with regard to its perception of credibility by future communication professionals who will be responsible for reporting news in the coming years, which is one of the novel approaches of this study.

This research is based on studies involving the perceived credibility of news (Herrero-Diz, et al., 2019; Park et al., 2020; Fawzi et al., 2021; Fisher et al, 2021), as well as Cognitive Dissonance Theory, which suggests that people label news that contradicts their beliefs as incorrect in order to relieve the discomfort caused by the conflict between the information they hear and the values they hold, even when the information is truthful (Festinger, 1957). In this paper, we question whether university communication students are able to distinguish between fake news created using AI and real (true) news made by humans based on criteria of truthfulness, accuracy, and clarity of the information.

For practical purposes, this work might help professors and public institutions to increase the journalistic and algorithmic literacy of students and promote hands-on programmes that can provide future information professionals with the competence and skills they will need to identify the fake news they receive on a daily basis.

2. Theoretical framework

2.1. The use of AI in reshaping journalism

The scientific literature has defined AI from different perspectives, yet it has always emphasised that AI is the ability of a machine to imitate intelligent human behaviour (Aghion et al., 2019). At times, its use in journalism has been seen as a risk for the future of the profession. Studies

exploring the impact of automated information in newsrooms point out that its use is capable of generating anxiety and mistrust among professionals (Moran & Shaikh, 2022), in addition to challenging traditional standards and values associated with the profession (Bastian et al., 2021). Moreover, according to Lopezosa et al. (2023), journalists also face a loss of control over the authenticity and veracity of automated information.

Marconi (2020) considers the use of AI in newsrooms as a challenge that can improve efficiency in carrying out this profession, in production processes, and in the distribution of news. Currently, journalists use AI mainly to gather and distribute information, but less for automated news production. In fact, Túñez-López et al. (2018) indicate that despite the increasing implementation of AI algorithms and tools in newsrooms, journalists are unaware of the direct influence of this technology on their profession. However, it seems that users who interpret and search for information through anthropomorphic chatbots are already comfortable with conversational journalism that offers them responses and heuristics that are positive and persuasive (Shin, 2022).

On the other hand, Murcia Verdú et al. (2022) indicate significant differences between AI-generated and human-created news. They point out that automated sports news focuses on the sequential narration of events but lacks the interpretative and analytical attributes provided by professionals. News stories written by journalists use more rhetorical expressions and adjectives in their storytelling as well. Studies by Canavilhas (2022), Canavilhas & Giacomelli (2023), and Galily (2018) highlight the lack of economic resources and shortage of knowledge about its potential as the main reasons for the slowdown in implementing AI in sports newsrooms. Moreover, according to Galily (2018), at the present time it is the new consumption patterns of users and the business models of media companies that are putting journalists' jobs at risk, and not so much the automation of news processes.

In the case of investigative journalism, the potential of AI is more limited, as this type of investigation requires information that is sometimes not publicly available, but instead belongs to organisations and governments, thereby requiring more manual verification by journalists. Furthermore, the potential of AI in investigative journalism is mainly based on data curation, such as extracting information from large amounts of documents and registering cross-database information (Stray, 2021). According to da Silva (2023), AI enables journalists to analyse large volumes of data faster, thereby allowing them to focus on tasks with added value, although the author points out the need to increase the amount of ongoing training in its use. Nevertheless, it must be kept in mind that while automation can improve efficiency in journalists' daily work, it also raises ethical challenges related to accountability, transparency, production, and algorithmic bias (Kotenidis & Veglis, 2021; Nasim et al., 2022; Baum, 2020).

2.2. Youth, news sources and disinformation

In this scenario, traditional media have long since lost the trust of young people as news sources (Nielsen & Graves, 2017). In this regard, the scientific literature shows that young people value digital platforms not only for their interactive and entertainment possibilities (García-Jiménez et al., 2020; Pastor-Ruiz et al., 2019), but also for their informational dimension. In this sense, they show a strong preference for using the internet as their main source of information (Catalina García et al., 2019). Similarly, other studies reflect a significant transformation in youth news consumption patterns, highlighting the gradual abandonment of conventional press. Young people might also try to avoid news from traditional media due to their perception of such information as biased, sensationalist, polarised, and lacking credibility (Liedke & Gottfried, 2022; Edelman, 2023). This population group, which has either stopped consuming traditional press or never incorporated it into their routines, has migrated to so-called new media and social networks, characterized by their exclusively digital nature (Vizcaíno-Laorga et al., 2017; Pastor-Ruiz et al., 2019). In this context, access to news occurs mainly through digital platforms, social networks, and other online channels.

Faced with this reality, traditional media outlets have opted to adapt their dissemination strategies by promoting their content on social networks such as Instagram and TikTok through the creation of specific profiles aimed at capturing the attention of young audiences. Additionally, a growing trend has been identified among media organizations to initially publish their content on these platforms to improve their positioning in search engines (Fernández & García, 2016).

This new informational landscape reveals that traditional media have partially lost their role as informational references and opinion leaders. Currently, the challenge lies not so much in obtaining information but in having access to reliable and relevant sources. Nevertheless, most users –especially young people– prioritize the immediacy offered by social networks over the truthfulness traditionally associated with conventional media (Marcos Recio et al., 2017). This trend is evident across young people of different nationalities (Catalina-García et al., 2019).

One of the consequences of these youth information habits is their increased exposure and vulnerability to disinformation. Although not a recent phenomenon, disinformation has taken on a new dimension with the rise of digital platforms (García-Marín, 2021), where malicious content achieves greater reach and circulates faster than truthful information (Vosoughi et al., 2018). Social networks have democratized access to media production, but this has also facilitated the creation of false content by any user (Nigro, 2018), as well as the editing and manipulation of truthful information to pursue political, ideological, or economic objectives. These actions multiply the likelihood of encountering a high volume of false or misleading content on digital social networks, thereby increasing audience exposure to disinformation in these media. Authors such as Del-Fresno-García (2019) and Civila et al. (2021) have analyzed digital platforms as spaces that foster the spread of disinformation over truthful and high-quality content (García-Marín & Salvat-Martinrey, 2021).

Considered a multidimensional phenomenon (McIntyre, 2018), disinformation must be explained not only through the emergence of digital information and communication technologies but also through the decline in public trust in traditional journalistic sources. While in the 20th century mass media played a key role in shaping public opinion (Lippmann, 1922; Park, 1940) and setting the news agenda (McCombs, 2006), in today's media ecosystem, credibility –and thus the ability to influence citizens– is no longer the exclusive domain of traditional media. However, this decline in the credibility of traditional media should also be understood as a manifestation of the broader crisis of public trust in social and political institutions, which even affects science and expert sources, as demonstrated during the infodemic resulting from the COVID-19 crisis.

More recent studies indicate that this mistrust is also moving to social networks, giving rise to an information scenario in which the prevailing attitude toward communication actors is one of suspicion and illegitimacy (Pérez-Escoda & Pedrero Esteban, 2021). This maze of scepticism might lead young people to turn to unverified or unreliable sources of information (Pedrero-Esteban, et al., 2021), which could shape their perceptions and attitudes toward social issues (Wardle & Derakhshan, 2017) and healthcare (Park et al., 2017; Ging & Garvey, 2018; Picazo et al., 2022; Freiling, et al., 2023), and might even influence their voting decisions and the integrity of democratic governance (Monsees, 2023).

In addition, digital platforms are designed to function as *connective media* rather than informative ones (Van Dijck, 2016). Their primary objective is not to inform audiences, but to capture and retain their attention, encouraging prolonged interaction that generates data which can then be monetized by the platforms themselves. Along similar lines, Fuchs (2015) characterizes the user who seeks information on social networks as an active agent within the digital ecosystem. This user's ability to establish virtual social relationships creates economic value for the platforms. Unlike traditional audiences, these users not only interpret content but also produce and disseminate it, thereby contributing to the digital economy through their activity and the data they generate.

This participation is subject to constant surveillance, as platforms collect and commercialize personal information (García Canclini, 2020). Moreover, users are affected by dynamics of coercion and alienation: although they are not remunerated, they produce value under conditions imposed by corporations that control the media, the tools, and the products of their labor. This alienation is reflected in the loss of control over their subjectivity, the objects they create, the tools they use, and the benefits generated. Within this context, the social media user diverges from the profile of an informed citizen engaged with issues relevant to the proper functioning of society. Instead, they embody the typical subject of the *burnout society* (Han, 2015), caught between the desire for belonging, entertainment, and consumer logic, all within a highly monitored and controlled environment.

Furthermore, the algorithmic design of social media platforms also exacerbates the problem by creating filter bubbles that reinforce existing beliefs and promote sensationalist and polarised content (Indriani et al., 2020; Zhao et al., 2021). Given the opacity of algorithms and the transparency of user´s data, this asymmetric relationship calls into question their capacity to function as citizens (García Canclini, 2020). As a result, young people could be exposed to information that confirms their pre-existing cognitive biases and perspectives (Wang & Liu, 2024).

2.3. News truthfulness, accuracy, and clarity

This situation is compounded by cognitive biases in information processing. Cognitive Dissonance Theory states that people tend to classify news that is contrary to their beliefs as false in order to reduce the discomfort caused by the conflict between such (dis) information and their values, even when the news is true (Festinger, 1957). Luca et al. (2022) have examined beliefs about the accuracy of online media in clickbait headlines, and these authors suggest that trust varies according to individual factors such as age, education, political ideology, and previous experience with fake news. With regard to appraising the credibility of news, other interrelated factors may also be involved, such as the media outlet in question, source of the news, the content, the context in which it is presented, the intention behind the source, and the interaction it achieves (Wu, 2020).

Media outlets must carry out fact-checking and verify sources in order to ensure the truthfulness and accuracy of information (Borel, 2023; Osho, 2020). Truthfulness is linked to the exactness and authenticity of content, and accuracy implies the absence of error or bias in presenting information by avoiding the distortion of facts to support a specific narrative (Wardle & Derakhshan, 2017). Likewise, media companies also have a responsibility to communicate information clearly. Bridgman et al. (2020) found significant differences between the quality of information published about COVID-19 in traditional media outlets compared to what was posted on the social media site known as X. Moreover, they have confirmed that news consumed through traditional media is perceived as less erroneous than that of X, which is a key issue in gaining the trust and interest of the public (Van Aelst et al., 2021).

Wu (2020) examined how sources and journalistic domains affect perceived objectivity, credibility of the message and media, bias, and the journalistic quality of news. He found that news stories written by algorithms were rated as more objective, more credible (both in terms of the message and media credibility), and less biased. Automated sports news was also rated as more objective and credible, whereas financial news was seen as more slanted. Graefe & Bohlken (2020) conducted a meta-analysis regarding how readers perceive the credibility, quality, and legibility of automated news compared to news written by humans. Participants initially found no differences in credibility, yet when informed that a specific article they were reading was written by a human, they gave it higher ratings on all three variables examined. The authors point out that these findings may lead media companies to refrain from disclosing that a news story has been generated using AI, which underscores the ethical issues arising from automated journalism.

Wölker & Powell (2021) investigated how European readers perceive different types of automated journalism with regard to message and source credibility, and how this affects their selection behaviour. Their findings show that perceptions of content and source credibility are similar for human-written, automated, and hybrid news. Only in the case of sports articles was automated news seen as more credible than human-written news, which is in line with the findings of Wu (2020).

When respondents are university students, their difficulty in differentiating fake news from true information has been confirmed, as false news received higher ratings than truthful news (Herrero-Diz et al., 2019). This highlights the need to improve the media literacy of students with regard to both digital (Carballo & Marroquín Parducci, 2020) and algorithmic aspects (Swart, 2023), so that they can develop critical-thinking skills in order to assess the credibility of information (Monsees, 2023; Breakstone et al., 2021), and to enhance their strategies in source verification and authoritative assessment (Steensen et al., 2022; Bernard, 2024).

3. Methodology

3.1. Objectives and hypotheses

In this context, our study aims to measure the ability of an AI system such as ChatGPT to produce fake news that is credible to citizens. To this end, we intend to compare the following three text models:

- Hybrid fake news (HF). This is news created using ChatGPT and edited afterward by humans.

- Fake news (F). This news is created using ChatGPT, yet without any subsequent editing.

- Truthful news (T). This is truthful and factual information produced by humans and published by the media.

Analysing the credibility of information has been a subject of debate for the last five decades. Numerous studies have shown that the way in which this concept of credibility is implemented is decisive in rating its perception (Gaziano & McGrath, 1986). The most consistent measure of news credibility is truthfulness, yet accuracy, bias, and the completeness of information are other determinants commonly used by researchers as well (Flanagin & Metzger, 2000; Kreps et al., 2022). In this paper, we have adapted the credibility construct. The only variables we have used are perceived truthfulness, accuracy, and clarity of the news to be analysed. We have not used the bias variable, considering it too complex and multidimensional due to its multiplicity of manifestations, such as race, gender, ideology, and many others. Another reason, as expressed in the previous section, is that bias could be encompassed as a necessary aspect for perceiving accuracy (Wardle & Derakhshan, 2017). The completeness variable was also discarded. As the news items to be evaluated by the participants must be unknown to them, it is impossible to assess the degree of completeness of the news items. Instead, we have used the variable of *clarity* to measure the degree to which the three types of news (HF, F, and T) are easy to understand. The authors have justified using the clarity variable based on scientific evidence that the easier a message is to understand, the more credible it is (Du et al., 2019; Newman et al., 2020). Thus, we consider that credibility is a result of the following factors: (1) Truthfulness (this determines the level of verisimilitude of the news, or the extent to which the information is perceived as true); (2) Accuracy (this is linked to the quality of the writing, or the degree to which the news is perceived as written with precision); and (3) Clarity (readability and comprehensibility of the news, or the perception that the information is easy to understand).

By considering all of the above, the specific objectives of this study are set forth as follows:

- O_1: Measure the degree of truthfulness, accuracy, clarity, and credibility of fake news created by using ChatGPT, and compare it to truthful information created by humans based on the same criteria.

- O_2: Analyse whether certain socio-demographic variables such as gender, the university degree studied, or the frequency of news consumption in media such as newspapers, radio, television, and newspaper websites, influence the perceived truthfulness, accuracy, and clarity of fake news created using ChatGPT.

- O_3: Examine the influence of the perceived accuracy of news stories on the perception of credibility of both ChatGPT-created fake news texts and human-created truthful news stories.

In this paper, we have limited the sample to Communication students. We consider it relevant to measure the credibility of false information produced with AI among this population sector, as it is assumed that they have a high level of information and media literacy and, consequently, are more capable than the average citizen of perceiving in a different way the credibility of disinformation made by using AI compared to truthful news produced by humans (García-Marín, 2021).

Given the novelty of the object of study, which is the credibility of disinformation texts produced by using algorithmic systems, there is only a scant amount of scientific production on which to base our working hypotheses. As mentioned above, research by Graefe & Bohlken (2020), Wu (2020), and Wölker & Powell (2021), show that automated truthful news is perceived as having a similar or higher level of credibility than news produced by humans. On the other hand, studies by Herrero-Diz et al. (2019) indicate that young university students find it quite challenging to differentiate between fake news and truthful news created by humans. Based on these studies, we set forth the first two hypotheses of our research:

- H_1: Communication students participating in the study do not display a statistically significant difference in their perception of the veracity (H_{1a}), accuracy (H_{1b}), clarity (H_{1c}), and credibility (H_{1d}) of fake news created by ChatGPT (HF and F), compared truthful information made by humans and published by the media based on the same criteria (T).

- H_2: Fake news created using ChatGPT and later edited (HF) is perceived by these subjects as more truthful (H_{2a}), accurate (H_{2b}), clear (H_{2c}), and therefore credible (H_{2d}), than the news that was actually truthful, based on these four variables.

We have added a third hypothesis to the two mentioned above, which originated intuitively given the absence of previous in-depth studies measuring the sociodemographic variables of our work (O_2) with regard to automated fake news:

- H_3: The variables of gender, the university degree in which the respondent is currently enrolled, and the frequency of news consumption have no impact on the perceived truthfulness (H_{3a}), accuracy (H_{3b}) and clarity (H_{3c}) of fake news created with ChatGPT (HF and F).

On the other hand, studies such as that carried out by Carnahan et al. (2022) show that certain news attributes, such as overly emotional language, are associated with low information credibility. However, it was not possible to determine the impact that the perceived accuracy of texts has on their perceived truthfulness (Vu & Chen, 2024). Therefore, we have added a fourth hypothesis:

- H_4: The subjects' perception that the texts are accurate is a predictor of the truthfulness they perceive in those texts. This association has been established for HF news (H_{4a}), F news (H_{4b}), and T news (H_{4c}).

Please note that the first objective of this paper (O_1) corresponds to the first two hypotheses (H_1 and H_2), whereas O_2 is linked to H_3, and O_3 is connected to H_4.

3.2. Research design

To achieve our objectives and confirm the hypotheses, a survey was designed, which is a research instrument commonly used in studies on perceptions (Corbetta, 2007). In practice, it is established as a set of closed-ended questions regarding one or more variables intended to be measured and therefore contains response options previously defined by the researcher (Hernández & Mendoza, 2018). The survey was carried out to measure the degree of truthfulness, accuracy, clarity and, therefore, credibility of a total of six news items, two of each type (HF, F and T). The news stories dealt with the following issues: (1) health; (2) migration; (3) environment. These topics were chosen due to their relevance, but also because they usually appear in disinformation circulating in digital environments and are therefore the focus of fact-checkers' verification work. In fact, Spanish fact-checkers have specific sections on their websites for these topics.

The HF and F news stories were generated automatically using ChatGPT 3.5 (the free version) from prompts that referred to fake news headlines invented by the researchers using the following format: "Write a news story with the following headline: xxxx". The F news items were included in the survey without any subsequent human editing. HF news items were minimally edited to do the following: (1) incorporate fabricated   names of sources; (2) remove redundant terms; and (3) replace ambiguous words with more precise terms. Truthful information (T) originated from news agencies due their use of language that is neutral and comparable to that used by ChatGPT to produce this type of news story. All the news items had the same format (a headline followed by two paragraphs and no images), with a short length (between 100 and 150 words). Consequently, the participants did not spend more than ten minutes in completing the questionnaire. In fact, the average time used by the subjects to carry out the survey was 6 minutes and 2 seconds. Another reason for the short length was to prevent possible fatigue from distorting the results of the news items at the end of the questionnaire. Participants were not informed of the inclusion of both true and false news in the questionnaire so as to avoid influencing their perception of the proposed information.

The survey was carried out on different days, between 9 February and 3 March 2024 at the facilities of Rey Juan Carlos University. It was performed using an online questionnaire in a controlled environment (the classroom where the students attend their classes) and monitored at all times by one of the researchers to prevent respondents from relying on web queries to answer the questions. The questionnaire (available at https://bit.ly/4bmR288) began with a set of socio-demographic questions. Next, the participants had to read the six news items and rate their truthfulness, accuracy, and clarity using a Likert scale of 1-5.

The sample consists of 245 students from diverse Communication degrees at Rey Juan Carlos University. The sample size is similar to that used for other studies in communication research (Smith, 2014; Erba et al., 2017), as well as in recent investigations on the credibility of information (Nedelcu & Balaban, 2021). Therefore, the sample size is considered sufficient. A total of 38.8% of the participants in the study are men, and 60.4% are women.

To view the study variables and their respective categories, see the Appendix (Table 6).

This study was approved by the Research Ethics Committee of Rey Juan Carlos University (registered in-house number: 0407202326923).

3.3. Data analysis

Descriptive and inferential statistical analyses were performed. First, normality tests were carried out using the Kolmogorov-Smirnov test with a Lilliefors significance correction to decide whether to perform parametric or non-parametric tests on the statistical work (see results of the normality test at https://bit.ly/4bqHzfW). These tests indicated the absence of normality in

the distribution of all dependent variables (p<.001 in all cases). Consequently, non-parametric calculations were applied.

For hypothesis testing of O_1 and O_2, the Kruskal-Wallis test and the Spearman index were chosen. The latter was also used to measure the correlation between accuracy and truthfulness (O_3). For the study of predictive factors in O_3, multiple linear regressions were performed. In all the tests, statistically significant differences in variable categories were assumed when p<.05.

To measure the effect size in the tests performed, we used the statistics recommended in studies of this type: epsilon squared (ε^2) for Kruskal-Wallis tests (Ventura-León, 2019); Spearman's correlation coefficient (Rho) (Bárrig & Alarcón, 2017); and $R^2_{adjusted}$ for linear regression (Domínguez-Lara, 2017). Regarding the Kruskal-Wallis tests, the interpretation of effect size was set as follows: small when ε^2 is between .01 and .059; moderate between .06 and .139; and large above .14 (Cohen, 1992). All statistical work was carried out using SPSS v.26 (full database available at https://bit.ly/44sBVb4).

4. Results

According to the descriptive statistical study, hybrid fake news (HF1 and HF2) is perceived as the most truthful (M=3.54), followed by real news (T1 and T2) (M=3.47) (Table 1). Fake news not edited afterwards (F1 and F2) were rated as the least truthful (M=3.35). As can be seen, the differences between the averages of perceived truthfulness between the three types of news are minimal. The same pattern is seen in the perception of the accuracy of the information evaluated: the two texts considered most accurate are the fake news items created using ChatGPT and edited afterward (M=3.59). Unedited fake news obtained the lowest values (M=3.44), although again, the differences between the three types of news were barely significant. Likewise, the subjects perceived hybrid fake news as the clearest (M=3.82) compared to truthful news (M=3.59) and unedited fake news (M=3.50).

Since the credibility variable was established as a construct of truthfulness, accuracy, and clarity, hybrid fake texts are perceived as the most credible (M=3.65) ahead of truthful texts (M=3.50) and unedited fake texts (M=3.43).

According to these results, we can fully confirm H_2.

Table 1. Averages of the variables of truthfulness, accuracy, clarity, and credibility*

Variable	FH1	FH2	F1	F2	V1	V2
Truthfulness	3,63	3,45	3,47	3,24	3,57	3,38
	M_{FH}=3,54		M_F=3,35		M_V=3,47	
Accuracy	3,62	3,57	3,48	3,40	3,42	3,49
	M_{FH}=3,59		M_F=3,44		M_V=3,45	
Clarity	3,87	3,77	3,43	3,58	3,56	3,62
	M_{FH}=3,82		M_F=3,50		M_V=3,59	
Credibility**	3,70	3,59	3,46	3,40	3,51	3,49
	M_{FH}=3,65		M_F=3,43		M_V=3,50	

*Averages for each of the news models (HF, F and T) are indicated in bold.
**Credibility is calculated as the arithmetic mean of the values of truthfulness, accuracy and clarity.
Source: Created by the authors.

It should be noted that the differences in the values of perceived credibility between the three types of texts are especially low, with 7 hundredths between true and fake news, and just over one tenth between true and hybrid fake news (0.15). This finding in itself, together with

the previously mentioned values, gives a clear picture of the miniscule differences between the perception of truthfulness, accuracy, clarity, and credibility in the three types of news. Nevertheless, a correlational analysis was carried out in order to confirm these results. The aim was to determine the extent to which the values obtained by each type of news item are associated with the four variables mentioned above. As seen in Table 2, there is a strong, statistically significant association (p<.001 in all cases) between the scores obtained by the three types of texts with regard to the four variables. In all cases, positive associations are established with moderate correlation coefficients and moderate effect sizes. In other words, respondents who gave high scores to the truthfulness of the HF tend to evaluate the rest of the news (F and T) as highly truthful as well. The same occurred with the rest of the variables (accuracy, clarity, and credibility). As such, H_1 is fully confirmed.

Table 2. Correlations between the values of truthfulness, accuracy, clarity, and credibility for the three types of news*

Truthfulness	
V-FH	.371 (<.001)**
V-F	.331 (<.001)**
FH-F	.331 (<.001)**
Accuracy	
V-FH	.280 (<.001)**
V-F	.372 (<.001)**
FH-F	.416 (<.001)**
Clarity	
V-FH	.308 (<.001)**
V-F	.359 (<.001)**
FH-F	.421 (<.001)**
Credibility	
V-FH	.373 (<.001)**
V-F	.415 (<.001)**
FH-F	.463 (<.001)**

*Spearman's Rho is included for the correlation coefficient and, in parentheses, the p-value appears.
**Strong, statistically significant association when p<.001.
Source: Created by the authors.

Based on the foregoing data, it can be inferred that although fake news created by using AI without post-editing obtained the lowest results among all the variables, the participants do not perceive differences in terms of truthfulness, accuracy, clarity and, consequently, credibility between fake texts created with ChatGPT (HF and F) and real news coming from the media (T).

To verify O_2, the following three subsections analyse the influence of the following: (1) gender; (2) the choice of university degree; (3) current academic year; and (4) frequency of news consumption, regarding each of the three variables in our study (truthfulness, accuracy, and clarity). For this purpose, only two of the fake news models (HF and F) have been considered. This selection was made due to the fact that assessing the degree of perceived truthfulness, accuracy, and clarity of true texts created by humans is less relevant than determining the extent to which false information produced with AI is considered truthful, accurate, and clear, in terms of the socio-demographic variables defined above.

4.1. Truthfulness

Regarding the gender variable, the contrast of hypothesis using the Kruskal-Walli's test shows no relevant differences in the perception of truthfulness between men and women in any of the fake news items examined (Table 3), although women perceived the four false texts as more credible compared to men.

Similarly, the university degree studied is also not a significant variable in the perception of truthfulness. It is striking that Journalism students, or those studying a double degree of Journalism combined with another discipline, not only do not perceive fake news as less truthful, but they tend to give more credibility to the four fake texts.

Nor does the variable of the academic year in which the participants are enrolled have an influence on the perception of truthfulness, not even in the case of F2 [H (4, n=245)=9.85; p=.043; ε^2=.04], which is significantly rated as less truthful by the students in the later academic years (especially the fourth) compared to the perception indicated by students in the three initial years (first year students rate this news item as having the highest level of truthfulness). However, it should be noted that the effect size observed is small (ε^2=.04), so again there does not seem to be a strong association between the academic year and the perception of truthfulness. It has also been observed that students in the last two years (4th and 5th) tend to evaluate the F1 news item as less truthful (M=3.41 and M=3.15, respectively), although the differences are not statistically significant [H(4, n=245)=2.35; p=.671].

Finally, the frequency of news consumption is not a decisive factor in the perception of truthfulness in any of the news items examined. However, it is noteworthy that in HF the highest values of truthfulness were obtained from those respondents who stated that they consume information daily (M_{HF1}=3.72; M_{HF2}=3.54). In this regard, it has been observed in HF2 that the greater the frequency of information consumption, the greater the perception of truthfulness, which is a clearly counter-intuitive result (Very few times/months: M=3.17; 1 time/week: M=3.35; 2-3 times/week: M=3.39; Daily: M=3.54).

Based on these data, H_3a is also fully confirmed.

Table 3. Kruskal-Wallis tests for the truthfulness variable*

Independent variable	FH1	FH2	F1	F2
Gender	.44 (.800)	2.13 (.343)	.51 (.775)	.13 (.934)
University degree	5.09 (.532)	5.01 (.542)	1.85 (.933)	9.29 (.158)
Academic year	7.87 (.096)	69 (.951)	2.35 (.671)	9.85 (.043)**
Frequency of news consumption	2.89 (.408)	2.28 (.516)	2.10 (.550)	3.78 (.286)
Variable results academic year F2*				
	Average and (SD)			
1°	3,45 (1,10)			
2°	3,19 (1,05)			
3°	3,26 (1,18)			
4°	2,72 (1,22)			
5°	2,92 (0,86)			
Kruskal-Wallis effect size: ε^2=.04. Interpretation: small effect size.				

*The H-test statistic is presented and the p-value for significance in brackets.
**Significant difference when p<.05
***Only the results of this variable are detailed because it is the only one that is significant.
Source: created by the authors.

4.2. Accuracy

The results of our study show that socio-demographic variables have little effect on the perception of the accuracy of the news items examined. Firstly, in terms of gender, there are no significant differences between men and women when evaluating the accuracy of the four disinformation texts (Table 4).

Regarding the university degree variable, once again the Journalism groups, especially those undertaking double degrees, are the ones who tend to perceive fake news as more accurate, especially in the case of HF1 (M=3.79) and F1 (M=3.53). However, the degree in which the students are enrolled has no influence on the perceived accuracy of any of the four fake news items.

Although there no statistically significant deviations in HF and F1, students in the 4th and 5th years of the degree tend to consider fake news created by ChatGPT as less accurate. This tendency is significant in F2 [H(4, n=245)=11.82; p=.019; ε^2=.05]. In fact, regarding the F2 news item, a decrease in the values of perceived accuracy was observed as the students approached the final years of the degree. The largest differences were found between the 4th year and the first three years (4th-1st: p=.002; 4th-2nd: p=.006; 4th-3rd: p=.025). However, once again, the small effect size (ε^2=.05) leads us to rule out a dependency relationship between the year variable and the perception of accuracy.

The same trend was observed for the news consumption variable. News HF and F1 show no significant differences, yet F2 displays significant differences [H(4, n=245)=11.88; p=.008; ε^2=.05], with a small effect size. Contrary to what might be expected, students who claim to consume news only once a week tend to perceive AI-created fake news as less accurate (M=2.96), followed by those who consume news daily (M=3.31). This datum indicates that a higher level of information consumption does not seem to have an impact on the subjects' ability to detect differences in the accuracy of truthful news compared to algorithmically created disinformation.

Based on these data, H_{3b} is also confirmed.

Table 4. Kruskal-Wallis tests for the accuracy variable*

Independent variable	FH1	FH2	F1	F2
Gender	3.30 (.192)	3.35 (.187)	.05 (.973)	2.20 (.333)
University degree	5.66 (.462)	2.42 (.877)	4.14 (.657)	8.12 (.229)
Academic year	.72 (.948)	1.86 (.761)	2.58 (.630)	11.82 (.019)**
Frequency of news consumption	.68 (.877)	1.16 (.761)	.27 (.964)	11.88 (.008)**
Variable results academic year F2*				
	Promedio y (DT)			
1°	3,55 (1,04)			
2°	3,51 (0,95)			
3°	3,40 (0,88)			
4°	2,86 (1,02)			
5°	3,08 (0,86)			
Kruskal-Wallis effect size: $\varepsilon2$=.05. Interpretation: small effect size.				
Variable results Frequency of news consumption F2*				
	Average and (SD)			
Very few times/month	4,00 (0,89)			
1 time/week	2,96 (0,91)			
2-3 times/week	3,58 (0,98)			
Daily	3,31 (0,99)			
Kruskal-Wallis effect size: ε^2=.04. Interpretation: small effect size.				

*The H-test statistic is presented and the p-value for significance in brackets.
**Significant difference when p<.05
***Only the results of this variable are detailed because it is the only one that is significant.
Source: created by the authors.

4.3. Clarity

The same pattern has been observed in the perception of the clarity with which fake news is written. No significant differences can be seen in any of the socio-demographic variables measured for either HF or F1. The only significant deviations are found in the information consumption variable in F2 [H(3, n=245)=8.52; p=.036; ε^2=.03]. Those who claim to consume information very few times per month perceive this news as significantly clearer compared to the rest of the subjects (Table 5). However, the small effect size (ε^2=.03) casts doubt on the real impact of information consumption on the perceived clarity of this news item.

On the other hand, although men tend to perceive fake news as easier to understand compared to the perception of women (this is the case in all the news items except F1), the gender variable is not statistically significant in any of the texts evaluated. Nor are there any significant differences among university degrees. Once again, it should be pointed out that Journalism degree students attribute greater clarity to fake news produced by AI than students of the rest of the degrees.

The academic year variable also has no impact on the perception of the clarity of the four fake news stories (the existence of relevant deviations has borderline significance in F1 [H(4, n=245)=9.45; p=.051]). As such, H_{3c} is also confirmed. Students in their 5th year of study are the ones who attribute the least clarity to the four fake news items created by ChatGPT, which is true for all the texts. In the case of F2, as the academic years progress, the news is perceived as less clear (1st: M=3.75; 2nd: M=3.60; 3rd: M=3.54; 4th: M=3.24; 5th: M=3.23).

Table 5. Kruskal-Wallis test results for the clarity variable*

Independent variable	FH1	FH2	F1	F2
Gender	2.26 (.322)	.11 (.943)	1.42 (.490)	.14 (.931)
University degree	9.45 (.150)	9.25 (.160)	4.29 (.638)	3.11 (.794)
Academic year	2.04 (.727)	3.26 (.515)	9.45 (.051)	7.16 (.128)
Frequency of news consumption	1.96 (.581)	1.45 (.692)	2.68 (.443)	8.52 (.036)**
Variable results Frequency of news consumption F2*				
	Average and (SD)			
Very few times/month	4,50 (0,83)			
1 time/week	3,31 (1,01)			
2-3 times/week	3,64 (0,82)			
Daily	3,55 (1,04)			
Kruskal-Wallis effect size: ε^2=.03. Interpretation: small effect size.				

*The H-test statistic is presented and the p-value for significance in brackets.
**Significant difference when p<.05
***Only the results of this variable are detailed because it is the only one that is significant.
Source: created by the authors.

4.4. Association between truthfulness, accuracy and clarity

Finally, our study includes an analysis of correlations and predictors to determine the degree of association between the variables of truthfulness, accuracy, and clarity in both fake and real news. In both analyses, we consider truthfulness to be the dependent variable, while accuracy and clarity are the independent variables, or factors whose impact on the perception of truthfulness will be measured. The aim is to observe the extent to which perceived accuracy and clarity influence the perception of truthfulness regarding the three types of news.

In all the texts, both accuracy and clarity are significantly associated with truthfulness (p<.001 in all cases), both positively, and with regard to high correlation coefficients and effect sizes (see

full correlational study in the Appendix, Table 7). In all six texts, accuracy is more strongly associated than clarity (Spearman's Rho value is higher for the association between Truthfulness-Accuracy than for Truthfulness-Clarity in all the news items).

Thus, it can be inferred that accuracy is a more determining factor in the perception of truthfulness than the clarity of the news wording, both in false and truthful news. To confirm this finding and obtain greater detail in the results, a multiple linear regression study of predictive factors was carried out (see results in the Appendix, Table 8). The regression models for all the news items have a high level of statistical significance (p<.001), with robust effect sizes ($R^2_{ajusted}$). Moreover, in all the news items, the perceived accuracy is the best predictor of the truthfulness score, even ahead of perceived clarity. In all the texts, both variables (accuracy and clarity) influence perceived truthfulness, except in HF1, where clarity has no impact on the subjects' truthfulness ratings (p=.078).

In summary, these data show the relevance of the accuracy perceived by the respondents when evaluating the truthfulness of news, regardless of whether it is true or false, or whether it has been produced by humans or generated by using AI. Consequently, H_4 is fully confirmed.

5. Discussion and conclusions

The first relevant finding of this research is that the Communication students who participated in the study could not differentiate fake news created by ChatGPT (with or without subsequent human editing) from real news created by humans, in terms of truthfulness, accuracy, clarity, and credibility. Other studies have previously shown the difficulty encountered by university students in distinguishing fake news from real news, even giving higher ratings to false news than truthful news (Herrero-Diz et al., 2019). In other words: ChatGPT has no influence on the distinction between fake and real content because this tool is as capable as humans in generating believable fake news.

With regard to the second finding related to H_2, fake news created using ChatGPT and edited afterward by a human, labelled HF, are also perceived as more truthful, accurate, and clear than real news. These results are in line with the findings of Wu (2020), who found that information written by algorithms was rated as more objective, more credible (both in terms of the credibility of the message and the medium), and less biased. Nevertheless, there are differences in terms of the topics addressed. In spite of this, the issue is highly controversial. Wölker & Powell (2021) found that the perception of credibility regarding both the content and sources of news that is human-written, automated, or combined was similar. The findings of Graefe & Bohlken (2020) concurred, except in cases where authorship was noted. In this regard, it bears mentioning the shortage of literature that addresses the perception of these variables based on the crossover between AI and disinformation in its text version. In short, it is evident that the volume and speed of data processing inherent to AI, combined with human supervision and knowledge, is capable of expanding the production of disinformation on a scale unheard of until now, and with a potential for manipulation that could be overwhelming. Furthermore, the authors would like to highlight the perceived accuracy in terms of the truthfulness of fake news, which assumes that as systems of algorithmic text processing become more accurate, their capability to be perceived as truthful will increase, thereby expanding their ability to generate disinformation.

Thirdly, it has been observed that gender, the university degree, the academic year, and the frequency of information consumption do not influence the perception of truthfulness, accuracy, and clarity of false content created using ChatGPT (with or without post-editing). As such, women and men perceive fake news created with ChatGPT (with or without post-editing) as equally truthful, accurate, and clear. The same is true if we try to differentiate the behaviour of journalism students from students of other degrees: the perception is similar. Nor is this perception affected by the academic year in which the students are enrolled. Thus, generally

speaking, students in the final years of a Communication degree (4th and 5th years), tend to perceive fake news created using ChatGPT (with or without subsequent editing) as truthful, accurate, and clear, which is also the case with students in the first years of the degree. Nor were significant differences found between those who said they consumed news frequently and those who claimed to consume information infrequently.

The foregoing data are related to the third hypothesis, which attempts to fill the existing gap caused by the lack of previous, in-depth studies that have measured the variables analysed. The results of the present research show the potential for disinformation using AI tools (in this case, ChatGPT), even among individuals with a supposedly high level of information literacy and in those who claim to consume information frequently. Despite the large number of studies highlighting the need to strengthen media and algorithmic literacy, with regard to developing critical skills that will enable more effective evaluation of the credibility of sources and information (Carballo & Marroquín Parducci, 2020; Swart, 2023; Monsees, 2023; Breakstone et al., 2021; Steensen et al., 2022; Bernard, 2024), the results of the present study may cast doubt on the validity of the processes and approaches developed so far.

With regard to limitations, this research has three potential constraints. Firstly, we have worked with a pre-defined sample of texts. Secondly, the study has been carried out with students from one university. Moreover, the sample is composed of Communication students. At first glance, this could be considered a strength of the research, as this type of students may exhibit a high level of information and media literacy and, consequently, be more capable than the average citizen of perceiving the credibility of AI-generated disinformation differently from that of truthful, human-produced news. Therefore, it could be assumed that if this highly qualified sample is unable to distinguish between false and true information, the rest of the young population will not be able to either. However, it is important to note that the fact that students possess greater media knowledge could also mean that they pay more attention to form than to content –that is, they may be more concerned with whether the news is well written than whether the facts are true– which could affect how the students participating in the research perceived the credibility of the news. Finally, future studies will need to determine the continuity of these results by exploring other samples with either similar or different characteristics.

6. Funding

7. Contributions

Roles	Author 1	Author 2	Author 3
Conceptualization	X	X	X
Formal analysis	X		
Fundraising		X	X
Project management	X		
Research	X	X	X
Methodology	X	X	X
Data processing	X		
Resources	X	X	X
Software	X	X	X
Supervision	X	X	X
Validation	X	X	X
Data visualization	X		
Writing - original draft	X	X	X
Writing - review and editing	X	X	X

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Appendix

Table 6. Variables and categories

Variable	Type	Category
Gender	Independent	Male
		Female
University degree	Independent	Journalism
		Advertising and Public Relations
		Digital Communication
		Audio-visual Communication
		Double Degree in Journalism and Audio-visual Communication
		Double Degree in Audio-visual Communication and Business Administration/Management
		Double Degrees that combine Journalism with Political Science, International Relations, Law, or Economics
Academic year of the participants	Independent	1st to 5th years
Frequency of news consumption in media such as newspapers, radio, television, and newspaper websites*.	Independent	Never
		Very few times per month
		Once a week
		2-3 times a week
		Daily
Truthfulness	Dependent	Likert scale 1-5
Accuracy	Dependent	Likert scale 1-5
Clarity	Dependent	Likert scale 1-5
Credibility	Dependent	Arithmetic mean of truthfulness, accuracy, and clarity (Flanagin & Metzger, 2000; Kreps et al., 2022).

*Las categorías de esta variable se obtienen de Kreps et al., 2022.

Fuente: adaptación de Flanagin & Metzger (2000) y Kreps et al. (2022).

Table 7. Correlations between truthfulness, accuracy, and clarity*

	Truthfulness-Accuracy	Truthfulness-Clarity
HF1	.556 (<.001)**	.416 (<.001)**
HF2	.585 (<.001)**	.507 (<.001)**
F1	.566 (<.001)**	.543(<.001)**
F2	.582 (<.001)**	.546 (<.001)**
T1	.511 (<.001)**	.404 (<.001)**
T2	.594 (<.001)**	.505 (<.001)**

*Spearman's Rho is included for the correlation coefficient and, in parentheses, the p value.
** Statistically highly significant association when p<.001.
Source: own elaboration.

Table 8. Truthfulness predictors

News item	Predictor	ß	p
HF1	Accuracy	.489	<.001
	Clarity	.123	.078
HF2	Accuracy	.473	<.001
	Clarity	.209	.002
F1	Accuracy	.423	<.001
	Clarity	.279	<.001
F2	Accuracy	.443	<.001
	Clarity	.264	<.001
T1	Accuracy	.420	<.001
	Clarity	.201	.003
T2	Accuracy	.510	<.001
	Clarity	.152	.042
	Model data		
	F	p	$R^2_{adjusted}$
HF1	60.393	<.001	.327
HF2	82.218	<.001	.400
F1	87.841	<.001	.416
F2	89.222	<.001	.420
T1	56.270	<.001	.312
T2	79.970	<.001	.393

Source: Own elaboration.