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Analysis on disinformation and gender bias generated by artificial intelligence

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Abstract

The convergence between artificial intelligence (AI), gender bias and disinformation has become a central theme in contemporary communication debates. This research analyses how biased algorithms perpetuate inequalities, while exploring AI's potential to mitigate gender stereotypes and promote equity. It examines the effects of AI-generated disinformation on the perception and representation of gender in various social contexts, highlighting its impact on power dynamics and inclusive narratives. Additionally, the study explores the role of gender media literacy and education as tools to address these challenges. It reviews international initiatives and public policies aimed at integrating a gender perspective into the development and use of AI technologies, as well as feminist approaches in data science that question traditional structures and propose more inclusive alternatives. Ultimately, this research contributes to the interdisciplinary debate on gender and technology, emphasizing the need for collaborative strategies to create fairer, more inclusive AI systems that benefit all.

Keywords: Artificial Intelligence (AI), Gender Disinformation, Gender Biases, Algorithmic Discrimination, Gender Media Literacy.

Resumen

La convergencia entre inteligencia artificial (IA), sesgo de género y desinformación se ha convertido en un tema central en los debates contemporáneos sobre comunicación. Esta investigación analiza cómo los algoritmos sesgados perpetúan desigualdades, al tiempo que explora el potencial de la IA para mitigar estereotipos de género y promover la equidad. Examina los efectos de la desinformación generada por IA en la percepción y representación del género en distintos contextos sociales, destacando su impacto en las dinámicas de poder y en la construcción de narrativas inclusivas. Además, el estudio explora el papel de la alfabetización mediática con perspectiva de género y la educación como herramientas clave para enfrentar estos desafíos. Se revisan iniciativas internacionales y políticas públicas orientadas a integrar la perspectiva de género en el desarrollo y uso de tecnologías de IA, así como enfoques feministas en ciencia de datos que cuestionan estructuras tradicionales y proponen alternativas más inclusivas. Finalmente, se enfatiza la necesidad de estrategias colaborativas para construir sistemas de IA más justos e inclusivos.

Palabras clave: Inteligencia Artificial (IA), Desinformación de Género, Sesgos de Género, Discriminación Algorítmica, Alfabetización Mediática con Perspectiva de Género.

INTRODUCCIÓN

Gender bias in AI is arising as one of the most urgent and debated issues in contemporary technological development. On one hand, recent research proves the marked underrepresentation of women in AI system design and development teams, and on the other, the consequences of this exclusion in perpetuating structural inequalities are of note (Leavy, 2018; Nadeem et al., 2020). These dynamics not only reflect historical inequalities but also reveal how algorithmic systems amplify biases present in society.

One of the leading causes of this issue is the lack of diversity in data sets used to train automatic learning models, as well as the homogeneous composition of the teams responsible for creating them. Additionally, the implicit bias of the programmers, whether conscious or unconscious, translates to systems that reproduce gender stereotypes and limit the technology's transformative potential (Nadeem et al., 2020). This reality highlights the need to implement corrective measures, such as incorporating gender perspectives and fostering diversity, not only to enrich the functionality of the systems, but also to guarantee greater equity in their design and application (Leavy, 2018; Liu, 2024).

In this context, different strategies have been proposed to mitigate the impact of gender bias on AI. One of the most noteworthy strategies is the implementation of equity principles in developing algorithms, systematic reduction of the algorithmic bias, and a significant increase in women's participation in STEM disciplines (science, technology, engineering, and maths) (Nadeem et al., 2020; Liu, 2024). Moreover, ethical focuses such as distributive justice and the ethics of care are being integrated into the analysis and design

of these systems, providing theoretical frameworks that promote the creation of more inclusive technologies that are sensitive to the needs of a diverse population (Wellner, 2020).

On the other hand, despite progress toward gender equality in different spheres of society, professional and social hierarchies are still mainly dominated by men, reflecting unequal power distribution (Latu et al., 2015). This highlights the urgency of tackling the structural inequalities that underlie technological and social dynamics, beginning by acknowledging that the concept of gender transcends physiological differences to address cultural and social constructs. As indicated by DCAF, Geneva Centre for Security Sector Governance, gender equality must be understood as a primary objective, which includes equalisation of rights, equal availability of resources and opportunities, and economic independence, regardless of gender.

Consequently, it is fundamental to highlight that in the fight against gender inequality, one of the clearest manifestations is discrimination against women. As established by the United Nations in its first article, this is defined as:

distinction, exclusion or restriction made on the basis of sex which has the effect or purpose of impairing or nullifying the recognition, enjoyment or exercise by women, irrespective of their marital status, on a basis of equality of men and women, of human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field (United Nations General Assembly [UNGA], 1979).

Based on this definition, we can see how said discrimination manifests in different fields. For example, in recent years, the increased violence against women in digital settings is particularly alarming. Social media platforms have become spaces where misogynist

discourse is not only generated, but also organised and amplified, becoming veritable campaigns of gender disinformation (Cabañas, 2020). This phenomenon proves that social structures that perpetuate inequalities and violence have found new mechanisms in digital technologies to invalidate or exclude minority social groups (Benjamin, 2019). Moreover, hate speech has intensified on these platforms, attacking individuals based on nationality, ethnicity, race, sexual orientation, and gender, and spreading with alarming speed (Lapa and Di Fátima, 2023).

However, these forms of discrimination are not only limited to the digital world. They also persist in other key fields, like education, where gender inequalities continue to affect millions of women. Particularly, women face significant barriers and prejudices in accessing primary education, especially in developing nations. In these regions, girls represent a considerable proportion of those who rarely access basic schooling (UNESCO, 2018). This panorama highlights the need to implement early, sustained actions that not only address these inequalities, but that also foster equity and empowerment for women and girls in all spheres of society.

As an indispensable condition, gender equality and empowering women and girls require a guarantee for all of them of full access to their rights and fundamental freedoms. This principle is set forth in a resolution adopted by the Economic and Social Council dated 8 June 2015, which seeks to accelerate achievement of gender equality by implementing measures aligned with the Convention on the Elimination of All Forms of Discrimination against Women. Both initiatives mutually reinforce one another in their commitment to foster

women's empowerment in all fields of social, economic, and cultural life (ECOSOC, 2015).

In this line, the Beijing Declaration emphasises the need to conduct specific actions that drive gender equality. They include fostering women's and gender studies, as well as applying the results obtained to key areas like the economy, science, and technology (Beijing Declaration). Notwithstanding, despite this progress, the path toward equity between men and women remains challenging. Persistent gender inequality, deeply rooted in fields like advertising, film, music videos, and television, takes on new dimensions in the digital field. This occurs when technological platforms integrate biased algorithmic decisions that not only perpetuate, but also amplify prejudices, creating a vicious cycle that is not always clear (Flexer et al., 2018; Gutiérrez, 2021; Hajian et al., 2016).

The emergence of gender disinformation has become a recent yet pressing concern. While disinformation has gained scholarly attention since Donald Trump's 2016 victory (Freelon & Wells, 2020), and again in 2024, more research is needed on how women and marginalized groups are targeted and on the long-term consequences of these practices. In the tech sector, women remain significantly underrepresented. Wajcman (2010) highlights their minority status in fields like IT, electronics, and communications. Although participation in STEM has increased, a substantial gender gap persists (Davila Dos Santos et al., 2022). UNESCO (2019) reports that only 12% of AI researchers and 6% of software developers are women, who are also 13 times less likely to hold ICT patents. This exclusion reduces women's influence in technology design (Wajcman, 2010). Its impact extends to the job market, as 57% of roles at risk of automation are female-dominated,

especially in service sectors (World Economic Forum & BCG, 2018; Zimmerman, 2018). On the other hand, during the UNESCO'S Global Dialogue on Gender Equality and Artificial Intelligence, conducted in 2020, they identified a concerning lack of regulatory instruments to effectively address gender equality as an independent issue. They concluded that current practises are insufficient to face this issue comprehensively (UNESCO, 2020, p. 12).

Given this scenario, the UNESCO'S "Women4Ethical AI" initiative called for global cooperation to develop an inclusive, gender-sensitive AI. At the World Forum on the Ethics of Artificial Intelligence, held in Slovenia in February 2024, the network issued a statement that highlighted the importance of aligning AI technologies with human rights principles. Proposed measures include the implementation of solid assessments, establishing accountability mechanisms, human supervision over algorithmic processes, ethical data management with a focus on rights, and integration of the gender perspective into all technological initiatives. These actions are an essential step toward development of more equal and responsible AI systems that promote true social and gender inclusion.

Although we are fully in the "Age of Algorithms" (Allen and Masters, 2020), the impact of these technologies on gender equality is still insufficiently explored (Alpaydin, 2021; Bolukbasi et al., 2016). This highlights the need for a more detailed analysis on the challenges and opportunities borne by algorithms, as well as possible discriminatory results that could arise from implementing them (Brière, 2022).

In the past, technology has been associated with the androcracy and is characterised as a male domain, where women were represented as inept and lacking in skill and interest, which perpetuates an exclusionary vision of their participation (Johnson, 2010; Onta, 2007). However, feminist interventions in technology have arisen as critical tools to question these narratives. These interventions are focused on examining how technologies reflect and reinforce gender constructs and the performance of traditional roles (Sutko, 2020, p. 568). From this perspective, gender relations are "materialised in technology," strengthening inequalities that are not only social, but also technical (Sutko, 2020, p. 568). Fryxell (2021) delves into this idea by arguing that digital worlds are "configured by gender technologies that ratify heteronormative roles and objectify women in the process" (p. 33). In this regard, AI with a gender perspective is a clear example of how gender divisions are "naturalised and (re)produce" on technological platforms (Sutko, 2020).

Feminism in data science is also gaining relevance as a field that challenges the supposed neutrality and objectivity of algorithmic systems. This focus is based on the idea that data systems are products of unequal social relationships, rather than impartial tools. Through the concept of intersectionality, D'Ignazio and Klein (2019) have shown how data feminism can be put into practise through principles that include questioning hierarchies, valuing emotion as a form of knowledge, and raising awareness of women's work, especially during the COVID-19 pandemic (D'Ignazio and Klein, 2020).

Legislation and public policy are crucial for regulating digital platforms and combating online gender-based violence (Wilfore, 2021; Amaral, Simões & Poleac, 2022). Yet, algorithmic analysis from a legal standpoint

remains rare, especially concerning gender discrimination (Broussard, 2016; Buijsman & Jänicke, 2021). Gender media literacy emerges as a key strategy, fostering critical engagement with media and technology to detect and address bias early on. This study explores the intersection of disinformation, gender stereotypes, and AI's role in reinforcing or mitigating these patterns. Drawing from multiple hypotheses, it examines how disinformation perpetuates gender roles and how algorithmic bias shapes the production and spread of biased content. Various forms of gender disinformation are analysed, from distorted portrayals of men and women to fake news reinforcing stereotypes, including biases in virtual assistants. Finally, the research evaluates regulatory policies and underlines the importance of gender media literacy to empower users and encourage more inclusive digital communication (Liu, 2024).

RESEARCH HYPOTHESES

Within the context of this research, we have formulated three fundamental research hypotheses to understand the dynamic between disinformation, AI, and gender biases:

1. There is a significant relationship between exposure to AI-generated disinformation and the perpetuation of gender stereotypes in society, which affects gender equality and fair treatment.
2. Gender biases in AI algorithms have a significant impact on women's opportunities for development and decision-making in different professional fields, which contributes to gender disparity in different areas.
3. There is a significant relationship between the degree of literacy and understanding of gender biases in AI and reduction of gender discrimination and disinformation in society, which promotes gender equality and equity.

To address these issues, we have conducted a systematised review of the bibliography based on key concepts like "*desinformación de género*," "*sesgos de género*," and "*Inteligencia Artificial*," as well as they synonyms and similar definitions in English (like "gender disinformation," "disinformation," "gender bias," "gender equality," "femtech"), both in the field of journalism and in the media.

METHODOLOGY

The present research is based on a qualitative and interdisciplinary systematized bibliographic review, a methodological approach designed to provide a critical understanding of the convergence between artificial intelligence, gender bias, and disinformation. To ensure scientific rigor and traceability, the data collection process involved exhaustive searches in high-impact bibliometric databases, specifically Web of Science (WoS), Scopus, Google Scholar, and Dialnet, as well as institutional repositories from leading international organizations such as UNESCO, ECOSOC, and the European Commission.

The temporal scope of the analyzed literature extends from the foundational legal framework established in 1979 by the UN General Assembly to the most recent academic and technological developments in 2024. This 45-year longitudinal perspective allows for an evaluation of how traditional structural inequalities have been transposed into the digital "Age of Algorithms". The search strategy employed a combination of key descriptors and Boolean operators in both English and Spanish, including terms such as "*gender disinformation*", "*gender bias*", "*artificial intelligence*", "*algorithmic discrimination*", and "*gender media literacy*".

The selection of the documentary sample was based on thematic relevance and academic solidity, prioritizing peer-reviewed articles and technical reports that address documented case studies of algorithmic bias in critical sectors such as recruitment, advertising, and virtual assistants. Theoretically, the study is framed within feminist interventions in technology and data science, utilizing the concept of intersectionality and the principles of "*data feminism*" to question the supposed neutrality of algorithmic systems. This framework facilitates a multi-dimensional analysis that transcends mere description to analytically test and validate the three formulated research hypotheses presented in the previous section.

ANALYSIS

Disinformation and perpetuation of gender stereotypes

Gender disinformation is a set of complex and deliberate practises designed to perpetuate structural inequalities and reinforce harmful stereotypes about women. These strategies not only seek to undermine equality, but also to strengthen misogynistic narratives that limit the participation and visibility of women in society. From the dissemination of non-consensual sexual content to manipulation of private information, these actions have profound consequences on the safety and well-being of women in the digital world.

Specifically, gender disinformation can be defined as the circulation of fake or deceitful information that attacks women based on their gender identity, with a particular focus on female political leaders, journalists, and public figures. This kind of attack is based on narratives deeply-rooted in stereotyped gender roles, whose object is to delegitimise their achievements and limit their influence (Jankowicz, 2017; Barker and Jurasz,

2019; Di Meco, 2019; Stabile et al., 2019). The techniques used to spread this disinformation include misogynistic comments that reinforce traditional stereotypes, sexualisation through manipulated images, online harassment, and cyber-attacks. These practises generate a negative perception of women in society, eroding their credibility in leadership roles, discouraging their participation in public debates and promoting their silencing (Di Meco, 2020).

Some of the leading victims of these campaigns are high-profile women, such as celebrities, activists, political leaders, journalists, and researchers. These figures face constant and recurring harassment, which seeks not only to discredit their work, but also to intimidate them into leaving their public positions (Marwick and Caplan, 2018; Stabile et al., 2019; Chen et al., 2020; Murphy and Flynn, 2022; Di Meco, 2023). This kind of disinformation perpetuates the idea that women are unreliable or excessively emotional to hold roles of power, especially in the political sphere, contributing to the exclusion of their voices in decision-making spaces. According to Di Meco and Wilfore (2021), this disinformation strategy's effect is to discourage women from seeking out leadership positions, perpetuating their underrepresentation in high-visibility fields. As mentioned by Lucina Di Meco (2020, p. 4), gender disinformation implies "spreading deceitful or inaccurate information and images against female political leaders, journalists, and public figures, based on misogyny and stereotyped gender roles." This phenomenon is also related to "dark participation," where women are represented as participants in hidden or manipulative agendas to justify their exclusion (Quandt, 2018).

Specifically, and in the political sphere, for example, disinformation narratives are systematically used to weaken the authority of women leaders. Several studies have proven that these strategies contribute to the underrepresentation of women in politics by associating them with stereotypes that reduce their leadership capabilities (Hedlund et al., 1979; Dahlerup, 2006; Elder, 2008). Female leaders tend to be the target of superficial criticisms that reduce their initiatives to aesthetic or irrelevant issues, while belittling their contributions to complex topics. For example, Garikipati and Kambhampati (2020) analysed responses to the COVID-19 pandemic in countries led by women, like New Zealand, Taiwan, and Germany, concluding that their decisions reflected greater risk aversion in terms of human loss, which contrasts with the priority granted to economic considerations in other contexts. Although this participatory and empathetic focus has been recognised as a strength, it has also been interpreted by some as a sign of weakness of excessive sensitiveness (Eagly and Johnson, 1990).

Moreover, the trend to infantilise women reinforces the image that they are incapable of making complex decisions or holding leadership roles (Carlson, 2010; Huot, 2013). This narrative is shown in disinformation strategies, where existing narratives are overlapped and recycled to provoke emotional responses in audiences. This phenomenon is driven by the complex nature of disinformation systems and the tendency of those who believe in a manipulated narrative to accept other similar narratives, thereby amplifying their impact (Goertzel, 1994).

Types of gender disinformation

Gender disinformation is a broad phenomenon that uses different methods and techniques to perpetuate gender stereotypes and inequalities. One of the most well-known forms of this disinformation is "revenge porn," which consists of distributing sexual content without the consent of the party involved. This practise implies the use of doctored images or private information in order to extort or harass the victims, perpetuating a cycle of abuse and control, and causing a devastating impact on their physical and emotional well-being (Gámez-Guadix et al., 2022).

This violates not only the privacy and autonomy of the victims, but also their emotional well-being and mental health, exposing them to serious psychological and social consequences (Hearn and Hall, 2019).

Another manifestation of this phenomenon is "creepshots," "upskirting," or "digital voyeurism," which means capturing and distributing images or videos of individuals in intimate or vulnerable situations without their consent. These practises, motivated by voyeurism or the intent to degrade the individuals in the images, reinforce the objectification of women and perpetuate gender violence, undermining the victims' trust and safety in the digital world (Lewis and Anitha, 2023).

"Doxing," which means publishing or doctoring personal information without consent, is also a recurring tactic in gender disinformation (Chen et al., 2019). By revealing sensitive information, this practise seeks to intimidate and harass the victims, placing their physical and emotional integrity at risk. This proves the urgent need to address this issue from both a legal and an ethical perspective.

Impersonation is another tool used to spread gender disinformation, especially within contexts of threats and defamation online. By stealing the individual's identity, the perpetrators seek to harm their reputation and credibility, which can lead to devastating repercussions, both in their personal and in their professional life (Cross and Layt, 2022).

On the other hand, "mobbing," which consists of mobilising a group to harass or intimidate an individual online, is also a method of gender disinformation worthy of attention. This kind of harassment, frequently deployed on social media, can severely affect the mental and emotional health of victims, limiting their ability to actively participate in the public sphere (Topkaya, 2011).

Sexist hate speech is another key mechanism in perpetuating harmful stereotypes and inciting violence against women. This speech, which often presents women as sexual objects or targets of violence, contributes to a culture of misogyny and discrimination that affects all levels of society (Wojatzki, 2018).

However, not all gender disinformation tactics are clearly identified, since many of them are presented through strategies that are less visible, but just as harmful. For example, one of these strategies is deliberate confusion between domestic violence and gender-based violence, which hinders efforts to address and prevent gender-based violence effectively.

Another recurring narrative is the false affirmation that there is a high percentage of gender-based harassment reports that are false. Although these reports only represent a minimum fraction of the total, these narratives seek to delegitimise the experiences of the victims and trivialise gender-based violence. At the same time, by equating acquittals with false reports, the

perpetrators of these narratives contribute to minimise the real impact of gender-based violence.

Moreover, the affirmation is also spread that men are also victims of domestic violence, which distorts gender realities and perpetuates a narrative of equity that is not supported by empirical evidence. Similarly, the erroneous idea that most feminicides are committed by foreign men foments ethnic stigmatisation and feeds into racist and xenophobic attitudes in society (Smith and Bamberger, 2021).

Together, these gender disinformation strategies help to maintain unequal power structures and hinder the construction of a fairer society. Their impact is not only limited to direct victims, but also negatively influences social progress and the perception of gender equality as an attainable objective.

Impact of gender biases on AI algorithms

The proliferation of applications, virtual assistants, and robots that use AI has brought with it the growing concern of gender bias, an issue that has taken on relevance both within the technological and contemporary social field. This phenomenon has intensified due to the mass implementation of these tools at different organisations, which has shown an increase in incidents related to gender bias. By mirroring and amplifying pre-existing social inequalities, AI machines highlight the importance of urgently addressing this issue (UNESCO, 2020; Stanovsky et al., 2019).

Data play a central role in the creation of AI algorithms, since data's quality and diversity are essential to guarantee optimum performance and fairness in results (Downey, 2021). However, the inherent prejudices, whether conscious or unconscious, of those who collect and prepare these data can be integrated

into the algorithms, causing discriminatory effects (Bui, 2021). To mitigate these issues, it is crucial to adopt rigorous ethical procedures and promote greater awareness of the social implications of the technology, applying training techniques designed to reduce bias (Kelley and Ovchinnikov, 2020).

The AI's quality depends directly on the input data: if they contain biases or are incomplete, the technology can amplify pre-existing inequalities. For this reason, it is essential to guarantee transparency in access to data, encourage auditing them, and correct possible biases during algorithmic development (Daley, 2021). This focus should also be used to address gender disparities in designing and implementing AI, a critical issue given the historical lack of diversity in this regard (Coeckelbergh, 2019; Equinet, 2021). Widely documented cases of algorithmic bias (Crawford, 2013; Eisenstat, 2019; Hao, 2019; Knight, 2016; Rodríguez Martínez and Gaubert, 2020; Wang, 2018) highlight the severity of the problem, while reports such as the ones by Data2x (2021) specifically examine how data affect the lives of women (Vaitla et al., 2017).

Algorithms, intended as tools to transform data into results, require huge volumes of information to learn, which makes them a direct reflection of the input data (Guszcza, 2018). Subjective decisions made while collecting and preparing these data can introduce significant biases (F. R. A. Focus, 2018), which reinforces the need to design systems that consider the social and contextual realities of the environment where they are implemented (Guszcza, 2018). Moreover, the lack of diversity in the AI community has contributed to the creation of algorithms which, from the very beginning, reinforce pre-existing inequalities (Equinet, 2021).

A noteworthy problem is the perpetuation of discriminatory biases and stereotypes through search algorithms, as observed in the images that mainly associate "CEO" with men (Jean, 2021). This kind of result influences social perceptions and can feed discriminatory decisions. Similarly, neuronal networks trained with biased data tend to magnify existing inequalities, like in the case of an algorithm designed to identify human activities in images, which developed gender biases due to the nature of the data used (Knight, 2019; Kleinberg et al., 2020).

On the other hand, Benjamin (2020) warns how AI systems offer "the appearance of objectivity without public responsibility" (p. 53), which shows the importance of paying attention to the collection, storage, and processing of data, as well as ethical and technical standards applied to algorithm design (Gilli et al., 2019). Designing human-focused technologies can help to address these issues, ensuring that they reflect the social contexts within which they are implemented and do not reinforce existing inequalities.

OpenAI's Sora application claims to include protection mechanisms to prevent violent, sexual, or identity-based misuse. Based on technologies like DALL-E, it promises to reject harmful prompts. However, studies show these safeguards can be bypassed through specific instructions, raising concerns about their effectiveness and potential misuse (OpenAI, 2021). These tools may also develop biases or be used fraudulently, underscoring the need for ethical principles and robust safeguards (Mehrabi et al., 2019).

Algorithmic bias has significant real-world implications. For example, a European bank showed gender disparities in car loan approvals, disadvantaging women despite their lower default rates (Andreeva &

Matuszyk, 2018). These cases illustrate how automated decisions can deepen social inequalities (Hajian et al., 2016; Langston, 2015; Wachter-Boettcher, 2017; Zhao et al., 2017). Incidents like Google's 2015 image-tagging error and the Arkansas disability benefit algorithm further expose the risks of unregulated AI. Gender classification errors are disproportionately higher for women and people of color, while Amazon's recruitment algorithm penalized the term "women" and favored male-coded language (Larry, 2018; Meyer, 2021).

In advertising, job ads have shown gender pay disparities, reinforcing bias in targeting and segmentation (Gibbs, 2015; Datta et al., 2015). Similar patterns are seen in facial recognition and hiring systems, where embedded prejudices lead to discrimination (Greenfield & Griffin, 2018). Ethical, human-centered AI design is essential to counter these risks (Lambrecht & Tucker, 2016). Media bias also persists, portraying women in stereotyped roles (Brody & Hall, 2008), and female voices dominate disinformative audio content in Italy (March-May), reinforcing traditional gender norms. Tackling algorithmic gender bias requires transparency, diversity, and regulation to promote fairness and inclusivity.

Virtual assistants, AI, and regulatory measures

The relationship between women's work and technology has taken on growing interest in gender and technology studies. Thus, a socialist feminist focus, as pointed out by Wajcman (2010) provides a valuable framework to analyse intersections between women's work and AI. This focus highlights how the "domestication" of AI is built around an association with femininity, seen as docile, receptive, and oriented toward caretaking (Sutko, 2020).

An illustrative example of this idea is found in virtual assistants like Siri, Cortana, and Alexa, who symbolise what is called "feminisation of AI." These devices normalise dividing work by gender by associating femininity with symbolic and communicative tasks (Sutko, 2020). These technologies are designed to conduct roles that were traditionally related to female gender roles, such as calendar management, note taking, and task organisation (Sutko, 2020).

Moreover, it should be noted that most of these virtual assistants have female voices, which reinforces gender stereotypes and perpetuates the feminisation of technology. Although Google Assistant is an exception, since it does not have a name associated with a specific gender, devices like Siri, Alexa, and Cortana have feminine voices, highlighting the tendency to relate femininity with communication and customer services roles (Costa & Ribas, 2019; UNESCO, 2019).

This feminisation of AI also reinforces traditional gender norms through the performance of "emotional labour." This kind of work, which produces emotional responses and interpersonal relationships, is a central characteristic of post-Fordist economies dominated by the service sector (Altomonte, 2015). Said emotional labour, often compared with caretaking and domestic work, contributes to perpetuating traditional gender roles (Hardt, 1999).

On the other hand, gender preferences are also clear in the use of male voices in contexts perceived as authoritarian or professional. For example, IBM's Watson, used in medical settings, uses a male voice, reflecting the perception that these voices are more appropriate for professional and instructional contexts (Costa & Ribas, 2019).

Objectifying women also takes on new shapes through AI, when materialised through gendered robots. A paradigmatic case is Sophia, a humanoid robot developed by Hanson Robotics and designed to be "exceptionally attractive" and evoke a sensation of "mechanic-eroticism" (Zimmerman, 2018). This trend also manifests in selecting male and female robots for different occupational roles, perpetuating gender stereotypes and inequalities in the professional field (Nomura, 2020; Eyssel & Hegel, 2012).

To move toward more inclusive, fairer technology, it is essential to comprehensively address gender biases in the development and use of AI. In this regard, the European Union's proposal regarding the Artificial Intelligence Act (AIA) introduces significant measures to fight gender biases and promote equality in development and application of AI.

The AIA establishes regulatory restrictions and actions that directly address issues related to gender equality. This shows recognition on the European Union's part of the need to mitigate gender biases in AI and complements the existing legal framework with specific provisions on gender equality and non-discrimination (European Commission, 2022).

One of the AIA's key elements is its focus on the algorithm design phase. The regulation establishes that data sets used for training, validating, and testing algorithms must be representative, complete, and error-free, to prevent the incorporation of gender bias from the beginning of technological development. Additionally, it includes data management and governance practises to identify and correct possible biases during these stages (European Commission, 2022).

This proactive focus marks a significant change in development and use of AI, fostering greater scrutiny of gender biases and promoting more inclusive practises within the technological industry. Moreover, the AIA establishes transparency and monitoring obligations for after commercialising AI systems. This includes the creation of records during the training phase and later implementation, guaranteeing system traceability and facilitating the investigation of possible malfunctions or inappropriate behaviours (European Commission, 2022).

Relationship between gender media literacy, disinformation, and gender discrimination

AI has taken its position as a key tool in the digital transformation, but it also faces criticism for perpetuating gender biases present in the data and algorithms underlying it. The Organisation of Consumers and Users (OCU) has identified examples of these biases in tools like ChatGPT and Perplexity, highlighting the urgent need to design algorithms that do not reinforce social inequalities (Organisation of Consumers and Users, 2024). Moreover, recent research reveals that AI systems do not only reflect social prejudices, but can also amplify them, generated chauvinism- and racism-laden content that reinforces negative stereotypes (Cabrera, 2024).

Gender inequality, now recognised as a factor that feeds violence in multiple social spheres, finds a channel to spread through digital technologies. Studies like the ones by Liberia, Zurbano, and Barredo (2013), Estébanez and Vázquez (2013), and Muñiz and Cuesta (2015) show how these phenomena are aggravated in the digital age. Additionally, based on Díaz-Aguado's (2013) methodology, Rosser et al. (2015) analyses the relationship of gender and sexist content on social

media, highlighting the magnitude of the problem. Along with platforms like WhatsApp, these platforms not only disseminate traditional gender roles, but also legitimise sexist microaggressions, many times rendered invisible by their implicit social acceptance. For this reason, strengthening the critical ability of users is indispensable to detect and fight these messages (Aguaded Gómez and Díaz Gómez, 2008).

Moreover, gender disinformation is an urgent challenge, given that it disproportionately affects women and has serious consequences for democracy and political participation. According to Atuase (2018), misogyny and other biases present in disinformation perpetuate stereotypes and feed into discriminatory dynamics. Therefore, fostering critical thought and actively questioning sources and messages is an essential strategy to counteract this phenomenon (Sessa, 2020).

In this context, gender media literacy is an essential tool to promote a fairer society. In addition to fighting disinformation and discrimination, it fosters inclusive education that incentivises a critical look at media contents, laying the foundation for a new generation of news professionals who are committed to challenging gender stereotypes. This focus, supported by UNESCO, highlights the importance of generating content free from prejudice and inequality (García Matilla, 2015; López Safi, 2015; Buitrago, Navarro and García Matilla, 2015).

Only by means of a comprehensive focus that addresses education, technological ethics, and media literacy will it be possible to build a society that rejects inequality and promotes gender equity.

CONCLUSIONS

This research highlights how gender disinformation and biases in artificial intelligence perpetuate structural inequalities and stereotypes, affecting both women's representation and their access to professional opportunities and fundamental rights. These issues, deeply rooted in current social and technological dynamics, highlight the importance of addressing them comprehensively, joining educational, legislative, and technological efforts.

In relation to the hypotheses formulated at the beginning of this research, the results allow for a categorical validation of the proposed theoretical framework. Regarding H1, the evidence confirms a significant relationship between AI-generated disinformation and the perpetuation of stereotypes, as seen in the systematic delegitimization of female leaders through misogynistic narratives and manipulated digital content. Similarly, H2 is validated by the documented impact of algorithmic bias on professional development; the automation of recruitment and credit-scoring systems has been shown to penalize women, thereby reinforcing structural glass ceilings in STEM and financial sectors. Finally, the analysis supports H3, identifying gender media literacy as the most effective tool for mitigating discrimination. Strengthening critical thought and the ability to question algorithmic 'objectivity' empowers citizens to dismantle the gendered constructs materialized in contemporary technology.

From a critical perspective, these findings suggest that the integration of biased algorithms into public and private decision-making is not merely a technical error, but a significant challenge to democratic equity. By offering an 'appearance of objectivity without public responsibility', AI systems can institutionalize

discrimination under the guise of mathematical neutrality. This implies a profound risk for the long-term narrowing of the gender gap; if the 'Age of Algorithms' continues to be configured by heteronormative roles and the objectification of women, technology will act as a regressive force rather than a transformative one.

Furthermore, the legal and ethical responsibility for these outcomes remains alarmingly fragmented. While regulatory initiatives like the European Union's Artificial Intelligence Act (AIA) represent progress toward transparency and accountability, current mechanisms are often insufficient to address the subtle 'domesticated' feminization of AI seen in virtual assistants and care-oriented robotics. Without a fundamental shift toward feminist data science and intersectional design, these technologies will continue to naturalize gender divisions at a structural level, making legal redress increasingly complex.

Based on these findings, we can reflect on future implications and the path toward more inclusive development. One of the most urgent aspects is the need to guarantee that artificial intelligence systems reflect values of equity and social justice instead of reproducing inequalities from the past. To achieve this, it is fundamental to incorporate gender and intersectional perspectives from the early stages of technology design and development. This integration will not only enrich the systems created but will also contribute to society trusting in these tools.

Additionally, public policies must evolve to adapt to the complexity of current challenges. It is essential that governments adopt regulatory frameworks that not only regulate AI systems but also foster the active participation of underrepresented groups in the technological industry. This way, the homogeneity of

development teams can be reduced, which is one of the leading causes of algorithmic biases.

The role of education is also a central cornerstone for this transformation. Training in digital skills and media literacy with a gender perspective should be promoted from an early age and spread to professional contexts. Only through informed citizenry will it be possible to counteract the harmful effects of disinformation and foster critical and ethical use of technology.

On the other hand, inter-sectorial collaboration is an essential strategy to address these issues. Academic institutions, technological companies, non-governmental organisations, and international bodies must work together to develop innovative solutions that mitigate gender biases and fight disinformation. This cooperation can also facilitate the creation of global standards that guarantee transparency, fairness, and accountability in the use of artificial intelligence.

Ultimately, overcoming the systemic challenges posed by gender disinformation and algorithmic bias requires more than incremental technical adjustments; it demands a radical reconfiguration of the relationship between gender and technology. AI is not an autonomous entity but a reflection of the human decisions that shape its architecture. Therefore, the potential of these tools lies in their capacity for responsible, inclusive design that prioritizes diversity and fundamental rights. By fostering an informed citizenry and implementing robust regulatory standards, it is possible to build a fairer society where every individual can thrive under conditions of authentic equality, free from the digital shadows of historical prejudice.

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