

ARTIFICIAL INTELLIGENCE

IN SCIENTIFIC RESEARCH: AN ANALYSIS FROM THE ETHICS AND RESPONSIBILITY PERSPECTIVE

LA INTELIGENCIA ARTIFICIAL EN LA INVESTIGACIÓN CIENTÍFICA: UN ANÁLISIS DESDE LA ÉTICA Y LA RESPONSABILIDAD

Farzad Sattari-Ardabili¹

E-mail: farzadsattary@yahoo.com

ORCID: <https://orcid.org/0000-0001-9734-7921>

Arnoldo José de Hoyos-Guevara²

E-mail: dehoyos@pucsp.br

ORCID: <https://orcid.org/0000-0003-2418-728X>

¹ University of Mohaghegh Ardabili. Iran.

² Pontificia Universidade Católica de São Paulo. Brazil.

Suggested citation (APA, seventh edition) _____

Sattari-Ardabili, F., & de Hoyos-Guevara, A. J. (2026). Artificial intelligence in scientific research: an analysis from the ethics and responsibility perspective. *Sophia Research Review*, 3(1), 50-56.

Submission: 10/19/2025

Acceptance: 12/07/2025

Publication: 01/01/2026

ABSTRACT

This article analyzes the role of Artificial Intelligence (AI) in scientific research and higher education, highlighting both its opportunities and the ethical challenges it entails. Artificial Intelligence not only automates routine tasks but also facilitates content generation, complex data analysis, and the creation of adaptive learning environments, optimizing productivity and enhancing innovation. However, its use requires rigorous human oversight, as ethical, legal, and academic responsibility rests exclusively with the authors. Responsible use of these technologies involves protecting confidentiality and intellectual property rights and avoiding algorithmic biases that could affect fairness and scientific integrity. In education, teachers must guide students in the critical use of Artificial Intelligence, fostering digital skills, critical thinking, ethical judgment, and academic responsibility, ensuring that the technology complements, not replaces, creativity, pedagogical reflection, and human interaction. The ethical implementation of Artificial Intelligence requires responsible ecosystems that integrate technological innovation, sustainability, and academic humanism, ensuring that knowledge production is trustworthy, inclusive, and socially responsible, and that it contributes to the comprehensive development of students and the integrity of scientific research.

Keywords:

Artificial Intelligence, ethics, scientific research, human supervision, academic integrity.

RESUMEN

El artículo analiza el papel de la Inteligencia Artificial (IA) en la investigación científica y la educación superior, destacando tanto sus oportunidades como los desafíos éticos que implica. La Inteligencia Artificial no solo automatiza tareas rutinarias, sino que también facilita la generación de contenido, el análisis de datos complejos y la creación de entornos de aprendizaje adaptativos, optimizando la productividad y potenciando la innovación. Sin embargo, su uso requiere supervisión humana rigurosa, pues la responsabilidad ética, legal y académica recae exclusivamente en los autores. El uso responsable de estas tecnologías implica proteger la confidencialidad, los derechos de propiedad intelectual y evitar sesgos algorítmicos que puedan afectar la equidad y la integridad científica. En el ámbito educativo, los docentes deben guiar a los estudiantes en un uso crítico de la Inteligencia Artificial, fomentando competencias digitales, pensamiento crítico, juicio ético y responsabilidad académica, asegurando que la tecnología complemente y no sustituya la creatividad, la reflexión pedagógica y la interacción humana. La implementación ética de la Inteligencia Artificial requiere ecosistemas responsables que integren innovación tecnológica, sostenibilidad y humanismo académico, garantizando que la producción de conocimiento sea confiable, inclusiva y socialmente responsable, y que contribuya al desarrollo integral de los estudiantes y a la integridad de la investigación científica.

Palabras clave:

Inteligencia Artificial, ética, investigación científica, supervisión humana, integridad académica.



INTRODUCTION

Artificial Intelligence has become a central element in contemporary scientific research and higher education, profoundly transforming knowledge production methods, pedagogical strategies, and academic assessment processes. Its application is not limited to the automation of routine tasks but also encompasses content generation, information classification and analysis, the synthesis of scientific literature, and the creation of adaptive learning environments.

These tools allow to optimize the efficiency of research, improve the understanding of complex data and facilitate the communication of results, while offering opportunities to personalize teaching and support students and teachers in diverse and multicultural contexts (Floridi, 2018, 2023). Artificial Intelligence, therefore, has great potential to enhance creativity, productivity and innovation, provided that its implementation is guided by ethical principles and academic responsibility (Alonso-Rodríguez, 2024; León González & Pire Rojas, 2025).

However, the use of Artificial Intelligence in research and education raises significant ethical challenges that require careful attention. The automation of cognitive processes and content generation can introduce biases, errors of interpretation, or problems with authorship attribution, compromising the integrity of scientific knowledge. In response to these risks, international organizations such as the Committee on the Study of the Human Rights of Scientists (CST) have been working to address these challenges. On Publication Ethics (2023) has established that Artificial Intelligence tools cannot be considered authors of scientific publications, as they lack the capacity to assume ethical, legal, or intellectual responsibility for the content they generate. Human authors must declare any assistance from Artificial Intelligence in the preparation of manuscripts, clearly indicating the type of tool used, its specific function, and the scope of its involvement, ensuring that authorship and final responsibility remain exclusively in human hands.

Internationally renowned publishers, such as Elsevier, Springer Nature, and Taylor & Francis, have complemented these guidelines by establishing specific policies on the use of Artificial Intelligence in scientific production. According to these standards, Artificial Intelligence tools can be used to support specific tasks such as content organization, writing improvements, or literature searches, always under human supervision. Their use to generate figures, images, graphs, or original data is not permitted, except in very specific cases where these activities are part of the experimental design and can be transparently documented and verified. These publishers emphasize that Artificial Intelligence should act as a technical assistant and not as a replacement for critical judgment, creativity, or

human interpretation, so that the quality, reliability, and originality of the research are maintained.

The responsible use of Artificial Intelligence also involves considerations regarding privacy, intellectual property rights, and data confidentiality. Artificial Intelligence tools may require the input of sensitive information, so it is essential that researchers carefully evaluate the terms of use of these platforms, ensuring that personal data and unpublished results are not compromised. Transparency in the use of Artificial Intelligence strengthens trust between authors, reviewers, and editors and maintains scientific integrity in the face of potential conflicts of interest, errors, or algorithmic biases (Chávez-Cárdenas et al., 2025; Flores & García-Peñalvo, 2023).

Beyond scientific publication, the ethics of Artificial Intelligence has direct implications for educational practice. Teachers have the responsibility to guide students in the critical and conscious use of these technologies, fostering skills such as digital literacy, ethical judgment, and academic responsibility. Artificial Intelligence cannot replace analytical skills, pedagogical reflection, or human interaction in the learning process; its value lies in complementing and enhancing the intellectual and creative capacities of those who use it.

Overall, the implementation of Artificial Intelligence in scientific research and education requires a comprehensive approach that harmonizes technological innovation, ethics, and professional responsibility. Contemporary challenges include ensuring transparency in authorship, preventing bias, protecting intellectual property rights, and maintaining data confidentiality, while preserving the creativity and critical thinking of researchers and educators. The ethics of Artificial Intelligence are not an accessory component, but an essential condition for its use to generate real benefits, promoting more inclusive education, more reliable research, and responsible academic development. Within this framework, this article analyzes the role of Artificial Intelligence in scientific research from an ethical and responsible perspective, identifying principles, risks, and good practices that guide the actions of researchers, educators, and publishers in an increasingly automated and digitalized academic ecosystem.

METHODOLOGY

This research is developed using a qualitative and analytical approach, typical of an academic essay. Its purpose is to critically examine the use of Artificial Intelligence in scientific research and education, considering its ethical, legal, and professional responsibility implications. To this end, it draws on the analysis of documentary and academic sources, avoiding the application of empirical measurements or direct experimentation, with the aim of offering a

thoughtful and well-founded study of principles, risks, and best practices in the use of these technologies.

Sources were selected from international organizations such as the United Nations Educational, Scientific and Cultural Organization (2024), which provides guidelines on digital ethics and the responsible implementation of technology. Similarly, editorial and scientific publication guidelines of global relevance were included, such as those issued by the Committee on the Rights of the Child (CCPR), on Publication Ethics (COPE), Elsevier, Springer Nature, and Taylor & Francis, which regulate the use of Artificial Intelligence in knowledge production and academic authorship. Additionally, recent scientific articles and theoretical works on research ethics, philosophy of technology, academic integrity, and pedagogy, published between 2020 and 2025, were considered to ensure an up-to-date and relevant conceptual framework.

The analysis focuses on the critical interpretation of these texts, identifying the main recommendations, restrictions, and best practices in the use of Artificial Intelligence in scientific research and higher education. It examines, in particular, the responsibilities of authors, reviewers, and editors regarding transparency, attribution of authorship, data confidentiality, prevention of bias, and verification of results. Based on this documentary study, a reflective framework is constructed that allows for a discussion of professional ethics, emerging dilemmas, and the role of technology in promoting academic integrity, critical thinking, and educational humanism. This methodology ensures that the essay's conclusions are based on solid academic evidence and recognized international standards in ethics and scientific publishing.

DEVELOPMENT

The impact of Artificial Intelligence on scientific research and education is profound and manifests itself at various levels of the academic ecosystem. AI-based tools, such as adaptive learning platforms, automated tutoring systems, data analysis programs, and research support algorithms, have transformed the processes of teaching, assessment, and knowledge production. These technologies make it possible to optimize information management, identify relevant patterns in complex data, and personalize training, providing valuable information for more informed academic decision-making. However, their implementation also poses significant risks if teaching and research activities are reduced to the supervision of automated systems without critical mediation.

The use of Artificial Intelligence generates complex ethical dilemmas that require a comprehensive analysis. Data protection and the privacy of students and researchers constitute a central challenge, demanding informed consent mechanisms, effective anonymization, and security protocols that prevent the

misuse of sensitive information. Similarly, algorithmic biases represent a real risk, as automated systems can reproduce social or academic inequalities present in historical data, affecting the equity of educational and research processes. The transparency and explainability of algorithms are essential for teachers, researchers, and students to understand how results are generated and to be able to critically audit the processes.

The autonomy and ethical responsibility of teachers and researchers are central principles in this context. It is not enough to master technological tools; it is necessary to train students to understand the foundations, risks, and limitations of Artificial Intelligence, promoting critical thinking, ethical discernment, and responsible decision-making.

Education and research professionals must continually evaluate the results produced by Artificial Intelligence, ensuring that its application respects criteria of equity, inclusion, and justice, and that it contributes to the comprehensive development of students and the strengthening of scientific integrity. Likewise, technological innovation must complement creativity, empathy, and ethical deliberation, preserving the human dimension of learning and research in the face of the increasing automation of knowledge.

Resnik & Hosseini (2025) highlight the need to update ethical standards in scientific research due to the increasing use of Artificial Intelligence. They point out that these technologies present specific risks related to transparency, data validity, and the responsibility of researchers for the results generated. They argue that the scientific community requires clear guidelines to guide the ethical integration of these tools, emphasizing that the final responsibility for research always rests with human researchers. This perspective underscores that ethics should govern not only the conduct of authors but also the way in which Artificial Intelligence systems are used in the generation and analysis of knowledge.

Limongi (2024) argues that the application of Artificial Intelligence in scientific research must be aligned with principles of integrity and transparency. The author warns that, without rigorous ethical oversight, these tools can introduce biases, errors of interpretation, or reproduce existing inequalities in the data. Limongi emphasizes the need to train researchers in digital and ethical competencies, ensuring that Artificial Intelligence serves as a support for scientific rigor and not as a substitute for the researcher's critical judgment.

Regarding the use of this tool for scientific research, Klockmann et al. (2022) point out that automated decisions in research can have long-term impacts on society and the environment. They emphasize the importance of incorporating ethical criteria that consider the consequences of research for future generations, promoting an approach that goes beyond

immediate benefit and seeks sustainability, equity, and social justice.

Branda et al. (2025) argue that the integration of Artificial Intelligence into scientific research should focus on human-machine collaboration, where technology enhances the researcher's capabilities without replacing creativity or ethical judgment. They emphasize that the success of research depends on a human-centered synergy, in which Artificial Intelligence systems are used as tools to support the responsible interpretation, analysis, and communication of results.

Stahl (2023) proposes the concept of responsible AI ecosystems, where intelligent systems are designed and managed to integrate ethical principles from their inception. He emphasizes that responsibility cannot fall solely on end users but must be embedded in the architecture and governance of systems, ensuring transparency, accountability, and minimization of ethical risks.

Radanliev (2025) emphasizes the importance of incorporating principles of transparency, fairness, and privacy in the development of Artificial Intelligence tools. He points out that algorithmic biases and lack of explainability can compromise the integrity of research, making it essential to establish protocols that ensure the traceability of automated decisions and compliance with ethical standards from the design to the implementation of the technology.

Giarmoleo et al. (2024), through a systematic literature review, identify that the ethics of Artificial Intelligence in research is not limited to the prevention of errors or biases, but also encompasses social responsibility and the impact of scientific results. They recommend a comprehensive approach that combines human oversight, accountability, and ethics education for researchers, ensuring that the technology is used consciously and responsibly.

Bouhouita-Guermech et al. (2023) analyze the specific challenges that Artificial Intelligence poses to research ethics, including the protection of sensitive data, confidentiality, and intellectual property. They note that researchers must maintain control and oversight over automated processes, ensuring that technological innovation does not compromise the integrity of results or trust in scientific research.

An analysis of these contributions reveals that the use of Artificial Intelligence in scientific research poses both significant opportunities and ethical challenges. First, it is emphasized that the ultimate responsibility for the results generated through these technologies rests exclusively with human researchers, which requires rigorous oversight and constant critical judgment. Artificial Intelligence should be used as a supporting tool that enhances creativity, data interpretation, and communication of results, without replacing the autonomy and discernment of the researcher.

The need for transparency and traceability in all automated processes is also emphasized. The lack of explainability in algorithms can lead to errors, biases, or unfair decisions, compromising the integrity and reliability of research. Therefore, the implementation of clear ethics protocols, as well as training in digital and ethical skills, is considered essential to prevent negative impacts and ensure the responsible use of these technologies.

Another relevant point is the social dimension and intergenerational responsibility. AI-assisted research must not only meet criteria of technical rigor but also consider the long-term effects on society and the environment, ensuring that the benefits are distributed equitably, and that potential harm is minimized.

Finally, it is emphasized that ethics in the use of Artificial Intelligence implies the creation of responsible ecosystems, where intelligent systems are designed from the outset with principles of equity, privacy, accountability, and sustainability in mind. The integration of technology should foster conscious human-machine collaboration, promoting a human-centered approach that combines technological innovation with strong ethical values and strengthens scientific integrity and trust in research.

Furthermore, the Publication Ethics Committee (2023) has established guidelines that are directly applicable to the educational and academic fields. Among the most important principles is that Artificial Intelligence tools cannot appear as authors of scientific articles, publications, or academic works, as they lack ethical, moral, and legal responsibility.

In the field of scientific publication, authors must be solely human, and artificial intelligence tools, such as ChatGPT or advanced language models, cannot be listed as authors. This position is supported by the Publication Ethics Committee (Committee on Publication Ethics). on Publication Ethics (COPE), an international organization that provides guidelines to promote integrity, ethics and transparency in scientific publishing, as well as other reference entities, such as the World Association of Medical Editors (World Association of Medical Editors (WAME), which seeks to improve quality and ethics in biomedical publishing, and JAMA Network, a group of highly reputable medical journals published by the American Medical Association, which establishes clear policies on integrity, authorship, and responsible use of new technologies. on Publication Ethics and these organizations agree that the ethical, legal, and scientific responsibility for content always rests with human authors, while Artificial Intelligence can only act as a supporting tool, without assuming authorship or critical evaluation roles.

The editorial policies of Elsevier, Springer Nature, and Taylor & Francis complement these guidelines, emphasizing transparency, traceability, and human

oversight in the use of AI. Elsevier (2025) recognizes that generative AI and AI-assisted technologies can be useful tools for researchers and authors, enabling them to organize content, synthesize information, identify research gaps, and improve writing.

However, these tools should not replace critical thinking or human oversight, and authors are responsible for the accuracy, originality, and ethics of their manuscripts. The use of these tools must be explicitly stated in the manuscript, including the name of the tool, its purpose, and the extent of human oversight. Artificial Intelligence may not be listed as an author or co-author, nor may it be used to generate or alter images or graphic art, except in specific cases of experimental design that are explained in detail in the methods section.

Reviewers must maintain the confidentiality of manuscripts and not upload them to AI tools, as this could violate authors' copyright and privacy. Critical review and scientific evaluation should be performed solely by humans, avoiding reliance on AI to make judgments about the quality or integrity of the manuscript.

Editors must also preserve the confidentiality of manuscripts and refrain from using artificial intelligence to make editorial decisions, as critical evaluation requires human judgment. Throughout the editorial process, artificial intelligence is used as a supporting tool: identifying suitable reviewers, verifying duplicates, ensuring adherence to standards, and assisting in editing, proofreading, and preparing proofs, always with human supervision.

Springer Nature (2023) reinforces the idea that these tools should be considered solely as technical support, never as a substitute for critical judgment and human creativity and recommends that authors rigorously review and validate any generated content. Springer Nature is closely monitoring advances in Artificial Intelligence and updates its policies as necessary. Regarding authorship, large language models (LLMs), such as ChatGPT, do not meet the authorship criteria, as authorship implies responsibility and accountability, which cannot be attributed to an AI. If an LLM is used, it must be documented in the Methods section of the manuscript. AI-assisted text improvements for style, grammar, or writing correction do not require a declaration, provided there is human oversight, and the author confirms that they reflect their original work.

Regarding AI-generated images, Springer Nature prohibits their use in publications due to legal and scientific integrity concerns. Exceptions are only permitted in cases where the images come from agencies with appropriate legal contracts, explicitly refer to AI studies, or are based on verifiable scientific data. All AI-generated images must be clearly labeled as such.

Regarding the use of AI by reviewers, the evaluation of manuscripts depends on the expert judgment of reviewers, which should not be replaced by generative AI, which can produce erroneous, biased, or outdated information. Reviewers should not upload manuscripts to AI tools, and if AI is used to support the review, it should be transparently stated in the review report.

Overall, Springer Nature's policies seek to ensure integrity, transparency, and human accountability at all stages of scientific publishing, limiting the role of AI to assisted tasks under supervision and without attributing authorship.

Taylor & Francis (2025), for their part, recognize that Generative AI tools, such as large or multimodal language models, offer opportunities to improve idea generation, support expression in non-native languages, and accelerate research and its dissemination. However, these tools present risks, such as errors, biases, lack of attribution, confidentiality issues, and potential data misuse.

Authors are responsible for the originality, validity, and integrity of their manuscripts and must use these tools with human oversight, ensuring accuracy, transparency, and compliance with intellectual property and privacy rights. Generative AI cannot be listed as the author, as it cannot assume responsibility or comply with the contractual and ethical requirements of authorship. Any use of AI must be explicitly declared, indicating the tool name, version, purpose, and how it was used, either in the Methods, Acknowledgments, or Preface sections, depending on the article or book.

Taylor & Francis prohibits the use of Generative AI to create or manipulate images, figures, or original research data, and limits its use to language enhancement, idea generation, or technical assistance tasks under human control.

Editors and reviewers must also maintain the confidentiality of manuscripts and cannot upload unpublished content to AI tools. Reviewers may only use AI to improve the clarity of language, while remaining accountable for the accuracy and integrity of their assessments. Overall, Taylor & Francis' policies seek to encourage responsible use of Generative AI, ensuring integrity, transparency, and rights protection in scientific publishing.

Research ethics has a direct impact on university teaching practice, as the principles that guide scientific production must be transferred to the educational environment. The use of Artificial Intelligence in teaching not only involves the application of technological tools but also the development of critical and ethical competencies in students.

This includes teaching how to responsibly evaluate the results generated by automated systems, understand their limitations, and recognize the potential biases or risks these technologies can introduce. Transparency

in the use of Artificial Intelligence, as well as the ability to monitor and validate automated processes, are fundamental competencies for training professionals capable of interacting with technology without losing their critical judgment and ethical responsibility.

This approach strengthens the relationship between technological innovation and academic humanism, ensuring that university education is not reduced to algorithmic knowledge management. AI-mediated teaching should contribute to the development of critical, creative, and socially responsible individuals, capable of making informed decisions based on ethical criteria. Furthermore, humanism remains the central focus of education in the digital age: AI should enhance human skills such as critical thinking, creativity, empathy, and ethical deliberation, rather than replace them.

Teachers act as ethical and pedagogical mediators, overseeing the use of technology and ensuring that it contributes to students' comprehensive development, promoting equity and respect for diversity. Technological innovation, guided by clear ethical principles and guidelines from international organizations and academic publishers, offers unprecedented opportunities to improve education and scientific research. Maintaining a balance between technological efficiency and pedagogical humanism ensures that Artificial Intelligence fulfills its role as a tool that enhances learning and knowledge production, reinforces professional responsibility, and strengthens academic integrity at all levels of the educational ecosystem.

CONCLUSIONS

Artificial Intelligence has redefined research and teaching processes, facilitating the production, analysis, and dissemination of knowledge. However, its value lies in complementing, not replacing, the critical thinking, creativity, and autonomy of researchers and teachers. Technology can optimize tasks and expand understanding of data, but ethical, interpretive, and pedagogical decisions remain the sole responsibility of humans. The key lies in maintaining a conscious collaboration between the human intellect and the analytical capacity of machines, preserving the ethical and humanistic dimension of knowledge.

The development of automated systems and generative models requires clear standards that guarantee traceability, explainability, and accountability. Transparency in the declaration of the use of Artificial Intelligence in publications and academic processes strengthens trust in research and avoids authorship conflicts, plagiarism, or manipulation of results. Furthermore, human oversight must be constant to prevent bias, errors, or distortions, ensuring that the principles of scientific integrity, fairness, and veracity remain central to the production of knowledge.

The use of Artificial Intelligence in higher education requires teachers and researchers to develop advanced ethical and digital skills. It is not enough to master the technology; it is also necessary to understand its limits, social implications, and potential risks. Faculty have a duty to guide students toward a critical and conscious use of these tools, promoting reflection, self-regulation, and informed decision-making. In this way, Artificial Intelligence becomes a means to strengthen academic responsibility, intellectual integrity, and digital citizenship.

The integration of Artificial Intelligence into science and education should be aimed at building responsible ecosystems where innovation, ethics, and sustainability coexist in balance. Technology, in the service of humanism, must contribute to social equity, data protection, respect for diversity, and the sustainable development of knowledge. Only a comprehensive ethical approach will allow Artificial Intelligence to promote more inclusive education, more reliable research, and a science committed to the well-being of present and future generations.

REFERENCES

- Alonso-Rodríguez, A. M. (2024). Hacia un marco ético de la inteligencia artificial en la educación. *Teoría De La Educación. Revista Interuniversitaria*, 36(2), 79–98. <https://doi.org/10.14201/teri.31821>
- Bouhouita-Guermech, S., Gogognon, P., & Bélisle-Pipon, J.-C. (2023). Specific challenges posed by artificial intelligence in research ethics. *Frontiers in Artificial Intelligence*, 6. <https://doi.org/10.3389/frai.2023.1149082>
- Branda, F., Ciccozzi, M., & Scarpa, F. (2025). Artificial intelligence in scientific research: Challenges, opportunities and the imperative of a human-centric synergy. *Journal of Informetrics*, 19(4), 101727. <https://doi.org/10.1016/j.joi.2025.101727>
- Chávez-Cárdenas, M. del C., Fernández-Marín, M. Á., & Lamí-Rodríguez del Rey, L. E. (2025). Web educativa e inteligencia artificial: Transformando el aprendizaje contemporáneo. Sophia Editions.
- Committee on Publication Ethics. (2023). Authorship and AI tools. <https://publicationethics.org/guidance/cope-position/authorship-and-ai-tools>
- Elsevier. (2025). Generative AI policies for journals. <https://www.elsevier.com/about/policies-and-standards/generative-ai-policies-for-journals>
- European Union. (2022). *Ethical guidelines on the use of artificial intelligence (AI) and data in teaching and learning for educators*. <https://data.europa.eu/doi/10.2766/153756>

- Flores Vivar, J. M., & García-Peñalvo, F. J. (2023). Reflexiones sobre la ética, potencialidades y retos de la Inteligencia Artificial en el marco de la Educación de calidad (ODS4). *Comunicar*, 31(74), 37-47. <https://doi.org/10.3916/C74-2023-03>
- Floridi, L. (2023). *Ethics of artificial intelligence: Principles, challenges, and opportunities*. Oxford University Press.
- Floridi, L., Cowls, J., Beltrametti, M., Chatila, R., Chazerand, P., Dignum, V., Luetge, C., Madelin, R., Pagallo, U., Rossi, F., Schafer, B., Valcke, P., & Vayena, E. (2018). AI4People-An Ethical Framework for a Good AI Society: Opportunities, Risks, Principles, and Recommendations. *Minds and machines*, 28(4), 689–707. <https://doi.org/10.1007/s11023-018-9482-5>
- Giarmoleo, F. V., Ferrero, I., Rocchi, M., & Pellegrini, M. M. (2024). What ethics can say on artificial intelligence: Insights from a systematic literature review. *Business and Society Review*, 129(2), 258–292. <https://doi.org/10.1111/basr.12336>
- Klockmann, V., von Schenk, A., & Villeval, M. C. (2022). Artificial intelligence, ethics, and intergenerational responsibility. *Journal of Economic Behavior & Organization*, 203, 284–317. <https://doi.org/10.1016/j.jebo.2022.09.010>
- León González, J. L., & Pire Rojas, A. (2025). Investigación, neurociencia e inteligencia artificial: Hacia una formación universitaria integral. Sophia Editions
- Limongi, R. (2024). The use of artificial intelligence in scientific research with integrity and ethics. *Future Studies Research Journal: Trends and Strategies*, 16(1), e845. <https://doi.org/10.24023/Future-Journal/2175-5825/2024.v16i1.845>
- Radanliev, P. (2025). AI ethics: Integrating transparency, fairness, and privacy in AI development. *Applied Artificial Intelligence*, 39(1). <https://doi.org/10.1080/08839514.2025.2463722>
- Resnik, D. B., & Hosseini, M. (2025). The ethics of using artificial intelligence in scientific research: new guidance needed for a new tool. *AI and ethics*, 5(2), 1499–1521. <https://doi.org/10.1007/s43681-024-00493-8>
- Springer Nature. (2023). Artificial Intelligence (AI). <https://www.springer.com/in/editorial-policies/artificial-intelligence--ai-/25428500?srsId=Afm-BOoorwcXvMqatuwUCIAmzicc2JcgelYa348sYwCJ-095BioUVFHDuT>
- Stahl, B. C. (2023). Embedding responsibility in intelligent systems: From AI ethics to responsible AI ecosystems. *Scientific Reports*, 13, 7586. <https://doi.org/10.1038/s41598-023-34622-w>
- Taylor & Francis. (2025). IA Policy. <https://taylorandfrancis.com/our-policies/ai-policy/>

United Nations Educational, Scientific and Cultural Organization. (2024). *Recommendation on the Ethics of Artificial Intelligence*. <https://www.unesco.org/en/articles/recommendation-ethics-artificial-intelligence>

Conflicts of Interest:

The authors declare no conflicts of interest.

Author Contributions:

Farzad Sattari-Ardabili, Arnaldo José de Hoyos-Guevara: conception and design of the study, data acquisition, analysis and interpretation, manuscript writing, critical review of content, statistical analysis, and overall supervision of the study.