

THE ROLE OF RESPONSIBLE CONDUCT IN ACADEMIC ETHICS AND INTEGRITY: A BIBLIOMETRIC PERSPECTIVE

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Abstract

Using a bibliometric methodology, the current study examined the development and worldwide trends in the areas of ethics, academic integrity, and scientific integrity as well as the responsible conduct of researchers, faculty, students, and doctoral students. Analyzing the theoretical and applied contributions from the specialist literature was the goal of the study in order to pinpoint the primary research themes and any gaps that still existed. The discovery of networks of collaboration between authors and institutions demonstrated how responsible behavior supports academic integrity and ethical standards and how interest in addressing these issues is growing. It was also noticed an increase in international collaboration, especially between Asian and European institutions. What stands out, however, is the rather small number of applied studies. The databases that were the basis of the research were Scopus and WOS, the articles published in the period 1992-2024 being analyzed. The bibliometric analysis was carried out with the help of the VOSviewer software, which allowed mapping the links established between authors, institutions, terms or publications, starting from the frequency of keywords, authors, citations and thematic clusters. The research led us to the conclusion that responsible conduct is an important element in ensuring ethics and academic integrity, this being proven by the interest that researchers have shown through its approach in various scientific researches, but we would find that there is still a need of a global and systematic approach to this concept, which could thus contribute to the creation of an ethical and transparent academic and scientific environment.

Key words: bibliometric analysis, academic ethics, academic integrity, responsible conduct, globalization

INTRODUCTION

Academic integrity is a important component for preserving scientific values in a worldwide setting characterized by difficulties like rapidly changing technologies (like artificial intelligence) or the demands of quick publication.

Because academic and research ethics and integrity are essential components of creating a rigorous and responsible academic community, encouraging social responsibility, advancing knowledge, and ensuring that the research conducted contributes to the common good, as in other fields governed by ethics, maintaining the caliber, legitimacy, and applicability of scientific activity depends heavily on them [10, 21].

Therefore, one of the purposes of ethics and academic integrity is to guarantee the validity and trust of the scientific community as well as the results of the study that was carried out. By forbidding data manipulation or fabrication, ethical principles protect the reliability and quality of scientific findings so that they can be verified, replicated, and used in subsequent studies.

However, academic and scientific ethics safeguard the rights and interests of all participants in the research process, including avoiding the exploitation of authors and researchers and upholding the confidentiality and welfare of the communities involved.

Through ethical practices, it can be ensured that all collaborators are recognized for their contributions, preventing some unethical phenomena, such as plagiarism or unjustified

authorship, but also conflicts of interest, promoting equity both in international and interdisciplinary collaborations.

Another role of academic ethics and integrity is that of promoting responsible conduct by educating researchers in the spirit of honesty and responsibility, by promoting ethical norms that contribute to the prevention of unethical practices, which are not only related to plagiarism or self-plagiarism, but also to manipulation data or publication in predatory journals. Ethics and integrity encourage researchers to publish their results completely and transparently, even if they are not favorable or contradict certain assumptions from which they started.

The fundamental values of the academic community—integrity, inventiveness, and social responsibility—are upheld by academic ethics, which encourages the development of original ideas and solutions as well as long-term solutions to global issues.

At the same time, academic ethics is what prevents and manages the negative consequences of disrespected integrity, which can compromise both the reputation of researchers and, as it is, that of academic institutions, negatively affecting both individual careers and public trust in science. Without respecting these values, trust in education, research and science could be compromised, and the development of knowledge would be limited by unethical and irresponsible practices.

Analyzing the way in which various researchers have approached these aspects related to ethics and academic integrity, we find that since 1973 Merton K.R. introduces different ethical norms of science, such as universalism, communalism, disinterestedness and organized skepticism, which are essential for scientific progress [20]. In 2005 Resnik B.D. presented various ethical aspects of science, including integrity in research, conflicts of interest and social responsibility of scientists [23], and Krinsky S., in 2004, analyzed conflicts of interest in scientific research, emphasizing that academic integrity is a essential aspect in maintaining scientific objectivity [15]. In 2007 John P.A. Ioannidis highlights various problems related to the

reproducibility of scientific research, emphasizing the need to respect ethical standards for the validity of scientific results [14]. In 2003 Steneck H.N. made a comprehensive description of responsible conduct in research, highlighting the role of education in the formation of these qualities for researchers, and in 2009 Fanelli D., through a meta-analysis, tried to estimate the prevalence of fabrication and falsification of data in science, emphasizing the importance of promoting integrity in scientific research [9, 26]. In 2013, Anderson S.M. carried out a comparative analysis of the role that institutional policies have in promoting ethics and integrity in research [1]. In 2022, Eaton S.E. analyzed the impact of emerging technologies on academic integrity and proposed strategies to maintain ethical standards in education, and Lancaster T. identified the need to adapt academic integrity to the challenges brought by artificial intelligence, insisting on the need to update educational policies [6, 16]. In 2023, Else H. analyzed the unethical market of selling authorship in scientific works, highlighting the concerns of publishers and the negative impact on academic integrity, and Chawla D.S. tracked the prevalence of unjustified authorship in science and its effects on the credibility of research, emphasizing the importance of respecting ethical criteria in the attribution of authorship [5, 8].

Additionally, there are national documents that stress the value of academic integrity and ethics in preserving the caliber and legitimacy of scientific research. According to a National Council of Ethics advice on integrity in scientific research, as well as Babes-Bolyai University, the need to respect ethical norms is emphasized, considering that they are essential for ensuring excellence in research and education [19, 27]. In the Good Practice Guide of the "Grigore T. Popa" University of Medicine and Pharmacy in Iasi, ethics is considered essential for the relations between staff and the institution, given also within the interactions with external beneficiaries, thus contributing to the promotion of university values [28]. In turn, the Polytechnic University of Bucharest, through its guide, underlines the

same values [29]. The Center for Research in Applied Ethics of the University of Bucharest assumes the role of promoter in stimulating debates about applied ethics and moral philosophy that can support the growth of an academic integrity culture [25].

These perspectives all emphasize the consensus among researchers that maintaining academic and research integrity and ethics is essential to ensuring the quality and credibility of these fields.

The purpose of the paper is to examine the development and worldwide trends in the areas of ethics, academic integrity, and scientific integrity as well as the responsible conduct of researchers, faculty, students, and doctoral students based on published literature.

MATERIALS AND METHODS

The research methodology involved going through the following stages: identifying the research themes, evaluating the impact that the scientific articles had on the existing literature and graphically representing the evolution of the terms "academic integrity", "academic ethics" and "responsible conduct". The searches were made in the WOS and Scopus databases on 29.11.2024, using 3 keywords. Thus, after the first search with the key term "academic ethics" in the WOS database, a number of 21,514 articles resulted, and there were 332,218 articles found in the Scopus database. When the second term "academic integrity" was added, 1,439 papers from the WOS database and 3,208 articles from the Scopus database were found. We included the third important term "responsible conduct" to our searches in the Scopus database because of the greater quantity of publications there. This resulted in a number of 75 articles (Fig. 1).

The bibliometric analysis, which is a research method that uses statistical and mathematical techniques to study the models and trends in the scientific literature [18] allowed us to highlight both the temporal trends, related to the frequency of publication of articles with the theme of ethics and academic integrity, and and the identification of collaboration networks between authors or institutions,

which highlighted the most important centers of excellence. The analysis followed the citations and impact of the publications, allowing the outline of some theoretical bases and concepts that can be the basis of further research.

By creating conceptual maps, made with the help of the VOSviewer software, we were able to offer a much more complex vision of the analyzed subject.

RESULTS AND DISCUSSIONS

Regarding the evolution of scientific research in the field of ethics and academic integrity, we found that since the first article appeared in 1992, their number has increased constantly, reaching 195 articles in 2024, articles that have been cited 2,785 times.

Starting from the 3,208 identified articles, through the bibliometric analysis we sought to obtain a comprehensive picture of the research on ethics and academic integrity, highlighting global trends, essential contributions and existing gaps in the specialized literature. By mapping the collaborative networks between authors, institutions and regions, we sought to identify the strengths and weaknesses of the academic system, as well as the impact of emerging technologies on academic integrity. The conceptual map between co-authors and countries illustrates the connections and the intensity of cooperation between researchers from various countries, being generated based on bibliometric data from the analyzed publications and providing information about the structure and dynamics of international collaborations.

We find that the USA and the United Kingdom appear as central nodes, having a major influence in global research networks and having intense collaborations with other nations, such as China, Germany or India, which are leaders in global academic production.

China has strong connections with partners in Asia, Europe and North America, underscoring a significant increase in Asian influence in research.

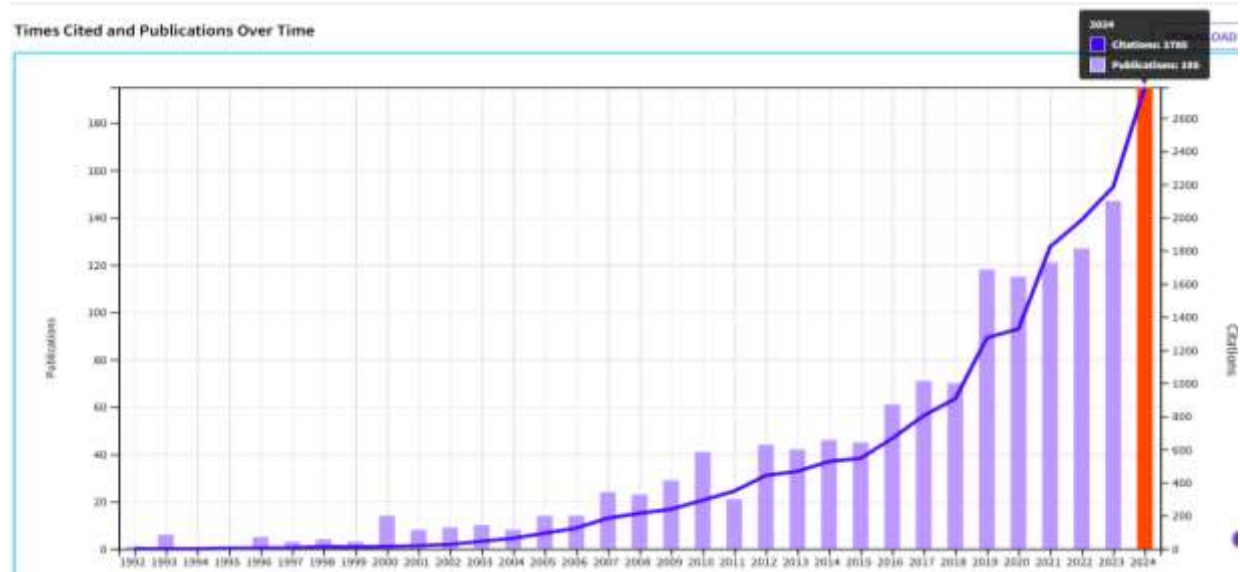


Fig. 1. The evolution of scientific research in the field of ethics and scientific integrity
Source: [30].

The map also highlights distinct thematic and regional clusters. The blue cluster, European, highlights strong collaborations between countries such as Germany, Spain and Belgium due to European funding programs. The green cluster, Asia, includes countries such as India, Malaysia or Indonesia reflecting these significant regional collaborations for research. The red cluster includes countries from East Asia and the Middle East, which constitute

another pole of strong scientific cooperation. Countries with fewer connections, such as Nepal, Sri Lanka and Kazakhstan appear on the periphery of the network, due to the low level of integration in global collaborations. Romania is present in this network, but has a smaller number of connections, its participation being a modest one within these networks (Fig. 2).

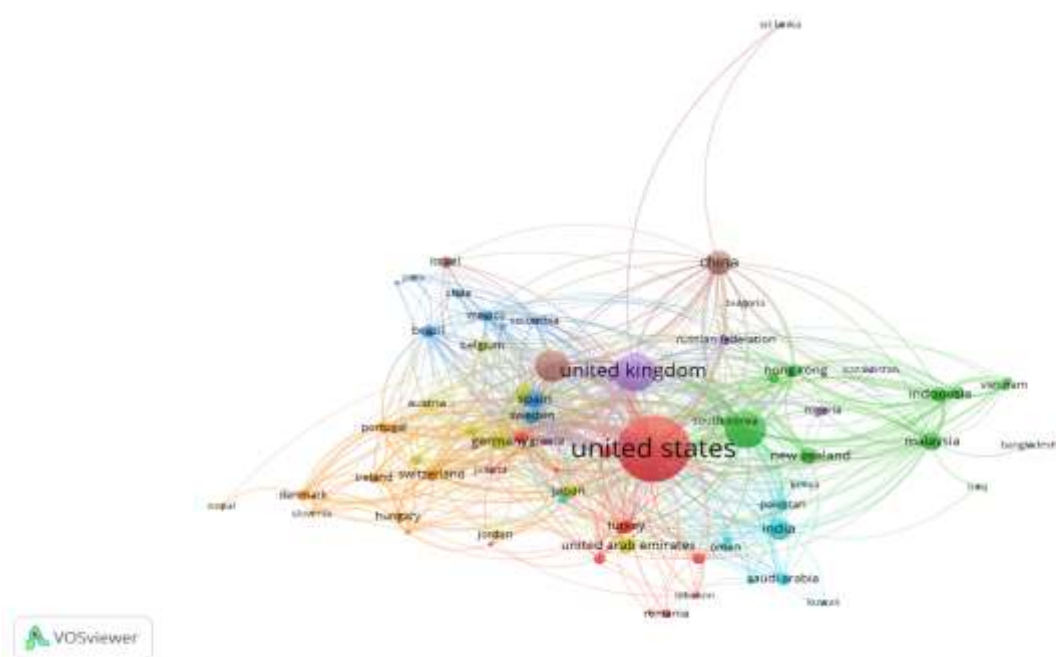


Fig. 2. The relationship between co-authors and countries
Source: own processing VOSwiever [30].

Thus, we find that the general network is dense, demonstrating the significant integration of countries in global collaborations, with a few exceptions. Influential states play an important role in disseminating knowledge and connecting more isolated regions.

The relationship between co-occurrence and keywords allowed us to establish the frequency with which keywords appeared together in the same context, highlighting the dominant topics and the relationships between them within a field of ethics and academic integrity and being essential in understanding the hierarchy and the interdependence between the analyzed subject and for the direction of future studies. Putting as a condition the use of a minimum number of 5 keywords, 869 scientific articles resulted, which were grouped into 7 clusters (Fig. 3).

The red cluster highlights topics such as "academic integrity", "cheating" or "artificial

intelligence", demonstrating researchers' concerns related to ethical violations in education and the impact of emerging technologies, such as artificial intelligence, on academic practices. Terms such as "dishonesty" and "cheating detection" show the challenges related to the detection of unethical behaviors, especially in the educational environment. The green cluster is centered on the ethics of scientific and medical research, including terms such as "research ethics", "scientific misconduct" and "medical research" highlighting concerns related to the correctness of publication (publication ethics) and the validity of clinical studies (clinical trials). The blue cluster highlighted the human dimension of ethics, with terms such as "human" and "ethics" emphasizing the social responsibility and ethical aspects of medical research.

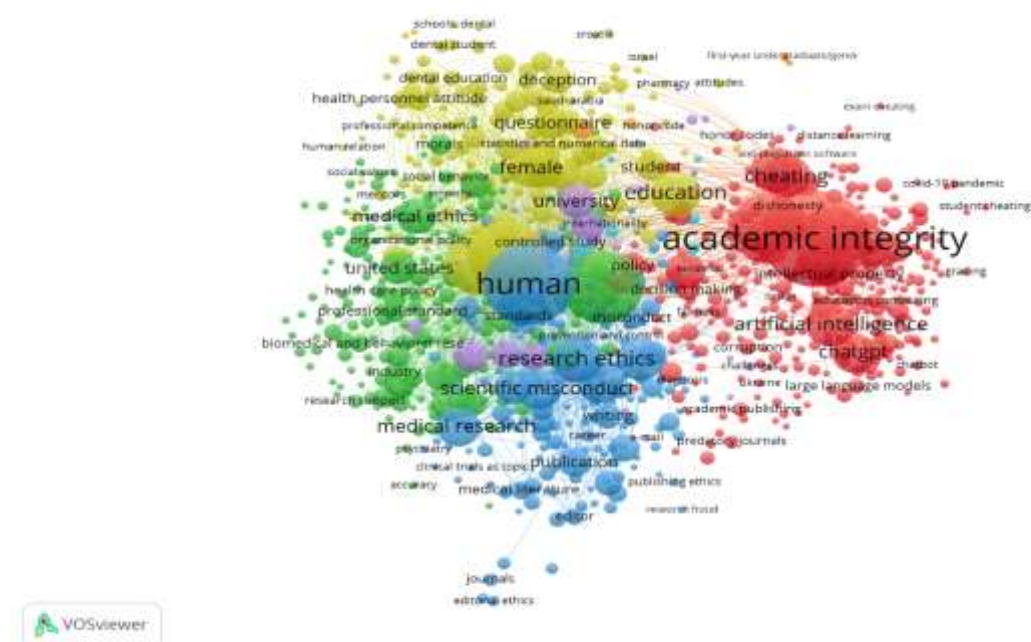


Fig. 3. Co-occurrence relationship - keywords
Source: own processing VOSviewer [30].

The yellow cluster highlighted aspects related to education and demography, including terms such as "education", "student" and "questionnaire" starting from studies focused on the application of academic integrity among students. The connections between the clusters are articulated through central terms such as "academic integrity" and "research ethics"

demonstrating the interdependence between education, research ethics and emerging technologies. Thus the analysis demonstrated the interaction between the fields of academic integrity, research ethics and modern technologies, providing a complex perspective on the dominant topics and the relationships between them, pointing out contemporary

issues including the effects of AI and ethical publication, and offering a structure for setting priorities for upcoming studies and regulations. Figure 4 highlights the relationships between co-cited papers and cited references in the field of academic ethics and research integrity, providing insight into the conceptual structure of this field. The dense groupings on the left, dominated by the works of McCabe D.L. and Trevino I.K. shows a well-established subfield focused on the study of unethical student behavior and the implementation of honor codes in education. These works are frequently co-cited, which underlines their importance as fundamental references in this field. Since Fanelli D.'s publications on the right deal with a specific subfield focused on the integrity of scientific research—with a focus on the frequency of data falsification and article retractions—they are separated from the rest of the map. Although less connected to the rest of

the network, these works are considered fundamental to the understanding of ethical misconduct in academia, being frequently cited in this context. The connections between the clusters are relatively low, because the subfields of academic ethics, focused on student behavior, and research integrity, focused on researcher behavior, are studied separately, with little conceptual overlap. However, the weak connection between Fanelli's works and those in the educational cluster demonstrates that they could be deepened in future research. Thus, a clear segmentation of the field between two major themes is established: unethical academic behavior in education and the integrity of scientific research. The limited connections between these subfields show the opportunity for conceptual integration needed for a broader understanding of the link between educational and scientific ethics.

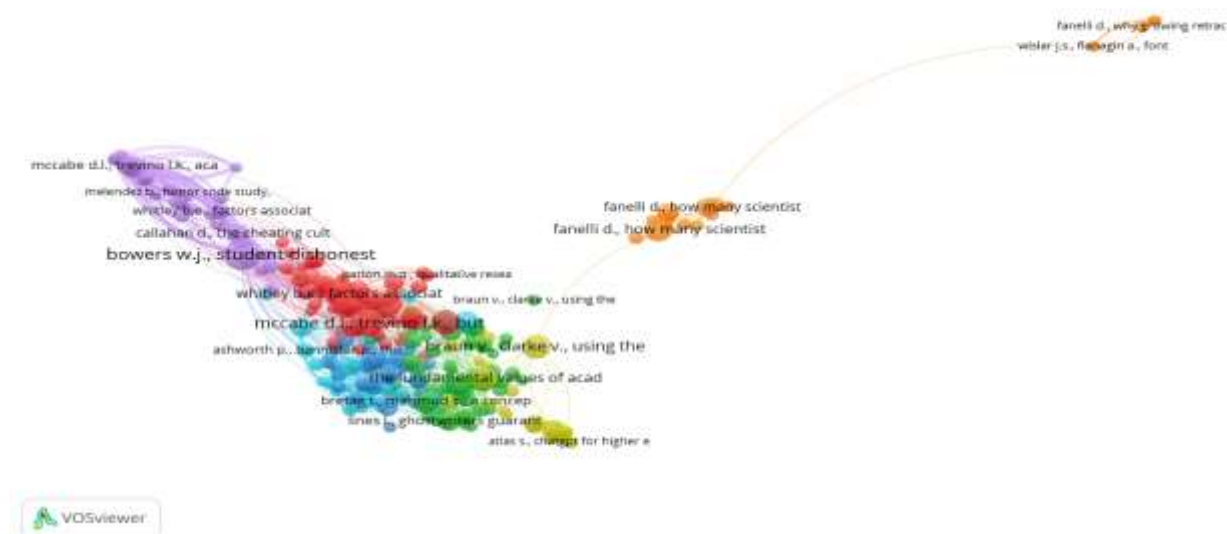


Fig. 4. Co-citations - cited references relationship
Source: own processing VOSwiever [30].

The relationship between citations and cited authors reflects the influence and relevance of individual or collective research on ethics and academic integrity. This relationship highlights how an author's ideas, methods, and findings have been taken up, integrated, and extended by the academic community (Fig. 5). The red cluster which is centered on McCabe D.L. shows the major contributions in the study

of unethical student behavior and academic honor codes, being supported by authors such as Trevino I.K. and Harding T.S., dominating research on educational integrity. The blue cluster, with Bretag T. as its central node, analyzes global academic integrity, focusing on plagiarism prevention and institutional policy implementation, with contributions from authors such as Ellis C. and Rowland S.

The yellow cluster connects interdisciplinary educational and ethical research, through authors such as Bertram G. and Rowland S., emphasizing the application of honor codes and the relationship between education and ethics. The green cluster is dominated by Tan S. and Wang J. who address the issue of educational integrity at an international level, exploring the cultural and global dimensions of academic behavior. The purple cluster centered again on Fanelli D. related to ethical

misconduct in science such as falsification of data and retraction articles, being connected with authors such as Anderson M.S. and Teixeira da Silva J.A. which analyzes the ethics of publication and research integrity. The separation between the clusters highlights an opportunity for integration between the two perspectives. The central authors are fundamental reference points, having essential works for the understanding and development of the field.

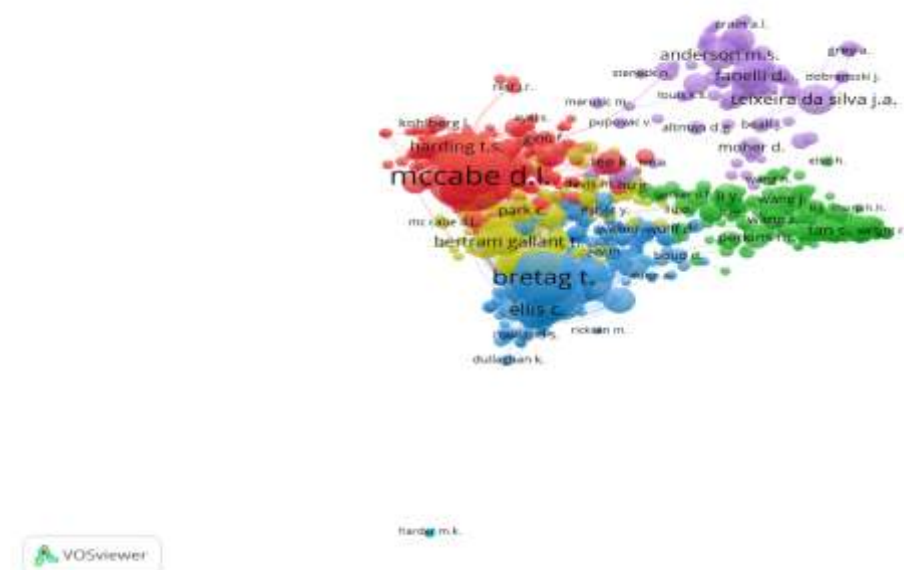


Fig. 5. Co-citations - cited authors relationship
Source: own processing VOSviewer [30].

Next, we analyzed those articles related to the formation of a professional conduct regarding ethics and academic and research integrity. From the 75 articles resulting from the consultation of the Scopus database, putting as conditions the identification of articles

published in 2020 that have a minimum number of 5 citations, a number of 10 articles resulted that were further analyzed, both the purpose and purpose being identified research, as well as the results obtained (Table 1).

Table 1. The results of the research in the field of training a conduct related to ethics and academic and research integrity

Author(s)	Title	Year	Number of citations	Main findings
Perrier, L., Blondal, E., MacDonald, H.	The views, perspectives, and experiences of academic researchers with data sharing and reuse: A meta-synthesis	2020	51	The research analyzed the opinions and experiences of researchers regarding the sharing of data resulting from their research and how to reuse it, with the aim of determining the deficiencies and the reasons that prevent this sharing [22]
Haven, T., Pasman, H. R., Widdershoven, G.,	Researchers' perceptions of a responsible research	2020	34	The research analyzes the climate responsible for research by analyzing the opinions of researchers using focus

Bouter, L., & Tjldink, J.	climate: A multi focus group study			groups. The study carried out within 2 research institutions in Amsterdam highlighted both the barriers faced by the respondents, as well as the solutions identified in order to achieve such a responsible climate [12]
Li, L., Ma, Z., Fan, L., Lee, S., Yu, H., & Hemphill, L.	ChatGPT in education: A discourse analysis of worries and concerns on social media	2024	17	The study analyzed the impact of ChatGPT on scientific research, starting from the existing information on Twitter related to education, being identified 5 predominant themes, which refer both to ethics and academic integrity, as well as to the development of skills required by the labor market. The results are considered useful both for political factors, as well as for the scientific and business environment [17].
Huybers, T., Greene, B., & Rohr, D. H.	Academic research integrity: Exploring researchers' perceptions of responsibilities and enablers	2020	13	The study analyzes the perception of researchers regarding the role of individual responsibility in ensuring academic integrity, from the perspective of the Singapore Declaration. This perspective is related to certain factors, namely: university ethics codes, staff training methods, mentoring activity and peer pressure. The results show that the respondents' country of origin, seniority at work or academic position are elements that influence this perception [13]
Armond, A. C. V., & Kakuk, P.	Perceptions of research integrity climate in Hungarian universities: Results from a survey among academic researchers	2022	10	Starting from the fact that individual behavior influences the climate of academic research integrity, the study identifies the weak points and strong points of the organizational climate in 3 Hungarian universities. The research is based on the answers provided by the respondents represented by both doctoral students and representatives of the academic or research environment, in different positions [3].
Elliott, T., Fazeen, B., Asrat, A., Cetto, A. M., Eriksson, S., Looi, L. M., & Negra, D.	Perceptions on the prevalence and impact of predatory academic journals and conferences: A global survey of researchers	2022	10	The study analyzes the perception of 1872 researchers, from different geographical areas, with different academic positions and with different income levels, regarding the publication in journals and scientific conferences of prey, with the aim of raising awareness of these practices and their vulnerabilities. The purpose of the study was to raise awareness of the role that education regarding academic ethics has in preventing these practices [7].
Gopalakrishna, G., Wicherts, J. M., Vink, G., Stoop, I., van den Akker, O. R., Ter Riet, G., & Bouter, L. M.	Prevalence of responsible research practices among academics	2022	9	The study focused on the analysis of wrong behaviors in scientific research, with the aim of preventing these practices, which was based on the application of questionnaires to a number of 6,813 teaching staff from

				universities in the Netherlands. The results obtained showed that the subjects taught, the rank or the publication protocols influence academic behavior differently, so they can be the basis for formulating policies to overcome these obstacles [11].
Arabyat, R. M., Qawasmeh, B. R., Al- Azzam, S. I., Nusair, M. B., & Alzoubi, K. H.	Faculty members' perceptions and attitudes towards anti-plagiarism detection tools: Applying the theory of planned behavior.	2022	8	The research analyzes the opinion of the academic environment in Jordan regarding plagiarism. The study was based on the application of a questionnaire that measured the behavior of the respondents and their attitude regarding the use of plagiarism detection software in scientific papers before their submission for publication [2].
Brown, T., Isbel, S., Logan, A., & Etherington, J.	Predictors of academic integrity in undergraduate and graduate-entry masters occupational therapy students	2020	7	The research identified and analyzed potential predictors of ethics and academic integrity among students and master's students, starting from the application of a scale of dishonesty. The obtained results can thus contribute to the identification of vulnerable students and the implementation of proactive policies [4].
Sarauw, L. L.	The reversed causalities of doctoral training on research integrity: A case study from a medical faculty in Denmark	2021	5	The research is a case study regarding the inclusion of a course on ethics and academic integrity within a Faculty of Medicine in Denmark, which contributes to the training of doctoral students, with the aim of identifying their perception regarding this aspect, as well as its role on the formation of a culture of academic integrity [24].

Source: Synthesis of the consulted literature.

The analyzed research reflects a complex and diversified approach to academic integrity and research ethics, highlighting both the barriers and possible solutions for promoting an ethical and responsible climate in the academic environment.

Data sharing and reuse are limited by organizational and individual barriers, requiring policies that encourage open collaboration. A responsible research climate depends on the balance between individual and institutional responsibility, as evidenced by studies in Amsterdam and Hungary.

The impact of emerging technologies such as ChatGPT on education and research underlines the need to develop skills relevant to the labor market and adapt educational policies.

Global studies on predatory practices highlight the vulnerabilities of researchers and the role

of education in academic ethics to prevent them.

Analysis of research misconduct shows the influence of factors such as the discipline taught or publication protocols, underscoring the need for proactive policies.

Regional studies, such as the one in Jordan, show variations in the perception of plagiarism and the use of detection technologies, reflecting the importance of education and technological resources. In addition, identifying predictors of academic dishonesty among students provides opportunities for the implementation of preventive policies.

The introduction of ethics courses, as in the case of the study in Denmark, demonstrates their role in forming a culture of academic integrity and strengthening an ethical environment in education and research.

These findings underscore the need for a comprehensive and integrated approach to promoting academic and scientific integrity. The main limitations of the research are thematic fragmentation, with educational ethics and research integrity being treated separately, which prevents a unified global perspective. Also, studies are often regional, focusing on Europe or the Middle East, limiting the global applicability of the findings. The impact of emerging technologies such as artificial intelligence is underexplored and the lack of longitudinal analyzes prevents the assessment of the long-term effects of policies and initiatives.

We believe that future research should integrate the themes of educational ethics and scientific integrity in a unified approach, exploring the impact of modern technologies on academic integrity and expanding research at a global level, with an emphasis on cultural and regional diversity.

CONCLUSIONS

The bibliometric analysis of ethics and academic integrity, as well as that of awareness of responsibility, highlights the importance and complexity of the subject, underlining the fundamental role of these fields in maintaining the credibility and quality of the academic environment. Research shows that integrity is central to ensuring ethical behavior in both education and science, but approaches remain fragmented without clear integration between these two dimensions.

Although the review identifies influential authors and clear subfields, the lack of an integrative perspective between educational ethics and research integrity limits the field's progress. Methodological gaps include the absence of longitudinal studies and the neglect of the long-term impact of integrity policies. Global research emphasizes cultural diversity and technological challenges, but often in a fragmented manner. The influence of emerging technologies, such as artificial intelligence, on academic integrity is underexplored, and studies fail to provide a systematic global approach that reflects cultural and regional differences

The future perspective should integrate these subfields, explore technological and cultural influences more deeply, and use longitudinal methods to build a unified vision of academic integrity that responds to global and interdisciplinary challenges.

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