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Shadows and lights on fact-checking research: trends, methodologies, and empirical approaches

Abstract

Fact-checking is not new in journalism, nor is disinformation a novel threat to newsrooms. Yet, the digital information overload poses new challenges to verification practices. In this context, fact-check platforms have gained relevance, including geographical contexts marked by polarization such as Southern Europe. This article presents a systematic review of 108 peer-reviewed articles on fact-checking, published between 2020 and 2023 in Southern Europe and indexed in Scopus. Specifically, we analyze trends, practices, methodologies, topics covered and main empirical findings. This systematic review was conducted in accordance with the PRISMA guidelines. Most publications originate from universities in Spain (74%), where research emphasizes journalistic practices. Italian studies often focus on the intersection of fact-checking and artificial intelligence, while Portuguese contributions lack thematic specificity. Our findings also suggest statistically significant variations from country to country, meanwhile, research objectives typically revolve around fact-checking guidelines and disinformation narratives, though the effectiveness of fact-checking remains underexplored, partly due to methodological limitations. Quantitative methods, especially content analysis, dominate the corpus, frequently using fact-checking content as data sources. The study highlights the need to expand fact-checking research in Southern Europe, suggesting more diverse methodological approaches and broader thematic agendas. Additionally, qualitative insights are especially needed to deepen understanding in this field.

Keywords

Fact-checking, Southern Europe, Systematic Review, Quantitative analysis, Qualitative, Disinformation.

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1. Introduction

In recent years, the proliferation of false and misleading news—both in political discourse and within the media ecosystem—has stubbornly infiltrated the information systems of many countries, emerging as an increasingly pressing dilemma for democratic structures and the civic consciousness of their citizens (Chambers, 2021). This phenomenon, driven by the immediacy of digital communication and the intertwining of social media platforms, has resulted in a consequential and relentless erosion of the epistemic reliability of sources, compromising the collective capacity to distinguish truth from fabrication.

Disinformation is the latest buzzword. Ranging from the complex political complex to the media scope, countless professionals use narratives and tactics to ensure someone is missing the truth (Bennett & Livingston, 2018). Citizens are not excluded from this abysmal entanglement, as information means social bonding amongst individuals, regardless of their informative skills or habits. As social media platforms spark debates, both threatening and boosting specific communicative strategies, democracy is now under strict surveillance. Populist political parties have masterminded perceptions and narratives to easily conduct their views and perspectives, using disinformation as to implement some sort of legitimization (Navarrete & Eder, 2024).

A society's understanding of and response to informational fallacies—or its tendency to become entrapped by them—depends on a plurality of structural and cultural variables. Among these, trust in media organizations and journalistic institutions plays a key role. Unsurprisingly, where traditional journalism suffers a decline in credibility, the ground becomes fertile for the spread of misleading narratives (Pickard, 2019). Another revealing factor is the level of media literacy, that is, the ability to distinguish between credible and deceptive sources—an increasingly indispensable skill in today's hyper-connected context (Wardle & Derakhshan, 2017). The political dimension is equally significant: in systems marked by extreme polarization and populist rhetoric, disinformation is often wielded as a weapon to consolidate consensus and dismantle the opposition (Waisbord, 2018).

The use of the simplistic bias “true” or “false” is not new, nor entirely accurate to address all topics considered, especially a text can include both true and false statements, or misinterpreted truth statements. Multiple layers of reality may suggest differences in opinion. According to Zannettou et al. (2019), the overall context of false environment can be described in a four-step flow: 1) citizens' understanding of what is false or true; 2) citizens' awareness of propaganda strategies; 3) citizens' proficiency in detecting online misinformation; and 4) disinformation strategies in the political scope. Young audiences, for instance, seem to be more vulnerable. Kyrychenko et al. (2025) stated that “Generation Z, non-male, less educated, and more conservative individuals were more vulnerable to misinformation”.

However, “an extensive literature addresses citizen ignorance, but very little research focuses on misperceptions” (Nyhan & Reifler, 2010, p. 303). Not it all comes down to the citizens. Technology has a significant role in addressing disinformation as harmful. Vosoughi et al. (2018) concluded that “false news reached more people than the truth; the top 1% of false news cascades diffused to between 1000 and 100,000 people, whereas the truth rarely diffused to more than 1000 people” (p. 1146). This study was based on a large-scale database, retrieved from a set of rumor cascades on Twitter from 2006 to 2017, thus acknowledging that false content is more likely to be shared by online users.

This is probably why fact-check platforms are important to tackle the overall amount of disinformation. Following Fridkin et al. (2015) remarks', fact-checking is particularly important during election campaigns, especially when it comes to influencing voters' attitudes, hence

presenting data that fact-checks can mitigate beliefs in false content and penalize dishonest candidates. Studies emphasize the effectiveness of these platforms of information verification, although they might struggle within certain features within audiences and specific topics. Amazeen (2015) claims that fact-checking practices are the perfect symbol of the ongoing tensions between traditional features of journalism, such as objectivity and interpretative frames, and journalists as a whole.

It is known that in Portugal, Spain and Italy, different models of media systems are in force (Hallin & Mancini, 2004) and similar political contexts prevail (Mendes & Dennison, 2021). Southern Europe, and specially Spain, Portugal and Italy, belong to the Mediterranean or Polarized Pluralist Model. In a definition considered by some authors to be negative in relation to previous models (see Albuquerque, 2011), the Polarized Pluralist model, in which they considered the Portuguese system, corresponds to a professionally weak journalistic culture, with a high degree of political parallelism, with strong state intervention, which serves as a political and partisan instrument (Hallin & Mancini, 2004). Although, recent studies have shown that media systems should not be understood as homogeneous categories. Brüggemann et al. (2014), for instance, suggest that Portugal displays hybrid characteristics, combining elements traditionally associated with the Polarized Pluralist model with features that complicate a strict typological classification.

In southern Europe, including southern France and Greece, we limited the analysis to these countries based on the scope of the study and data availability. They present high levels of political parallelism or polarization, explaining why literature has carried out some joint analyses of their fact-checking platforms (Ufarte-Ruiz et al., 2020). Previous studies illustrate how in Southern Europe fact-checking is conceptualized as an alternative to conventional journalism (Moreno-Gil et al., 2022) that is developed by independent entities beyond the news media. However, there are distinct fact-checking projects in these countries, with different approaches, partnerships and strategies.

Therefore, it is important to understand how scientific production on fact-checking has evolved in the three countries. In addition, there is a lack of review studies that, in an integrated way, explore the trends and recurring themes of research on fact-checking focused on this scenario. Given this scenario, through a systematic analysis, our study's main objective is to understand how the fact-checking phenomenon has been studied in recent years in Southern Europe (Portugal, Spain and Italy).

Even though previous studies have analyzed specific practices, norms, organizations, or contexts of disinformation related to fact-checking, less attention has been paid to how the academic field itself has addressed this phenomenon in Portugal, Spain, and Italy. By mapping research objectives, topics, methodological approaches, and empirical focuses, this study contributes to identifying dominant research agendas, methodological preferences, and underexplored areas in recent literature indexed in Scopus. In this way, it offers a comparative overview of how fact-checking has been constructed as an object of academic study in three media contexts in Southern Europe.

We seek to analyze research on fact-checking, as a journalistic practice or recent movement, identifying trends, practices, methodologies, topics covered and main empirical findings. Specifically, three research questions are posed:

- RQ1. What is the volume of fact-checking studies per country?
- RQ2. What are the preferred topics in the fact-checking analysis?

- RQ3. How do methodological approaches vary in fact-checking studies across Southern European countries, and what implications do these variations have for the scope and depth of research?

2. Theoretical Framework

Disinformation is a classic political instrument to deceive people, using false information in an intentional way to discredit opponents and true news (Pérez-Escobar et al., 2023). However, the consolidation of digital technologies has increased the impact of these contents, to the point that lies are better disseminated than the truth (Vosoughi et al., 2018). Journalists are also losing their authority (Salgado & Bobba, 2019), which boosts distrust in the media and public institutions. This trend fuels an erosion of democracies that overlaps with the rise of a dissonant public sphere (Koc-Michalska et al., 2023).

In this framework, there has been an emergence of fact-checkers, with a strong focus on social media (Graves & Amazeen, 2015). Fact-checking is understood as a distinctive form of verification, using systematic and replicable methodologies to assess whether content is false or not (Loterio-Echeverri et al., 2018). In this study, fact-checkers and fact-checking services are used as synonyms, which are dedicated to providing fact-checking as a service. By contrast, fact-checking apps or tools are technological applications designed to assist users in verifying information quickly.

The methodological framework employed in fact-checking is based on a rigorous and verifiable approach, inspired by the principles of investigative journalism and documentary research (Luengo & García-Marín, 2020). The process begins with the identification of a potentially controversial or relevant claim, usually originating from public figures, traditional media, or viral content circulated through digital platforms (Clayton et al., 2020). This is followed by the collection and analysis of primary and secondary sources, with a preference for official data, institutional documents, peer-reviewed academic publications, and certified databases (Graves & Cherubini, 2016). Any informational element is subjected to a triangulation system, meaning it is compared with multiple independent sources to verify the consistency of the materials and the strength of the evidence (Brandtzaeg & Følstad, 2017). A key factor in this process is the high degree of methodological transparency, as serious organizations make the entire argumentative process and the consulted references visible and publicly accessible, thereby helping to strengthen public trust (Bachmann & Valenzuela, 2023).

Many fact-checking organizations have emerged since 2012 with the aim of denying false information and counteracting the disturbing activity of some political actors (Vázquez-Herrero et al., 2019). These practices mean a realignment of journalistic practices to respond to disinformation as they are grounded in the journalistic principle of truth (Graves, 2016).

Fact-checkers usually operate through a partnership between data journalists and software engineers (Ufarte-Ruiz et al., 2018). Most of the items examined are political statements or hoaxes, in whose detection the audience participation plays a role (Liu et al., 2023). As fact-checking is a global movement (Graves, 2018), these platforms establish common criteria on content selection: news significance based on the individual involved, the subject matter, its impact, and/or its popularity on mainstream and social media (Moreno-Gil et al., 2021).

Moreover, some authors argue that fact-checking should go beyond technical verification to promote a proper democratic discussion (Andersen & Søre, 2020). One action is to cultivate media literacy activities, which have been adopted by some fact-checkers to enhance the audience's knowledge (Çömlekçi, 2022). On this matter, several government bodies have collaborated both domestically and internationally to find mechanisms to counter the spread of

disinformation. In 2018, the European Commission established a task force of experts to identify strategies and solutions (European Commission, 2018). This was aligned with the launch in 2020 of the European Digital Media Observatory, which brings together fact-checkers and disinformation specialists. The initiative aimed to support digital literacy programs and foster collaborative efforts with media organizations in the fight against disinformation.

Since the beginning of the 21st century, independent fact-checking initiatives have emerged in Spain, dedicated exclusively to verification, which until then had been the task of journalistic work. The fact-checking blogs Malaprensa (2004) and Miniver (2006) were pioneers (López-Pan & Rodríguez-Rodríguez, 2020), constituting personal initiatives dedicated to denouncing journalistic misconduct.

Nowadays, Spain has a wide number of fact-checkers, ranging from civic organizations to Public Service Media (VerificaRTVE), but probably Maldita.es is the platform with the largest impact (García-Vivero & López, 2021). Spanish fact-checking services are often classified into two groups based on their business model: media-dependent or funded by volunteers or civil society entities (Esteban-Navarro et al., 2021).

In Portugal, Polígrafo is the only media outlet dedicated exclusively to fact-checking. Polígrafo was created in 2018 and quickly gained prominence and popularity due to its television broadcast, having an impact on public opinion (Tardáguila, 2019). Even so, the first media outlet to launch a section dedicated to fact-checking in Portugal was the online newspaper Observador, in 2015. Although considered recent, the practice of fact-checking in Portugal has proven to be politically impartial and is a movement that is highly receptive to the public (Baptista et al., 2023).

In turn, in Italy, among the most active in the national landscape is Pagella Politica, a pioneer in the sector, which since 2012 has committed to examining statements made by public figures, assigning them a truth rating based on verifiable data, documents, and sources, following standards inspired by international models of accountability journalism (Graves, 2016).

Complementing this effort is Open, a news project led by Enrico Mentana, which includes a dedicated fact-checking section aimed at debunking falsehoods found both in political discourse and in the tweets and posts circulating on social media. Equally notable is Bufale.net, which since 2013 has aimed to debunk hoaxes, urban legends, and deceptive content often spread with fraudulent or ideological intent. Facta.news, in turn, is an initiative promoted by Pagella Politica and supported by the international Google News Initiative. It is specifically designed to combat disinformation in real time, with particular attention to health, environmental, and political emergencies.

The fact-checking sector is constantly changing, with different organizations evolving, but there are some interesting international lists of fact-checkers such as the signatories of the International Fact-Checking Network (IFCN), the European Fact-Checking Standards (EFCSN), and the European Digital Media Observatory (EDMO). Organizations and networks such as the IFCN, EFCSN, and EDMO have contributed to methodological transparency, editorial independence, quality standards, and cross-border collaboration in the field (Graves, 2018; Graves & Cherubini, 2016).

In general, fact-checkers do not limit themselves to merely correcting factual inaccuracies. Rather, they strive to educate digital users through informative sections, critical reading guides, and tools aimed at refining individual judgment. In doing so, they become stewards of civic truth, where accurate information is cultivated as public good and a democratic safeguard. These countries, though lacking a cohesive and modern legal framework on the matter,

nonetheless emerges as a vibrant laboratory of ideas and initiatives, in which citizens can, if they so choose, rise above the role of passive consumers to become vigilant overseers of public discourse. Indeed, it is worth emphasizing that these projects do not merely rectify factual errors but serve as crucial educational hubs (Lewandowsky et al., 2017). In this way, the citizen is no longer a mere spectator of digital narratives but becomes an active agent—capable of questioning, doubting, and challenging.

The rise of disinformation has intensified the need for reliable mechanisms to verify and counter false narratives. As the role of fact-checking as an essential tool in preserving the integrity of public discourse has expanded, prompting researchers to investigate its effectiveness, methodologies, and impact, we develop here a systematic review of academic articles on fact-checking in Southern Europe. This region, marked by diverse media ecosystems and varying political dynamics, provides a rich landscape for examining how fact-checking practices have evolved in response to disinformation challenges. Such a review would offer critical insights into regional trends, highlighting gaps in the literature and future strategies for combating disinformation more effectively.

3. Methods

Our study's main objective is to understand how scholars in Southern Europe have studied fact-checking over the years as a practice or a recent journalistic movement. In doing so, we aim to identify the main trends, practices, methodologies, topics covered, and empirical findings on fact-checking.

To achieve this, we conducted a systematic analysis on fact-checking research produced in Portugal, Spain, and Italy. For this purpose, we used the Scopus bibliographic database, limiting our search to articles published from 2020 to the present in four languages: Portuguese, Spanish, Italian, and English. The number of publications (journal titles) indexed in Scopus by country is different and may help explain why Spain has more studies: in the area of communication, Portugal has 10 journals, Spain 32 and Italy 11. The analysis begins in 2020 because this period marks a significant intensification in the production and circulation of disinformation, particularly in relation to the COVID-19 pandemic (Pereira et al., 2020; Larrondo Ureta et al., 2021). This could also mean increased visibility for fact-checking initiatives.

This systematic review was conducted in accordance with the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) 2020 guidelines (Page et al., 2021). A completed PRISMA checklist is provided as supplementary material. The protocol was not registered in a public registry, as the study was descriptive in nature and did not involve clinical or patient-based outcomes.

The bibliographic search was conducted using specific queries for each country, as described below:

- Portugal

(TITLE-ABS-KEY("fact-checking" OR "fact checking" OR "fact-checker*" OR "verification journalism" OR "fake news" OR "misinformation" OR "disinformation")) AND (LIMIT-TO(LANGUAGE, "English") OR LIMIT-TO(LANGUAGE, "Portuguese")) AND (AFFILCOUNTRY("Portugal")) AND (PUBYEAR > 2020)

- Spain:

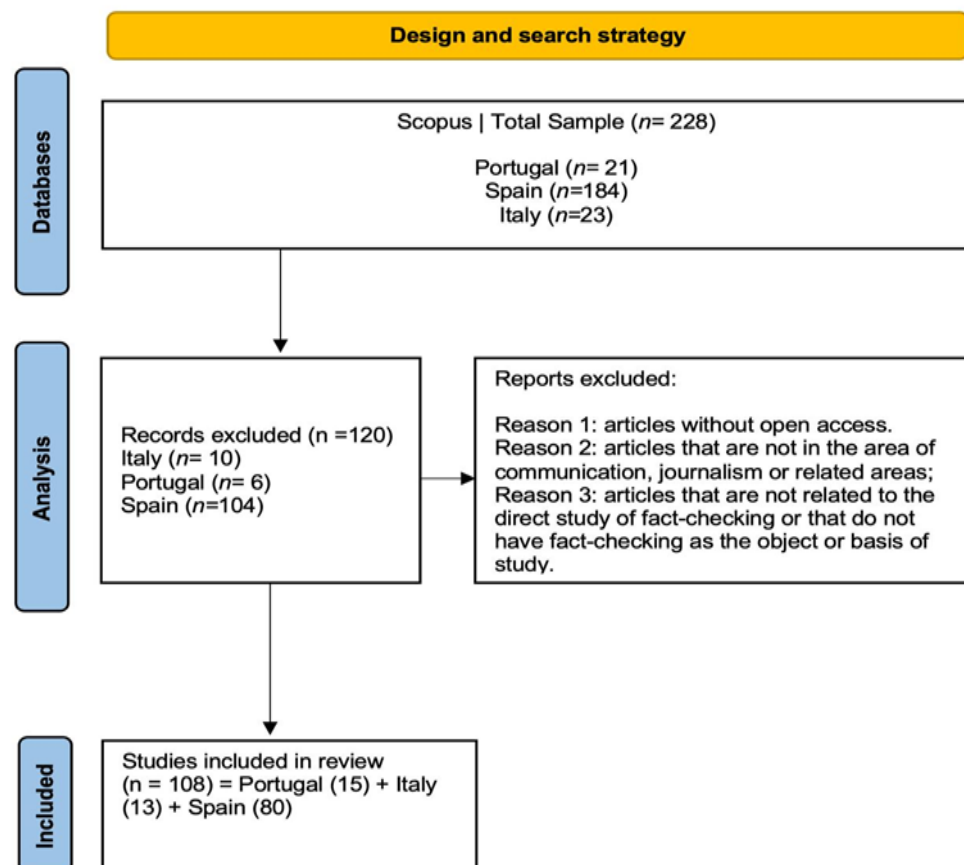
(TITLE-ABS-KEY("fact-checking" OR "fact checking" OR "fact-checker*" OR "periodismo de verificación" OR "verificación de hechos")) AND (LIMIT-TO(LANGUAGE, "English") OR

LIMIT-TO(LANGUAGE, “Spanish”)) AND (AFFILCOUNTRY(“Spain”)) AND (PUBYEAR > 2020)

- Italy

(TITLE-ABS-KEY(“fact-checking” OR “fact checking” OR “fact-checker*” OR “giornalismo di verifica”)) AND (LIMIT-TO(LANGUAGE, “English”) OR LIMIT-TO(LANGUAGE, “Italian”)) AND (AFFILCOUNTRY(“Italy”)) AND (PUBYEAR > 2020).

Figure 1. Design and search strategy



Source: Own elaboration.

For our selection, we only included scientific articles that directly and centrally addressed fact-checking, specifically by analyzing their research objectives. After applying these filtering criteria, we analyzed a total of 108 articles from the three countries (Portugal, N = 15; Spain, N = 80; Italy, N = 13), based on the institutional affiliation of the primary author (Figure 1). It is important to highlight that this uneven distribution was not corrected through weighting, as it reflects the actual distribution of publications indexed in Scopus retrieved by the search strategy. However, it was explicitly considered in the statistical interpretation of the country-level comparisons.

Since there are some transnational analyses, we consider that the country explored is not as important as the institutional affiliation of the author. The latter indicates in which territories there is a greater academic concern for effect-checking.

3.1. Content analysis

To analyze our corpus, we applied a quantitative content analysis (Igartua Perosanz, 2006; Neuendorf, 2017). To address the research questions, a coding book was created and applied to each unit of analysis. The coding book consists of eight variables:

1. Year of publication;
2. Country of origin (institutional affiliation);
3. Main objective of the study;
4. Complementary objective of the study;
5. Type of methodology;
6. Applied methodological technique;
7. Main topics covered in the study;
8. Complementary topics covered in the study.

3.2. Statistical Analysis

All statistical analyses were performed using the SPSS software (IBM SPSS 29.0.1.1, Chicago, IL) to explore the relationships and differences between variables related to the research objectives, methodologies, and countries of origin of the fact-checking publications. The chi-square test (χ^2) was applied to verify the association between nominal variables. In all statistical analyses, a significance level of $p < 0.05$ was considered.

To assess the strength of the association between variables, Cramér's V was calculated, which allowed the interpretation of the magnitude of the relationship between the analyzed variables. In addition, a frequency analysis was conducted to examine the distribution of categorical variables such as research objectives, methodological techniques, and topics covered in the studies.

For interpreting the chi-square results, the standardized residuals were analyzed. Positive standardized residuals (+) indicated that the observed frequency was significantly higher than expected, while negative residuals (−) indicated that the observed frequency was significantly lower than expected.

Given the unequal distribution of publications across countries, expected cell counts were inspected for all country-level contingency tables. When sparse cells were identified, Pearson's chi-square tests were complemented with Monte Carlo estimates, using 100,000 simulated samples. In addition, sensitivity analyses were conducted by aggregating theoretically related categories in order to reduce sparsity and assess the stability of the observed patterns. These aggregated analyses were applied to country-level comparisons involving main research objectives and methodological techniques. Cramér's V was used to assess the magnitude of associations, while adjusted standardized residuals were interpreted only as exploratory indicators of cells contributing to the association. Therefore, country-level results are interpreted as exploratory patterns within the Scopus-indexed corpus rather than as generalizable national differences. It is also important to emphasize that Cramer's V was interpreted cautiously, considering not only conventional thresholds, but also the size of the table, degrees of freedom, expected cell counts, and the substantive relevance of each association.

4. Results

Our results first show that fact-checking is a more common research topic in Spain ($N=80$) than in Italy ($N=13$) and Portugal ($N=15$), representing 74% of the analyzed corpus. This highlights a significant discrepancy between Spain's output and that of the other two countries. We also observe that there has been a growing interest in the topic in both Portugal and Spain over the years, as evidenced by the increasing number of publications each year since 2020 (Table 1). It is important to note that the publications in 2025 only refer to the first two months of the year.

Table 1. Frequency and percentage of publications in each country by year.

	Portugal		Spain		Italy		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
2020	0	0	9	11.3	0	0	9	8.3
2021	2	13.3	6	7.5	2	15.4	10	9.3
2022	2	13.3	11	13.8	1	7.7	14	13.0
2023	5	33.3	19	23.8	7	53.8	31	28.7
2024	5	33.3	31	38.8	3	23.1	39	36.1
2025	1	6.7	4	4.0	0	0	5	4.6

Source: Own elaboration.

Regarding the objectives of the studies, we observed that 26.9% of the studies primarily focus on the “Analysis of Fact-Checking Practices”, particularly concerning the processes and methods used by journalists. The method applied is a manual content analysis, which determine the objective through pattern inference based on a qualitative approach. On this matter, the main objective of a study refers to its primary research goal that defines the core purpose and shapes the research design, data collection, and analysis; meanwhile, the complementary objective refers to acknowledged secondary goals that support or expand the main objective.

Besides focusing on the practices intrinsic to fact-checking, it is important to highlight that 23.1% of the studies also aim to understand trends, narratives, and patterns of disinformation, through for example the analysis of fact-checking articles. This search for identifying disinformation content is even more evident (27%) as a complementary objective. The study of effectiveness (5.6%/4.6%) and selection criteria, possible biases (2.8%/5.6%) are the least common objectives in our corpus.

When we analyze the distribution of study objectives in accordance with publication years, we find that some objectives are more present than others; however, no statistically significant differences are evident from year to year [χ^2 (35; $n = 108$) = 46.133 $p = 0.099$; $v = 0.292$]. Although the effect size suggests a small-to-moderate association, the result was not statistically significant.

Still, as shown in Table 2, the objective “analyzing practices” in fact-checking has been relevant over the years, peaking in 2023 (35.5%).

Table 2. Main research objectives by year (% per row)

	Analyzing practices	Assessing Effectiveness	Studying Impact	Fact-Checking in Specific Contexts	Disinformation Narratives	AI and fact-checking	Selection criteria	Other
	%	%	%	%	%	%	%	%
2020	44.4	0.0	0.0	33.3	22.2	0.0	0.0	0.0
2021	40.0	10.0	10.0	20.0	10.0	10.0	0.0	0.0
2022	21.4	0.0	21.4	14.3	21.4	14.3	7.1	0.0
2023	35.5	3.2	12.9	9.7	12.9	9.7	6.5	9.7
2024	17.9	10.3	2.6	12.8	35.9+	7.7	0.0	12.8
2025	0.0	0.0	0.0	0.0	20.0	20.0	0.0	60.0+

Note: + statistically higher value (analysis of corrected standardized residuals); - statistically lower value (analysis of corrected standardized residuals).

Source: Own elaboration.

It is also important to highlight that the objective “identifying disinformation narratives through fact-checking” gradually increases, reaching a peak in 2024 (35.9%), showing a value higher than expected. This objective gained prominence over the years, suggesting a growing interest in identifying disinformation through the “use of fact-checking articles as a database”. The objective of studying “fact-checking in specific contexts” fluctuates between 9.7% and 33.3% over the years, without any clear pattern of growth or decline. These data suggest that this topic remains relevant for scientific research in this field. We also note that Artificial Intelligence in fact-checking has become a more recent area of interest, although without exponential growth.

On the other hand, Table 2 seems to highlight some emerging trends. We found articles where the focus was on “selection criteria (biases)” only in 2022 and 2023, and even then, only three scientific papers. Besides the reduced interest in conducting research for this objective, it also suggests that concerns with selection criteria were short-lived and did not consolidate as a main topic. It is curious to note the peak of interest in evaluating the effectiveness of fact-checking in 2024, possibly related to concerns about its impact.

Similarly, no statistically significant association was found between publication year and complementary objective, [χ^2 (35; $n = 108$) = 45.929, $p = 0.102$; $v = 0.292$], again suggesting a small-to-moderate but non-significant association.

“Analyzing practices” also appears as a predominant complementary objective between 2022 and 2024. It is highlighted that, as a main objective, “identifying disinformation narratives through fact-checking” also shows a peak above the expected value, as a complementary objective, in 2020 (55.6%).

Overall, most objectives appear to be temporary issues. Although the study objectives vary over the years, statistical analysis suggests that these variations may be due to chance rather than a statistically significant trend. Considering the uneven distribution of publications among countries, comparisons at the national level were made with caution. The association between country of origin and main research objective was statistically significant.

Table 3. Main research objectives by country (n and row %).

	Analysis Practice	Assessing Effectiveness	Studying Impact	Fact-Checking in Specific Contexts	Disinformation Narratives	AI and fact-checking	Selection criteria	Other
PT	2 (13.3%)	2 (13.3%)	1 (6.7%)	1 (6.7%)	4 (26.7%)	1 (6.7%)	0 (0.0%)	4 (26.7%) +
SP	25 (31.3%)	2 (2.5%) -	7 (8.8%)	12 (15.0%)	21 (26.3%)	4 (5.0%) -	3 (3.8%)	6 (7.5%)
IT	2 (15.4%)	2 (15.4%)	1 (7.7%)	2 (15.4%)	0 (0.0%) -	5 (38.5%) +	0 (0.0%)	1 (7.7%)

Note: + observed value higher than expected; - observed value lower than expected, based on adjusted standardized residuals. Pearson χ^2 (14, $N = 108$) = 30.968, Monte Carlo $p = .007$, Cramér's $V = .379$. Since 75.0% of the cells had expected counts below 5, the results should be interpreted as exploratory patterns within the Scopus-indexed corpus, not as robust evidence of generalizable national differences.

Source: Own elaboration.

To assess whether the country-level pattern was overly dependent on sparse categories, a sensitivity analysis was conducted by aggregating theoretically related research objectives into three broader groups: fact-checking practices, disinformation and contexts, and other objectives/evaluation/AI (Table 3B).

Table 3B. Sensitivity analysis: aggregated main research objectives by country, n and row %. <https://doi.org/10.6084/m9.figshare.32334843>

As Table 3 shows, scientific publications affiliated with Spain were more frequently classified as focused on the analysis of fact-checking practices, while publications from Italy showed a relatively higher proportion of studies addressing AI and fact-checking. On the other

hand, publications from universities in Portugal exhibited a more dispersed distribution, with a comparatively higher proportion of studies classified under the objectives “other”.

We can also observe that the aggregate analysis presented in Table 3B confirms that the pattern does not depend entirely on isolated categories. Nevertheless, the effect size is small to moderate, and the uneven distribution of publications among countries requires caution. Therefore, these results should be interpreted as exploratory trends within the analyzed Scopus-indexed corpus, rather than stable national differences in fact-checking research.

Our corpus reveals a greater preference for quantitative studies (44.4%). When compared with the years of publication, we observe that the application of a mixed methodology was significantly more frequent in 2020 (77.8%) and 2021 (60.0%). The mixed methodology became less frequent over the years: in 2022 (28.6%), 2023 (22.6%), and 2024 (25.6%). On the other hand, the quantitative method shows a significantly different pattern, reaching its peak in 2023 (61.3%) [$\chi^2(10; n = 108) = 18.380, p = 0.04; v = 0.292$] indicating a small-to-moderate association.

Regarding the techniques applied, the results highlight a greater predominance of ‘content analysis,’ with 40.7% of studies. Our findings also reveal that content analysis integrates studies that combine various methodological procedures. However, 22.2% of the techniques applied correspond to the category ‘other.’ This seems to suggest that new techniques are being applied in scientific production, beyond the traditional techniques of social sciences. In this regard, our data points to an evolution of methodological techniques in the field, particularly with the use of analysis software, machine learning, among others. Descriptively, we highlight the application of ‘interviews’ (11.1%), ‘surveys’ (8.3%), ‘experiments’ (6.5%), ‘focus groups’ (1.9%), and the combination of ‘content analysis and interviews’ (5.6%).

The association between methodological techniques and year of publication was statistically significant, [$\chi^2(50; n = 108) = 69.888, p = 0.03; v = 0.360$], indicating a moderate association. Therefore, over the years, ‘content analysis’ remains the most applied technique, peaking in 2022 with 57.1% of studies. We also observe that techniques such as ‘focus group,’ ‘text analysis,’ and the combination of techniques are applied with very low frequency over the years.

Our results also show that some methodological techniques are significantly associated with specific objectives [$\chi^2(70; n = 108) = 99.594, p = 0.01; v = 0.363$, indicating a moderate association]. Through Table 4, our findings indicate that the objective of ‘identifying narratives of disinformation through fact-checking’ corresponds to 72.0% of the application of ‘content analysis,’ which is significantly higher than expected.

Moreover, it is also important to highlight the use of the “experiment” method, which accounts for 40% of the cases studying “AI in fact-checking.” Our data thus indicate a clear tendency for studies on AI and fact-checking to adopt experimental approaches, at a significantly higher proportion than other objectives. It is well known that research on AI and fact-checking often involves algorithms, machine learning models, and effectiveness testing, which frequently require controlled experiments.

Regarding the objective of “analyzing fact-checking practices”, we observe a more balanced distribution, with content analysis (44.8%) and interviews (20.7%) being the most common techniques. Additionally, it is noteworthy that 66.7% of the studies focusing on “selection criteria” rely on other types of methodological techniques, either non-traditional approaches or a multiple-methods combination not explicitly categorized. Nonetheless, some techniques appear to be underutilized or may not be suitable for certain research approaches.

Table 4. Distribution of methodological techniques by main study objectives (% per row)

	Content analysis	Interview	Survey	Experiment	Focus Group	Text analysis	Cont. Analysis & Survey	Cont. Analysis & Interview	Interview and survey	Observation, interview and survey	Other
	%	%	%	%	%	%	%	%	%	%	%
Analyzing practices	44.8	20.7	10.3	3.4	0.0	0.0	0.0	3.4	3.4	0.0	13.8
Assessing Effectiveness	16.7	0.0	0.0	16.7	0.0	0.0	0.0	0.0	0.0	0.0	66.7+
Studying Impact	44.4	0.0	22.2	11.1	0.0	0.0	0.0	0.0	0.0	0.0	22.2
Fact-Checking in Specific Con texts	33.3	13.3	0.0	0.0	0.0	0.0	6.7+	13.3	0.0	0.0	33.3
Identification of disinformation narratives	72.0+	0.0-	4.0	0.0	0.0	4.0+	0.0	8.0	0.0	0.0	12.0
AI & fact-checking	10.0-	20.0	0.0	40.0+	10.0+	0.0	0.0	0.0	0.0	10.0+	10.0
Selection criteria	33.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7+
Other	9.1-	18.2	27.3+	0.0	9.1+	0.0	0.0	9.1	0.0	0.0	27.3

Note: + statistically higher value (analysis of corrected standardized residuals); - statistically lower value (analysis of corrected standardized residuals).

Source: Own elaboration.

The relationship between country and methodological technique was also examined cautiously due to the uneven distribution of publications and the high number of methodological categories. In the original cross-tabulation, the association was statistically significant, $\chi^2(20, N = 108) = 65.381$, Monte Carlo $p < .001$, Cramér's $V = .550$. However, 78.8% of the cells had expected counts below 5, indicating that the detailed table was sparse.

For this reason, a sensitivity analysis was conducted using aggregated methodological categories: content analysis, other empirical or combined methods, and other/textual/observation approaches.

Table 5. Sensitivity analysis: aggregated methodological techniques by country, n and row %

Country	Content analysis	Other empirical or combined methods	Other / textual / observation
Portugal, n = 15	2 (13.3%) -	7 (46.7%)	6 (40.0%)
Spain, n = 80	41 (51.3%) +	25 (31.3%)	14 (17.5%) -
Italy, n = 13	1 (7.7%) -	7 (53.8%)	5 (38.5%)

Note: + observed value higher than expected; - observed value lower than expected, based on adjusted standardized residuals. Pearson $\chi^2(4, N = 108) = 14.798$, Monte Carlo $p = .004$, Cramér's $V = .262$. The association is statistically significant but small to moderate in magnitude. The results should be interpreted as exploratory patterns within the corpus.

Source: Own elaboration.

As shown in Table 5, Spanish-affiliated publications were more frequently associated with content analysis, whereas Portuguese- and Italian-affiliated publications showed a lower proportion of content analysis and a more dispersed methodological profile. Nevertheless, these differences should be read cautiously. The aggregated analysis reduces the problem of sparse

cells, but the small number of Portuguese and Italian publications still limits the robustness of country-level comparisons.

Analyzing the topics covered in the studies, we find that, overall, the theme of “fact-checking practices and routines” (24.1%) is the most frequent in the corpus, followed by the use of “fact-checking as a database” (16.7%). Topics such as “the use of AI in fact-checking” (10.2%) and “disinformation/fact-checking related to Covid-19” (10.2%) also appear with notable representation.

As a complementary topic, “fact-checking practices and routines” (21.3%) remains the most frequent. Notably, the topic of “selection criteria (potential biases)” rises to 9.3%, suggesting that while it is not often the primary focus, it is a relevant aspect as a complementary theme.

Regarding the distribution of main topics by year of publication, no statistically significant differences are observed [χ^2 (50; $n = 108$) = 66.060, $p = 0.06$; $v = 0.300$]. Although the effect size suggests a small-to-moderate association, the result did not reach statistical significance.

Nevertheless, some general trends are worth noting. Our results show that 2023 and 2024 were the years with the greatest diversity of topics. Interestingly, from 2023 onwards, there has been an increase in studies on fact-checking as a database, the use of AI, and the impact of fact-checking. From 2022 onwards, in descriptive terms, the topic “practices and routines in fact-checking” has lost some relevance, as has “disinformation about COVID-19.”

For complementary topics, the results show significant differences in relation to the year of publication [χ^2 (45; $n = 108$) = 75.440, $p = 0.003$; $v = 0.374$, indicating a moderate association]. The topic “practices and routines in fact-checking” also remains the most common complementary theme over the years, reaching its peak in 25.8% of publications (Table 6). It is also important to note the declining trend of studies focused on the topic “effectiveness of fact-checking” since 2020. Even as a complementary topic, in 2020, 44.4% of studies addressed the “effectiveness of fact-checking.” In some way, this trend suggests that studies have shifted their focus toward “practices and routines in fact-checking” and the “use of fact-checking as a database.”

Table 6. Distribution of complementary topics by year (% per row).
<https://doi.org/10.6084/m9.figshare.32328423>

5. Discussion and Conclusions

From a general perspective, our results show how fact-checking has been addressed in recent scientific production indexed in Scopus in Portugal, Spain, and Italy. Spain clearly predominates in the analyzed corpus (RQ1), representing 74% of the selected articles. However, we must consider that this finding should not be interpreted as direct evidence that fact-checking research is intrinsically more developed in Spain than in Portugal or Italy. Instead, it reflects the distribution of publications captured by the search strategy and may be influenced by structural factors such as the size of the academic area, the number of communication journals indexed in Scopus, the language of publication, and the greater visibility of Spanish fact-checking initiatives. In fact, other studies corroborate the high Spanish scientific production on fact-checking and fake news worldwide (Tejedor et al., 2024).

We believe that this discrepancy between countries suggests greater involvement of the Spanish academy with fact-checking, possibly due to the fact that this journalistic movement is consolidated in the country. The first Spanish fact-checking projects date back to the early 2000s (López-Pan & Rodríguez-Rodríguez, 2020). For example, in Portugal, it is a very recent practice and the first projects date back to 2015, with the online newspaper “Observador” which created a section dedicated to fact-checking. In the Italian case, independent fact-checking is

also relatively recent, with the fact-checker “Pagella Politica” being launched in 2012. Furthermore, there has been no record of constant fact-checking initiatives by other Italian media outlets (Graves & Cherubini, 2016).

We also identified a predominance of studies focused on the analysis of fact-checking practices (RQ2). These works highlight the processes and methods used by journalists in verifying information (e.g., Jerónimo & Sánchez Esparza, 2023; Sánchez Gonzales et al., 2026). This priority can be explained by the emerging nature of fact-checking as a journalistic practice, which generates interest in understanding its internal processes.

Furthermore, the identification of disinformation narratives also appears as a relevant study objective (23.1% as the main focus and 27% as a complementary one), which may indicate an increase in concern about the impact of disinformation in the new digital era. This trend follows the increase in studies on disinformation in the social sciences. For example, the studies analyzed sought, through the analysis of fact-checking articles, to understand disinformation related to the war in Ukraine (e.g., Hidalgo-Cobo et al., 2025), analyze the semiotics of hate speech against immigrants (Sánchez Esparza et al., 2024), identify false statements by political agents (Fenoll et al., 2024) or study disinformation about the environment (Gallardo-Camacho et al., 2024).

Our results also highlighted relatively low interest in studying the effectiveness of fact-checking and its selection criteria and biases. Content analysis was our main methodology because we focus on examining pre-existing texts, specifically the written dimension of the articles. This finding suggests that there is less attention given to assessing the actual impact of fact-checking on public perception or on reducing misinformation. Furthermore, the temporal analysis indicates that interest in these topics has not been consolidated over the years, appearing sporadically. One possible explanation is that evaluating the effectiveness of fact-checking requires more complex experimental methodologies, which may be less accessible to researchers in the field of communication. However, in a corpus of studies from the USA, it was shown that the analysis of the effectiveness of fact-checking is more related to the application of experimental surveys (Nieminen & Rapeli, 2019).

Regarding the methods used (RQ3), a predominance of quantitative approaches was observed, with special emphasis on content analysis (40.7%). This trend suggests that research on fact-checking in Southern Europe is in line with scientific research on digital journalism (Salaverría, 2019), which has demonstrated an adaptation to the new digital reality, especially with researchers having the help of tools that impose quantitative study.

The high use of content analysis, in some way, corresponds to this new digital reality, in which studies on journalism and social networks deal with enormous amounts of information (Salaverría, 2019). Interestingly, Italian scientific production on fact-checking stands out for the use of experimental methods (46.2%), which also corresponds, in our results, to a greater interest from academia in the relationship between fact-checking and artificial intelligence. This evidence corroborates other studies in literature, which point to a significant increase, year after year, in journalism research related to Artificial Intelligence (Sonni et al., 2024).

Our study also seems to support the idea that scientific production, within the scope of fact-checking, presents an ad hoc methodological approach, namely due to the way in which specific solutions are presented for each study, not following a consolidated pattern. The same trend was verified by the study by (Tejedor et al., 2024) in a systematic review of the literature on fact-checking.

Another important point concerns the differences between countries. Spain stands out for its focus on analyzing fact-checking practices, while Portugal appears to adopt a more

diversified approach, with a greater number of studies classified in the “other” category. This suggests that Portuguese researchers explore the topic from less conventional angles. On the other hand, as we mentioned above, Italy shows a strong interest in the use of AI in fact-checking. Conversely, in general, misinformation about Covid-19, which was initially a recurring theme, has lost ground in recent years, which indicates a change in the research agenda after the decline of the pandemic.

In conclusion, it is important to note that scientific research on fact-checking in Southern Europe has grown, with greater evidence in Spain. In recent years, this country has seen a trend towards massive publications on communication and political topics (Rivas-de-Roca, 2023). This also explains why it has more journals indexed in Scopus than Italy and Portugal. Nevertheless, we do not believe that the difference between nations is due to the mission or scope of the journal, since they all belong to the field of communication and have a similar academic scope. Moreover, the larger volume of Spanish publications should not be interpreted simply as evidence of a greater national concern with fact-checking.

On the other hand, it might also reflect structural characteristics of the Spanish academic and media environment, including a greater number of communication journals indexed in Scopus, a more diverse fact-checking ecosystem, and a longer history of verification initiatives. The lower Portuguese output may be related to the more recent institutionalization of fact-checking and the smaller size of the academic field. Italy, in turn, appears in this set of publications as more strongly associated with experimental and AI-related approaches, suggesting a different articulation between fact-checking, computational methods, and research on disinformation. Previous research on fact-checking in Southern Europe has also illustrated that verification practices are shaped by national media contexts, professional cultures and different levels of institutionalization (Moreno-Gil et al., 2022).

The predominance of studies on journalistic practices and identification of disinformation shows a focus on understanding the operational dynamics of fact-checking, while topics such as effectiveness and selection criteria are still little explored. The advancement of artificial intelligence in the field has become a point of interest, especially in Italian academia.

It should be noted that the political context in those countries over the time period could be relevant for explaining patterns in research. For instance, Portugal experiences more political stability than Spain and Portugal, being the latter increasingly shaped by populist and nationalist narratives, particularly around immigration. In all three countries, these political dynamics, combined with the spread of digital misinformation, may contribute to different research agendas focused on fact-checking and the broader fight against disinformation.

7. Limitations and future work

This study has several limitations. First, our corpus of analysis is unevenly distributed among countries. Although we recognize this imbalance as an important descriptive finding, we also note that it may limit the robustness of statistical comparisons between the three countries analyzed.

Second, it is crucial to point out that some contingency tables included cells with little data, especially in national-level comparisons involving research objectives and methodological techniques. To address this issue, expected cell counts were inspected, Monte Carlo estimates were used, and sensitivity analyses were performed with theoretically aggregated categories. We believe that these procedures can strengthen the analysis, without neglecting that they may not be sufficient to completely overcome the limitations associated with the small number of publications collected from Portugal and Italy.

Another limitation may be related to the fact that the review was restricted to articles indexed in Scopus and to a recent period, starting in 2020. This may have excluded relevant studies available in other databases. Therefore, we argue that the results should be understood as a mapping of recent academic production indexed in Scopus.

Furthermore, it is important to recognize that the classification by country was based on the institutional affiliation of the first author, which provides a consistent criterion, but does not necessarily correspond to the country empirically studied in each article.

In the future, other research could expand the corpus to other databases, include a longer time period, apply additional qualitative validation procedures, and examine dimensions that have been little explored so far, such as gender-biased misinformation, audience impact, selection criteria, and even the effectiveness of fact-checking interventions.

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