
Miscellaneous

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What is the nature of the racist and xenophobic hate speech disseminated on social media in Southern Europe? Topic modelling of anti-immigration messages posted on X and YouTube in Spain, Italy and Greece

Abstract

One of the greatest challenges facing democratic societies today is hate speech, that spreads massively and uncontrollably through social media. particularly racist and xenophobic speech, the category of discrimination in which most hate crimes are recorded annually in Southern Europe. In this context, many studies have already focused on analysing hate on X (formerly Twitter), but few have studied other platforms or specifically focused on messages directed at migrants and refugees, or in languages other than English. The present work aims to analyse, using computational methods, anti-immigration hate speech spread through Twitter messages and YouTube comments, in the contexts and languages of the main Southern European countries: Spain, Italy, and Greece. Specifically, after conducting a manual classification of messages about migrants and/or refugees on both platforms and in the three Mediterranean countries, the most frequent words were analysed, and topic modelling was applied to the messages classified as racist and/or xenophobic. In general terms, the underlying topics in these messages mostly identify immigrant and/or refugee groups as a realistic and/or symbolic threat to the receiving countries, which is directly related to the findings of previous works where media and audience frames of negative representations of migration were studied. Furthermore, in all three countries, there appears to be a predominance of hate directed at Arab and Muslim communities, which stands out in comparison to the proportion of hate aimed at other outgroups.

Keywords

Hate speech, racism, xenophobia, immigration, social media, topic modelling.

1. Introduction

The study of content disseminated on social media is essential for an in-depth analysis of any public interest topic or social phenomenon, as these platforms have become the space where public opinion is expressed more freely and spontaneously. In an era where the monopoly of mass media has been disrupted by digital platforms, the atomisation of the public sphere has created a world of opportunities for citizens to connect, stay informed, and, at the same time, produce their own content, express themselves freely, and inform others, acting as prosumers (Islas-Carmona, 2008). These new forms of expression enable the transmission of perceptions, opinions, and emotions more rapidly and accessibly than ever before. At first glance, this appears to be a significant opportunity to enhance freedom of expression and citizen engagement. However, as observed in recent years, this also entails risks and threats, particularly the development and expression of extreme, radical, and intolerant ideas often directed at certain stigmatised groups, frequently identified as foreign, threatening, and dangerous (Lacan, 1977). Alongside the rise of rumours and fake news (and often linked to them), the increase in hate speech towards stigmatised groups is one of the issues exacerbated by the growing reach of these platforms. Indeed, various authors have already noted an unstoppable rise in toxic, violent, and hateful content spreading uncontrollably on social networks (e.g., Quandt, 2018; Schmidt & Wiegand, 2017; Vučković & Lučić, 2023). This seems to stem primarily from two factors. On the one hand, these platforms enable rapid and massive dissemination of content, encouraging instant reactions, visceral responses, hasty judgments, and unfiltered comments (Brown, 2018). On the other hand, these platforms allow anonymity and the use of pseudonyms (Kim & Lowrey, 2015), giving users a sense of impunity.

This situation has raised concern among academics and institutions, as online hate speech can cause suffering for its direct victims (Reichelmann *et al.*, 2020) and also serve as a trigger for violent attacks in real environments (Burnap & Williams, 2015; Müller & Schwarz, 2021). According to Contrada *et al.* (2001), verbal rejection of the “other” is the most basic form of a discrimination pyramid that can lead to genocide (Brown, 2000). Therefore, while social platforms can be powerful tools for building a more participative society on political and social issues, they can also serve as vehicles for the spread of society’s most negative perceptions, rarely expressed in physical spaces, through explicitly violent manifestations (Maarouf *et al.*, 2024). For this reason, numerous authors have developed increasingly sophisticated strategies to detect and analyse online hate (e.g., Badjatiya *et al.*, 2017; Miran & Yahia, 2023; Salminen *et al.*, 2020). However, most studies focus on hate speech in general, without special attention to racist and xenophobic hate –the category with the highest number of hate crimes recorded annually. Moreover, most research on online hate speech has almost exclusively concentrated on Twitter, with the limited aim of identifying hate on that platform without characterising or analysing it in depth (e.g., AbdelHamid *et al.*, 2022; Meng *et al.*, 2022). Meanwhile, platforms such as YouTube have received comparatively little scholarly attention until the past five years, despite being one of the platforms where hate and polarisation appear to have increased the most (Breazu & Machin, 2023).

This study aims to address these gaps by conducting an in-depth analysis, with the aid of computational methods, of anti-immigration hate messages disseminated on these two social platforms –Twitter and YouTube– in key Southern European countries: Spain, Italy, and Greece. The research focuses on this region as it serves as the main gateway to Europe for immigrants, refugees, and asylum seekers, especially those from North Africa and the Middle East, who are often most affected by rejection in Europe (González-Baquero *et al.*, 2023). Specifically, we analyse a sample developed within the European project “Preventing Hate Against Refugees and Migrants” (PHARM), under which this study is framed. It is important to note that Twitter rebranded to X in July 2023; however, since this research was conducted prior to this change, the platform will be referred to as Twitter throughout this article.

2. The rise of racism and xenophobia in Southern Europe

In Southern Europe, racism and xenophobia account for the majority of hate crimes committed annually, often involving the most explicit forms of hate speech. According to the Office for Democratic Institutions and Human Rights (ODIHR) of the OSCE, these crimes have steadily increased in Spain and Italy, as in most European countries. Meanwhile, in Greece, they appear to have decreased in recent years, although this reduction might be attributed to the lack of an adequate recording system. Excluding that case, the widespread increase in anti-immigration hate crimes in other Mediterranean countries may be linked both to socio-economic conditions –since these regions have higher levels of poverty and unemployment than Northern Europe– and to the rise of far-right movements, which have capitalised on social discontent resulting from recent crises to promote extremist and anti-immigration narratives (Lilleker & Pérez-Escobar, 2023). Indeed, ultraconservative parties have leveraged social discontent and digital platforms to disseminate anti-immigration messages (Blanco-Herrero *et al.*, 2023; Saridou *et al.*, 2023). This could explain why racist and xenophobic rhetoric has gained influence (Krzyżanowski *et al.*, 2018; Stechemesser *et al.*, 2021), particularly in the Mediterranean, where migratory pressure is higher (Pogliano, 2019). Recent studies not only indicate an increase in anti-immigration hate crimes and discourse but also show a rise in negative portrayals of immigration in major Southern European media outlets, which further reinforce these racist and xenophobic narratives (Amores *et al.*, 2020a, 2020b). Several scholars also note that European media primarily depict immigrants as either a realistic or symbolic threat (Amores *et al.*, 2019; Bansak *et al.*, 2016; Esses *et al.*, 1998, 2013). According to the integrated threat theory of prejudice (Stephan & Stephan, 2000), realistic threats refer to the perception that an outgroup endangers physical or economic well-being, whereas symbolic threats arise from perceived differences in values or beliefs, which lead one group to view the culture of another as a challenge or degradation to their worldview.

The consequences of this trend in Southern Europe are concerning. Although Spain has traditionally shown more positive attitudes towards migration than the European average (Arcila-Calderón *et al.*, 2022c) and more favourable media portrayals of migrants and refugees (Amores *et al.*, 2020a), in recent years the country has not been immune to rising polarisation, misinformation, and ultraconservative rhetoric, primarily promoted by the far-right party Vox (Blanco-Herrero *et al.*, 2021; Bustos-Martínez *et al.*, 2019; Ferreira, 2019). In Italy, the main proponents of anti-immigration discourse have similarly been ultraconservative parties, first Matteo Salvini's Lega, and later Fratelli d'Italia under the leadership of Giorgia Meloni, who came to power in 2022 after running an openly xenophobic campaign on social media (Evolvi, 2019). Greece has also seen a surge in disinformation and racist discourse in recent years (Ekman, 2019; Pitropakis *et al.*, 2020), predominantly promoted by circles linked to Χρυσή Αυγή (Golden Dawn), even after it was outlawed in 2020. This environment has led the current government, headed by the Νέα Δημοκρατία (New Democracy) party, to increasingly integrate far-right members and policies into its agenda (Avraamidou & Eftychios, 2022).

As observed, the rise in racism, xenophobia, and related hate crimes is largely driven by the widespread, uncontrolled dissemination of hate speech on social media (Lamerichs *et al.*, 2018; Matamoros-Fernández & Farkas, 2021), often promoted by far-right groups. As early as 2015, Oleaue noted that more than 30,000 websites and social media accounts globally promote racial and cultural disdain, with platforms like Twitter and YouTube playing key roles in this dissemination (Breazu & Machin, 2023). For this reason, it is crucial to study and combat online hate. However, in addressing its detection and analysis, it is essential to recognise that racism and xenophobia are difficult categories to differentiate, as these forms of prejudice often overlap (Díez Nicolás, 2009; Cortina, 2017). This explains why they are frequently treated as a single category in most European hate crime records, an approach that is also adopted in this research.

Despite being the main forms of prejudice that fuel online hate speech, racism and xenophobia have not received sufficient scholarly attention. Additionally, most studies addressing these forms of hate have focused on Twitter, partly due to its accessibility for research purposes (until the free access to its API ended in 2023) and its specific characteristics, which seem to facilitate the uncontrolled spread of toxic content (Aldamen, 2023). By contrast, YouTube has been much less studied, possibly due to the difficulty of accessing data and the predominance of video content on the platform. However, hate speech also spreads explicitly and extensively through videos and especially through written comments, where sub-forums and debates facilitate the proliferation of hateful messages (Matamoros-Fernández, 2017). Considering this, few studies have focused on identifying anti-immigration hate on YouTube, with even fewer attempts to analyse and characterise it across wide regional contexts and on a comparative basis. Moreover, the limited existing studies on racist and xenophobic content on YouTube have primarily used qualitative methods or focused on specific case studies (e.g., Banaji, 2013; Carvalho *et al.*, 2023; Latorre & Amores, 2021; Matamoros-Fernández, 2017). None, however, have applied computational methods aimed at extracting thematic features of anti-immigration comments on YouTube on a large scale, especially in Southern Europe. In fact, similar studies focused on Twitter in this geographical context are also absent (Lilleker & Pérez-Escobar, 2023). This research aims to fill these gaps in the literature, trying to answer the following research questions:

- RQ1. What are the most frequent words in anti-immigration hate speech spread on Twitter and YouTube in the main Southern European countries?
- RQ2. What are the predominant topics in anti-immigration hate speech spread on Twitter and YouTube in the main Southern European countries?
- RQ2a. Are there differences between the Southern European countries regarding the predominant topics in anti-immigration hate speech spread on Twitter and YouTube?
- RQ2b. Are there differences between Twitter and YouTube regarding the predominant topics in anti-immigration hate speech spread on these platforms in the main Southern European countries?

3. Method

3.1. Sample

This study builds on the work developed within the PHARM project, whose main goal was to create a prototype capable of automatically detecting anti-immigration hate speech spread online in Greece, Italy, and Spain (Arcila-Calderón *et al.*, 2022a). Specifically, this article analyses a portion of the dataset manually generated by multiple coders in each country to train the prototype, focusing on Twitter and YouTube content. These platforms were selected for analysis due to their widespread use both globally and regionally and their influence on public opinion. According to DataReportal (2022), in 2021, Spain had 43.93 million internet users (94% penetration rate), with 8.75 million Twitter users (18.7% of the population) and 40.70 million YouTube users (87.1% of the population). Italy had 50.85 million internet users (84.3% penetration), with 3.75 million Twitter users (6.2%) and 43.20 million YouTube users (71.6%). Greece had 8.50 million internet users (82.2% penetration), with 706.7 thousand Twitter users (6.8%) and 7.40 million YouTube users (71.5%). Greece exhibited the lowest rates of internet and platform penetration among the three countries during the analysed period.

Tweets were collected using geolocation filters through Twitter's API v2, employing a linguistic filter dictionary tailored to each context and language. These filters included, first, keywords representative of racist/xenophobic hate, often viral and derogatory hashtags used in each country to spread anti-immigration messages. Secondly, a list of primary terms, descriptive terms referring to the social groups affected by racism and xenophobia, such as "immigrants," "refugees," "asylum seekers," "foreigners," "Arabs," "Muslims," "Asians," "Chinese," etc. Lastly, a list of secondary terms, including derogatory and offensive language that, combined with the

primary terms, served as indicators of intolerance and discrimination towards immigrants and/or refugees. These same filters were applied across the three countries, coded in Python to extract tweets.

Regarding YouTube, data was collected using scraping techniques. Due to the limitations of this method and the impossibility of covering all platform content, it was necessary to explore and identify channels that frequently disseminated anti-immigration discourse before downloading comments. Thus, channels mainly associated with pseudo-media and far-right political groups were selected, such as Vox in Spain, Lega in Italy, and Χρυσή Αυγή (Golden Dawn) in Greece. A specific Jupyter notebook was then developed to collect comments on these channels and their associated data, using the same linguistic filters as those applied on Twitter. The selected channels are as follows:

- Spain: Vox España, LibertadDigital, TRECE, Intereconomía, El Toro TV, Libertad TV, El Español, MisCrónicas, El Periodista Camorrista, DistritoTV, Mediterráneo Digital, Falange Española de las JONS, HazteOir, Tradición Viva TV, España 2000, Disidentia, El Puntual 24H, Un Tío Blanco Hetero, Lágrimas Progres, Juicio de Pertinencia.
- Italy: Matteo Salvini, Lega Salvini Premier, italexit tv, Forza Italia, ilgiornale, CasaPound Italia, Fratelli d'Italia, FiammaTricolore_ufficial, Forza Nuova, Libero Quotidiano, La Voce del Patriota, La Nuova Bussola Quotidiana.
- Greece: Makeleio TV, Ορθοδοξία, PrinceOliverNews, ΙΑΜΒΟΣ, Spartanshield, Στέργιος Καλόγηρος -Δημοσιογράφος Βεργίνα tv, Χρυσή Αυγή - Λαϊκός Σύνδεσμος, Ethnikismos.net, Ελληνική Λυση - Κυριακος Βελοπουλος, Νίκη.

In total, 24,000 messages were collected between October 2020 and July 2021, comprising 8,000 messages from each country (6,000 tweets and 2,000 YouTube comments). After collecting and cleaning the dataset, all messages were manually coded by pairs of trained researchers in each country, using a codebook translated into the three languages. Specifically, the texts were classified as racist/xenophobic hate, non-hate, or discarded if irrelevant to the corpus (e.g., messages from unrelated contexts, containing foreign vocabulary, or expressing other types of hate). Furthermore, a sentiment analysis was conducted, labelling texts according to their latent sentiment: positive (e.g., joy, enthusiasm, hope), negative (e.g., anger, contempt, sadness), or neutral (e.g., informative messages without clear sentiment). Inter-coder reliability, verified through Krippendorff's Alpha on the samples of two primary waves, exceeded 0.8 for both variables –hate and sentiment. This process resulted in a final sample of 7,986 messages reliably classified as racist/xenophobic hate. Full details on the data collection and coding process for this sample are available in the authors' previously published article (Arcila-Calderón *et al.*, 2022a).

3.2. Word frequency

This sample of messages classified as anti-immigration hate was initially analysed using basic natural language processing (NLP) techniques to obtain the word frequency distribution. For this purpose, the Python libraries Numpy and Natural Language Toolkit (NLTK) were employed. This process would provide valuable information for the subsequent interpretation of the topic modelling results. To apply NLP techniques accurately, it was necessary to tokenize the texts and remove stop words (between 700 and 800 per country), punctuation marks, accents, and links.

3.3. Topic modelling

Finally, to detect the underlying topics in the messages classified as anti-immigration hate, topic modelling was applied. This is an unsupervised machine learning technique that enables the automatic classification of large textual datasets. For this purpose, the Latent Dirichlet Allocation (LDA) algorithm was used. This approach infers latent topics in the texts without prior knowledge or manual annotations, as the algorithm automatically identifies patterns in clusters of co-occurring words (Jacobi *et al.*, 2015). In addition to NLTK, the Python libraries

Pandas (for data analysis), Gensim (for topic modelling), and pyLDAvis (for topic visualisation and exploration) were required for this task. Stop words, punctuation marks, and double spaces were removed, and all texts were converted to lowercase to enhance the coherence of the identified topics.

4. Findings

First, it is worth to explore the results from the manual classification developed to generate the samples, providing a preliminary understanding of the quantity of racist and/or xenophobic hate, as well as the predominant sentiments in the original databases of messages about migrants and refugees extracted from Twitter and YouTube. Thus, of the 6,000 tweets collected in Spain, 88.8% (n=5327) did not contain hate speech, compared to 11.1% (n=666) where anti-immigration hate was detected. Similarly, of the 2,000 YouTube comments, 80.5% (n=1610) were free from hate, while 19.4% (n=388) contained racist or xenophobic content. Regarding sentiment analysis, 47.2% (n=2832) of the tweets were neutral, 1.9% (n=116) were classified as positive, and 50.8% (n=3050) as negative. For YouTube comments, 47.3% (n=945) were neutral, 9.6% (n=192) were positive, and 42.9% (n=857) were negative.

In Italy, the classification of tweets showed more balanced results for anti-immigration discourse. Of the 6,000 tweets, 49.7% (n=2982) contained hate, while 50.2% (n=3012) did not. For YouTube, 36.1% (n=721) of the 2,000 comments contained hate speech, while 63.9% (n=1278) did not. In terms of sentiment analysis, 33.9% (n=2034) of the tweets were neutral, 12.9% (n=776) were positive, and 53.2% (n=3191) were negative. Of the YouTube comments, 24.4% (n=489) were neutral, 20.9% (n=417) were positive, and 54.7% (n=1094) were negative.

Finally, in Greece, 46.9% (n=2816) contained anti-immigration hate, while 53% (n=3178) did not. For YouTube comments, 20.7% (n=413) were classified as hate speech, while 79.3% (n=1586) did not contain hate. Regarding sentiment, 23.1% (n=1387) of the tweets were neutral, 0.6% (n=35) were positive, and 75.7% (n=4544) were negative. For YouTube, 41.3% (n=827) of the comments were neutral, 7.7% (n=154) were positive, and 51% (n=1020) were negative.

Table 1 summarizes the results of this manual classification by source and country.

Table 1. Frequencies and percentages from the manual classification of anti-immigration hate and sentiment in messages about migrants and refugees by country and social media.

Country	Social platform	Annotated data	Hate analysis		Sentiment analysis		
			Hate	No hate	Positive	Neutral	Negative
Spain	Twitter	6,000	666 (11.1%)	5,327 (88.8%)	116 (1.9%)	2,832 (47.2%)	3,050 (50.8%)
	YouTube	2,000	388 (19.4%)	1,610 (80.5%)	192 (9.6%)	945 (47.3%)	857 (42.9%)
	Total	8,000	1,054 (13.2%)	6,937 (86.7%)	308 (3.9%)	3,777 (47.2%)	3,907 (48.8%)
Italy	Twitter	6,000	2,982 (49.7%)	3,012 (50.2%)	776 (12.9%)	2,034 (33.9%)	3,191 (53.2%)
	YouTube	2,000	721 (36.1%)	1,278 (63.9%)	417 (20.9%)	489 (24.4%)	1,094 (54.7%)
	Total	8,000	3,703 (46.3%)	4,290 (53.7%)	1,193 (14.9%)	2,523 (31.5%)	4,285 (53.6%)
Greece	Twitter	6,000	2,816 (46.9%)	3,178 (53%)	35 (0.6%)	1,387 (23.1%)	4,544 (75.7%)
	YouTube	2,000	413 (20.7%)	1,586 (79.3%)	154 (7.7%)	827 (41.3%)	1,020 (51%)
	Total	8,000	3,229 (40.4%)	4,764 (59.6%)	189 (2.4%)	2,214 (27.7%)	5,564 (69.6%)

Source: Own elaboration.

4.1. *Most frequent words in hate messages towards migrants and refugees spread through Twitter and YouTube in the main countries of Southern Europe*

After the manual classification and before proceeding with topic modelling, we addressed Pl1 by extracting the most frequent words in the messages classified as anti-immigration hate speech, broken down by country and platform. Although a larger number of terms were explored, only the 10 most repeated words in each subsample are presented here.

In Spain, the most frequent words in the 666 hate tweets were: *llamada* [55], *inmigración* [51], *efecto* [50], *masiva* [46], *inmigrantes* [35], *ilegal* [33], *Canarias* [27], *fronteras* [26], *España* [25], *ilegales* [23] (in English: call, immigration, effect, massive, immigrants, illegal, Canary Islands, borders, Spain, illegal). In the 388 hateful YouTube comments, the most common words were: *país* [70], *inmigrantes* [61], *inmigración* [60], *gente* [56], *España* [36], *detenido* [36], *personas* [33], *ilegal* [33], *trabajo* [32], *bien* [30] (in English: country, immigrants, immigration, people, Spain, detained, people, illegal, work, good).

In Italy, the most repeated words in the 2,982 hate tweets were: *problema* [132], *immigrazione* [78], *nero* [76], *clandestini* [58], *migranti* [56], *musulmani* [35], *Italia* [33], *razzista* [28], *violenza* [20], *colpa* [20] (in English: problem, immigration, black, clandestine, migrants, Muslim, Italy, racist, violence, guilt). In the 721 hateful YouTube comments, the top words were: *Italia* [82], *italiani* [74], *islam* [58], *musulmani* [49], *paese* [48], *allah* [48], *casa* [45], *immigrati* [43], *persone* [42], *immigrazione* [33] (in English: Italy, Italians, Islam, Muslims, country, Allah, home, immigrants, people, immigration).

In Greece, from the 2,816 hate tweets, the most frequent words were: *λαθρομετανάστες* [346], *bogdanosk* [59], *ελλάδα* [58], *nmitarakis* [49], *χώρα* [49], *πρόσφυγες* [46], *adonisgeorgiadi* [42], *έλληνες* [41], *μόνο* [41], *primeministergr* [36] (in English: illegal, Bogdanosk, Greece, Nmitarakis, country, refugees, AdonisGeorgiadi, Greeks, only, PrimeMinisterGR). And in the 413 hateful YouTube comments, the most common words were: *Ελλάδα* [56], *χώρα* [45], *έλληνες* [31], *όλοι* [26], *μετανάστες* [23], *μόνο* [20], *τώρα* [20], *στοις* [19], *λαθρομετανάστες* [19], *σύνορα* [18] (in English: Greece, country, Greeks, all, immigrants, only, now, for, illegal, borders).

From this preliminary exploration, it can be observed that the main words constructing anti-immigration hate speech on Twitter and YouTube in the three Mediterranean countries are primarily associated with concepts of homeland, nation, or state. They are also related to issues of ethnicity, religion, and origin—elements that possibly shape, structure, and justify rejection. Differences between countries are minimal; the main distinction lies in references to national governments and specific political parties or figures in each country, although the frequency of these references remains similar across the three countries. However, certain key concepts stand out in frequency across all three samples, such as the term “illegal,” likely linked to immigration, and the term “invasion,” possibly associated with other frequent terms such as “Islamist.” Similarly, the word “border” is prominent in all three countries. Additionally, there is frequent mention of “Europe” (though not necessarily among the top 10 most frequent words), which may suggest that much of this discourse frames immigration as a continental issue, prioritising Europeans over non-Europeans.

Differences between the two platforms appear more pronounced. On Twitter, anti-immigration hate speech seems primarily focused on migration issues and perceived threats. On YouTube, however, anti-immigration comments appear more centred on political and institutional matters related to migration. These differences seem consistent across the three countries.

4.2. *Topic modelling of hate messages towards migrants and refugees spread through Twitter and YouTube in countries of Southern Europe*

Secondly, topic modelling was conducted to identify the underlying topics in messages classified as racist/xenophobic in the three Mediterranean countries, thus addressing Pl2. The

predominant topics found in each country and platform are presented below, along with the main words constituting them (the 10 most heavily weighted terms, translated into English).

4.2.1. Predominant topics in anti-immigration hate messages on Twitter in Spain

- Topic 1.** Muslims Are Not Welcome: Mass immigration of Muslims, the so-called “Islamic invasion” in Spain and Europe, must stop. Most representative words:
 0.013*“invasion”+0.011*“government”+0.009*“europe”+0.008*“enter”+0.006*“criminals”+0.006*“immigration”+0.006*“moor”+0.005*“illegal”+0.005*“inside”+0.005*“borders.”
- Topic 2.** Islamic Threat: Muslim immigrants are radicals, criminals and jihadist terrorists. Most representative words:
 0.012*“terrorist”+0.010*“neighborhoods”+0.009*“moors”+0.008*“people”+0.007*“spaniards”+0.006*“expulsion”+0.006*“effect”+0.006*“call”+0.006*“islamist”+0.006*“country.”
- Topic 3.** Need for Anti-Immigration Measures: The need to stop massive immigration by closing the borders and expelling and banning all illegal immigrants from entering Spain, whether they are “Moors,” “Blacks,” “Chinese,” or “Indians.” Most representative words:
 0.018*“close”+0.016*“borders”+0.013*“illegals”+0.012*“immigrants”+0.012*“expulsion”+0.011*“canary”+0.009*“massive”+0.008*“shit”+0.007*“immigration”+0.007*“black.”
- Topic 4.** The Government is to Blame: The Spanish government allows the massive arrival of boats to Spanish borders, accommodates illegal immigrants in luxury hotels and gives them aid. Most representative words:
 0.021*“canary”+0.016*“immigration”+0.014*“call”+0.014*“effect”+0.012*“massive”+0.011*“illegals”+0.009*“boats”+0.009*“immigrants”+0.008*“islands”+0.008*“spain.”

4.2.2. Predominant topics in anti-immigration hate messages on YouTube in Spain

- Topic 1.** No More Aid to Immigrants: Aid to immigrants must be stopped, since they come illegally to Spain to take away jobs from Spanish citizens and commit crimes. Most representative words:
 0.016*“foreigners”+0.011*“immigrants”+0.010*“country”+0.006*“continue”+0.004*“can”+0.004*“vox”+0.004*“live”+0.004*“detained”+0.004*“politicians”+0.004*“work.”
- Topic 2.** Spaniards First: Spain needs parties like Vox that stop protecting and helping immigrants before helping Spaniards. Most representative words:
 0.017*“spain”+0.015*“immigration”+0.012*“longlive”+0.009*“vox”+0.008*“first”+0.006*“spanish”+0.005*“bad”+0.005*“taxes”+0.005*“foreign”+0.005*“women.”
- Topic 3.** Border Closure: Spain needs to close borders to protect Spanish citizens from mass immigration and save the country’s culture and values. Most representative words:
 0.009*“people”+0.007*“borders”+0.007*“people”+0.007*“family”+0.006*“immigrant”+0.006*“want”+0.006*“countries”+0.006*“country”+0.005*“hate”+0.005*“home.”
- Topic 4.** No more Illegal Immigration: The Spanish government should not allow any more illegal immigration and should forcibly expel all undocumented immigrants. Most representative words:
 0.010*“law”+0.009*“illegals”+0.009*“vox”+0.007*“ideology”+0.007*“immigrants”+0.005*“spaniards”+0.004*“immigration”+0.004*“racist”+0.004*“work”+0.004*“right.”
- Topic 5.** Incompetent Government: The Spanish government allows and supports the massive influx of illegal immigrants and criminals into Spain, and is just as exploitative and ungrateful as they are, taking advantage of the money of Spanish workers. Most representative words:

0.020**"illegal"+0.013**"spain"+0.012**"people"+0.009**"vox"+0.008**"country"+0.007**
"invasion"+0.006**"thieves"+0.006**"politicians"+0.006**"life"+0.005**"spaniards."

4.2.3. Predominant topics in anti-immigration hate messages on Twitter in Italy

Topic 1. Protection Against Muslims: Italy must protect its homeland, as well as its history, culture, and religion, against Muslim immigrants who threaten it. Most representative words:

0.014**"muslims"+0.013**"hate"+0.010**"world"+0.007**"history"+0.006**"europeans"+
0.005**"africans"+0.005**"catholics"+0.005**"salvini"+0.004**"family"+0.004**"church."

Topic 2. The Government and the Left is to Blame: The Italian government and Left-wing politicians protect criminal illegal immigrants over Italians. Most representative words:

0.014**"racism"+0.008**"black"+0.006**"murderer"+0.005**"french"+0.005**"world"+0.
0.005**"equality"+0.005**"color"+0.004**"pope"+0.004**"against"+0.004**"lgbt."

Topic 3. Danger to Italy: It is necessary to stop accepting illegal immigrants, as they are dangerous and threaten the system, democracy and values in Italy. Most representative words:

0.014**"illegals"+0.010**"migrants"+0.009**"violence"+0.008**"welcome"+0.007**"immi
gration"+0.007**"people"+0.006**"solidarity"+0.005**"hospitals"+0.005**"moroccans"+
0.004**"violent."

Topic 4. Weak European Policies: International mafias exploit Europe's welcoming policies to traffic refugees and illegal immigrants of Arab and Sub-Saharan origin, posing a threat to Western culture. Most representative words:

0.016**"migrants"+0.011**"blame"+0.008**"immigration"+0.007**"people"+0.006**"italy
"+0.005**"bad"+0.005**"color"+0.004**"racist"+0.004**"threat"+0.004**"black."

Topic 5. Immigrants Bring the Virus: The government locks down and restricts Italy for Italians but not for illegal immigrants, who pose a health threat by importing and spreading the virus. Most representative words:

0.027**"illegals"+0.019**"migrants"+0.018**"Italy"+0.009**"government"+0.008**"securi
ty"+0.008**"black"+0.008**"state"+0.007**"close"+0.006**"covid"+0.006**"virus."

4.2.4. Predominant topics in anti-immigration hate messages on YouTube in Italy

Topic 1. The Government Promotes Terrorism: Italian politicians, who share interests with the mafia, are destroying the country by filling it with illegal Muslim immigrants, radicals, and terrorists. Most representative words:

0.022**"islam"+0.010**"people"+0.008**"before"+0.007**"muslims"+0.005**"italy"+0.00
5**"italian"+0.005**"world"+0.004**"isis"+0.004**"quran"+0.004**"government."

Topic 2. Muslims are the Threat: The main problem in Italy is the uncontrolled arrival of illegal Muslim immigrants, who undermine Italian history and values. Most representative words:

0.022**"islam"+0.010**"women"+0.008**"religion"+0.006**"always"+0.006**"truth"+0.0
06**"law"+0.005**"exists"+0.005**"europe"+0.005**"italian"+0.004**"history."

Topic 3. Border Protection: Italy needs to protect its land and people by controlling the borders and combating illegal immigration, using the army if necessary. Most representative words:

0.009**"woman"+0.008**"italians"+0.007**"writings"+0.006**"home"+0.006**"migrants
"+0.006**"always"+0.006**"italy"+0.005**"state"+0.005**"life"+0.004**"man."

Topic 4. Refugees Rob Italy: Irresponsible politicians are turning Italy into a refugee camp filled with thieves and murderers, all maintained at the expense of Italian taxpayers. Most frequent words:

0.016**"muslims"+0.010**"true"+0.009**"salvini"+0.007**"italy"+0.007**"way"+0.006**"italians"+0.006**"all"+0.005**"second"+0.005**"death"+0.004**"reason."

Topic 5. Islamic Invasion: The Italian government is responsible for the Islamic invasion, which threatens the country's religion, culture and values, as well as for the robberies, murders and drug trafficking committed by Muslims in Italian neighbourhoods. Most representative words:

0.023**"allah"+0.015**"god"+0.010**"quran"+0.008**"jesus"+0.006**"church"+0.005**"state"+0.005**"templars"+0.004**"christians"+0.004**"man"+0.004**"mosques."

4.2.5. Predominant topics in anti-immigration hate messages on Twitter in Greece

Topic 1. Need to Stop the Invasion: Greece must halt the invasion and expel all illegal immigrants, as they are altering the demographics and replacing the Greek population with Muslims and Gypsies. Most representative words:

0.026**"illegals"+0.020**"immigrant"+0.020**"diaspora"+0.018**"country"+0.017**"bomb"+0.016**"horse"+0.016**"trojan"+0.007**"greece"+0.007**"expulsion"+0.007**"gypsies."

Topic 2. The Government Sells Greece to Illegal Immigrants: Politicians are allowing Greece to be overrun by immigrants who overcrowd hospitals and are supported by Greek taxpayers. Most representative words:

0.037**"illegals"+0.011**"greece"+0.008**"greeks"+0.008**"bogdanosk"+0.007**"islamists"+0.006**"all"+0.006**"nmitarakis"+0.006**"communists"+0.006**"lost."

Topic 3. Need to Expel Muslim Immigrants: The need to expel external Islamic invaders to protect Greek culture and values. Most representative words:

0.081**"illegals"+0.027**"invaders"+0.012**"out"+0.009**"democracy"+0.007**"religion"+0.006**"center"+0.006**"night"+0.005**"immigrants"+0.005**"afghans"+0.004**"immigrant."

Topic 4. Illegal Immigrants Are Criminals: Undocumented immigrants come to Greece to commit robberies, rapes and murders. Most representative words:

0.025**"illegal"+0.014**"illegals"+0.011**"stolen"+0.011**"greeks"+0.008**"good"+0.007**"papers"+0.007**"trash"+0.006**"block"+0.006**"late"+0.006**"ass."

Topic 5. The Government Supports Foreigners More Than Greeks: The Greek government prioritizes illegal immigrants and Syrian refugees, providing them with citizenship, free food, and medicine, while neglecting the needs of Greek citizens. Most representative words:

0.023**"illegals"+0.011**"government"+0.009**"refugees"+0.009**"greeks"+0.008**"islamists"+0.008**"interior"+0.008**"law"+0.007**"continues"+0.004**"come"+0.004**"together."

Topic 6. The Government Allows the Islamist Invasion: The Greek government is allowing Islamist criminals to enter illegally the country to commit crimes. Most representative words:

0.068**"islamists"+0.043**"illegals"+0.036**"invaders"+0.013**"cyprus"+0.013**"coronavirus"+0.011**"turkey"+0.010**"sent"+0.009**"propaganda"+0.009**"correction"+0.009**"politics."

4.2.6. Predominant topics in anti-immigration hate messages on YouTube in Greece

Topic 1. The Government Sells the Greek Homeland: Politicians like Tsipras are selling Greece to illegal immigrants, causing a demographic and cultural disaster in Greece. Most representative words:

0.005**"greece"+0.004**"democracy"+0.003**"enter"+0.003**"fire"+0.002**"immigrants"+0.002**"illegals"+0.002**"now"+0.002**"homeland"+0.002**"greeks"+0.002**"tsipras."

Topic 2. The Greek Government Supports the Invasion: Greek politicians betray their people by failing to control borders and allowing Muslim invasion. Most representative words:

0.005*”greece”+0.005*”greeks”+0.003*”deportation”+0.003*”traitors”+0.003*”erdogan”+0.003*”refugees”+0.003*”borders”+0.002*”country”+0.002*”illegals”+0.002*”politicians.”

Topic 3. Islam is a Threat: Muslims are violent and intolerant, they are killing Christians in their land and destroying their culture, tradition and values. Most representative words: 0.004*”greece”+0.003*”country”+0.003*”immigrants”+0.002*”countries”+0.002*”war”+0.002*”destruction”+0.002*”blood”+0.002*”islam”+0.002*”fire”+0.002*”respect.”

Topic 4. Threat of Muslim Invasion: Greece must stop accepting Muslim refugees and immigrants massively, as they are turning the country into a poor and dangerous third-world nation. Most representative words:

0.003*”greece”+0.003*”country”+0.003*”immigrants”+0.003*”borders”+0.003*”syria”+0.003*”refugees”+0.002*”greeks”+0.002*”illegals”+0.002*”weapons”+0.002*”problem.”

5. Discussion and conclusions

This study provides an analysis of anti-immigration hate speech propagated through Twitter and YouTube in Spain, Italy, and Greece. Based on the manual classification, it was observed that Greece and Italy show a higher number of racist and xenophobic messages compared to Spain, consistent with European surveys on attitudes towards migration. However, even in countries with higher hate percentages, the figures are less alarming than expected, given that filters were applied to narrow the initial sample. As anticipated, the most frequent sentiment in all three subsamples was negative (Schmidt & Wiegand, 2017). Nevertheless, a substantial number of neutral, mostly informative messages were also found across all three countries, while positive messages were notably limited on both platforms in each country.

Focusing on messages classified as racist and/or xenophobic, topic modelling allows for several conclusions, which align with the observations from the most frequent words analysis. Firstly, addressing PI2a, thematic and motivational differences in this type of hate speech among the three countries appear minimal. The only discernible differences reflect the unique characteristics of each context, such as references to specific political figures and parties, or a more frequent mention of COVID-19 in the Italian sample. Nonetheless, the affected groups, motivations, and arguments driving the hate appear consistent across Southern Europe. Generally, the predominant topics identified in the three subsamples can be grouped into two major categories: those that identify immigrants and refugees as a realistic threat and those that perceive them as a symbolic threat (Stephan & Stephan, 2000). Additionally, it is possible to highlight a third category more focused on the political aspect, exploring the causes and consequences of immigration.

More specifically, the first thematic category includes discourses that portray immigrants as a realistic threat to security, as well as an economic or demographic threat to host societies. The representation of immigrants as a security threat is almost always linked to Islamist terrorism, associating immigrants, especially Muslims and “illegals,” with terrorism and further identifying them as criminals, thieves, and/or murderers. In some cases, especially in the Italian and Greek subsamples, irregular immigrants are also blamed for spreading COVID-19 (as the samples were collected between 2020 and 2021), representing them as a health threat. Concerning the representation of immigrants as an economic threat, the focus is also primarily on migrants of Arab origin, with references to alleged “mass immigration” or “invasion,” especially in the Spanish subsample. However, this perception of immigration as an economic burden also appears to extend, albeit to a lesser extent, to sub-Saharan and Asian migrants.

The second thematic category includes topics that portray immigrants as a symbolic threat to the historical and sociocultural heritage of host countries, their cultural and religious identity, and even Western democratic values. This type of messaging seems to justify a significant portion of the anti-immigration discourse observed in all three countries, primarily

targeting immigrants of Arab origin, particularly Muslims. Islam appears to generate more rejection on these platforms than other cultures or religions. This finding indicates that one of the main and most intense causes of discrimination in the Mediterranean (and in the West by extension) is Islamophobia (González-Baquero *et al.*, 2023), though often intertwined with racism, xenophobia, and other forms of prejudice, such as aporophobia or misogyny, within various intersecting frameworks (Cortina, 2017; Crenshaw, 1994). Indeed, this type of hate, which stigmatises and dehumanises Muslims, serves as the foundation and justification for apartheid, repression, and ethnic cleansing practices enacted by the Israeli military on the Palestinian population, as occurred in genocides and persecutions perpetrated against other Muslim communities in the past, such as the 1995 Srebrenica genocide by Serb-Bosnian forces or the persecution of the Rohingya Muslim minority in Myanmar.

Finally, the third thematic category encompasses topics that blame national and European governments, as well as progressive parties, for the previously described threats. Specifically, prominent messages accuse politicians of permitting the so-called “invasion” of “illegal” immigrants, posing both realistic and symbolic threats to host societies. Other messages criticise politicians for allegedly treating immigrants better than native citizens and demand stricter measures, such as border closures or the deportation of “illegals.” Additionally, in all three contexts, there are messages supporting far-right parties and politicians. In Italy, in addition, the government (composed of a coalition between the Five Star Movement and the Democratic Party and led by Giuseppe Conte until February 2021) is frequently linked to the Italian mafia and the trafficking of irregular immigrants.

More marked differences were found between the two platforms analysed. Comparing predominant topics to answer PI2b, Twitter demonstrates greater thematic diversity, primarily related to the first two categories, whereas on YouTube, messages are more focused on political and governmental issues, more closely aligned with the third thematic category. Thus, while Twitter reveals a broader spread of anti-immigration hate speech –possibly reflecting a more diverse participation– the YouTube channels analysed appear more limited and biased, closely associated with far-right political groups in each country. These channels seem primarily used to promote far-right groups as solutions to the perceived threats posed by immigration, to amplify nationalist and patriotic sentiments, and to demand anti-immigration measures. They are also used to hold left-wing governments and politicians accountable for supporting the reception and protection of immigrants and refugees. Notably, many of these demands appear to have been effective, as, following this work, far-right parties gained power in national or regional governments in all three countries, implementing anti-immigration policies, which have also been adopted by more traditional, ostensibly moderate conservative parties.

Delving deeper into the identified topics, a key conclusion is that the racist and xenophobic hate speech spread through Twitter and YouTube in Southern Europe reflects the dominant negative media frames on migrants and refugees that have been recurrently detected in previous studies (in both news media and social media), which identify these groups as an economic burden or a threat to host societies (Amores & Arcila-Calderón, 2019; Amores *et al.*, 2020a; Valdez-Apolo *et al.*, 2019). This confirms that the negative frames of immigration propagated by mass media are also present in the anti-immigration hate speech circulating on social platforms, either through the direct presence or influence of the media or through the assimilation and replication of these frames by audiences. This also demonstrates the significant influence these frames can exert on public opinion, providing a foundation for explicitly manifested racist and/or xenophobic hate on social media. Indeed, numerous studies have already shown how negative media portrayals of immigration foster harmful perceptions and attitudes, perpetuating stereotypes and promoting the dehumanisation of these groups (e.g., Esses *et al.*, 2013; Boomgaarden & Vliegenthart, 2007; Schemer, 2012). For this reason, it is essential to caution media professionals about the potential adverse effects of spreading

negative frames of immigration, which have, in fact, increased in recent years across major European media (Amores *et al.*, 2019), especially in Southern Europe (Amores *et al.*, 2020a).

A demographic analysis of primary Twitter and YouTube users is also crucial for understanding the broader social impacts of this hate speech. Twitter is widely used by journalists, politicians, and citizens to disseminate and consume information. However, the platform's influence extends beyond its user base, as it can shape public opinion and traditional media narratives. Therefore, the spread of racist and xenophobic messages on Twitter has significant implications for social attitudes towards migrants and refugees, potentially reinforcing negative stereotypes and fostering social polarisation. YouTube, as a leading platform for video dissemination, attracts a more diverse audience but is particularly popular among young users, who are especially susceptible to the influence of audiovisual content. The prominent role of far-right groups in spreading anti-immigration hate on this platform may indicate an intent to radicalise and mobilise younger audiences against immigrants and refugees. Moreover, the platform's algorithms, which tend to recommend similar content, as well as controversial and sensationalist material, may foster echo chambers that increase exposure to toxic and polarising narratives, reinforcing intolerant ideologies (Díaz Ruiz & Nilsson, 2023). Consequently, the social impacts of anti-immigration hate speech, amplified within these echo chambers, may include increased discrimination, social exclusion, and violence against immigrants, refugees, and/or racialized groups, inevitably to the detriment of social integration and peace.

These findings highlight the need for robust content moderation policies and proactive measures by social media platforms to identify and mitigate the spread of hate speech. Additionally, educational and awareness initiatives promoting media literacy are necessary to equip users with critical skills to evaluate online content and recognise the manipulative tactics used by hate groups. In conclusion, this study offers relevant findings at the theoretical, methodological, and social levels, pioneering the use of computational techniques to analyse anti-immigration hate speech propagated on social media in the Mediterranean context. These results could help develop coordinated strategies—including legislators, social media companies, and civil society—to combat racism and xenophobia online, thereby creating a safer and more inclusive digital environment.

6. Limitations and future lines of research

In conclusion, it is essential to acknowledge certain limitations of this study. Although the inclusion of YouTube was innovative, the sample on this platform was drawn exclusively from channels previously identified as potential sources of anti-immigration discourse –primarily channels linked to far-right groups– which may have introduced bias into the analysis. However, these groups appear to be the main proponents of anti-immigration narratives in all three countries. Additionally, the study aimed to identify latent topics, affected social groups, and motivations behind these messages, rather than contextualising them or linking them to specific social movements. Furthermore, specific filters were used to limit the download to messages that could contain hate, so no definitive conclusions were drawn regarding the total amount of hate or the sentiments identified from the initial manual classification process, as it was not representative. Given these limitations, future research should include a wider range of YouTube channels, as well as other social platforms, and use only descriptive terms related to migration as filters to obtain more general and representative conclusions on the true extent of online anti-immigration hate—a task already undertaken on a large scale across Europe, but solely with tweets and without analysing latent topics (Arcila-Calderón *et al.*, 2022b). Conducting longitudinal analyses to observe potential changes over time would also be valuable.

Moreover, extracting additional information from the sample and including microdata on messages and authors could yield valuable insights into the types of users responsible for disseminating anti-immigration hate. Similarly, network analysis techniques could help establish connections among users, topics, and trends, as well as identify possible fake accounts, trolls,

and bots –and their potential links to corporations or political groups– that may be leading the spread of these discourses. Future research should also focus on contextualising online racist and xenophobic hate speech, linking recurring themes and trends in these messages with specific news items and events. Finally, it is crucial to empirically verify the connections between online anti-immigration content and media frames of immigrants and refugees, as well as the negative representations of these groups disseminated through hoaxes and fake news, and even through political and institutional discourse. Similarly, it would be worthwhile to investigate whether such hate speech encourages violent attacks against immigrants and/or refugees in real environments.

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