

The disinformation society: The impact of fake news on the public sphere



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Creators and spectators facing online information disorder. Effects of digital content production on information skills



Creadores y espectadores frente al desorden informativo online. Efectos de la producción de contenidos digitales en competencias informativas

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ABSTRACT

Misinformation on social media is a major problem facing our society. The experience deriving from use does not guarantee success in identifying false information. This study seeks to determine whether an active role in social media impacts on informational skills. For this purpose, we designed a survey that was administered to 756 young people between 16 and 26 years of age from different educational levels. The results show a profile of creative users who participate in generating their own content and sharing their recommendations openly, as opposed to another profile, the "spectators", focused on entertainment and interaction. The creator profile is the variable that most contributes to reporting fake news on social media. When contrasting information, educational level is the most relevant aspect, although academic results and creator users also represent a significant contribution. Greater trust in the sources found on social media identifies the active profile, while distrust is associated with the spectators. We recommend that media education puts in place actions intended to recuperate trust in social media, so that they can be utilized critically, encouraging active, not reactive use.

RESUMEN

La desinformación en las redes sociales es un problema al que se enfrenta nuestra sociedad. La experiencia de uso no garantiza el éxito para identificar la información falsa. El estudio pretende determinar si un rol activo en los medios sociales influye en las competencias informacionales. Para ello se diseñó una encuesta que se aplicó a 756 jóvenes entre 16 y 26 años de diversos niveles educativos. Los resultados muestran un perfil de usuarios «creadores» que participan en la generación de contenidos propios y en compartir sus recomendaciones abiertamente, frente a otro, los «espectadores», centrados en el entretenimiento y la interacción. El perfil creador es la variable que más contribuye a denunciar noticias falsas en las redes sociales. A la hora de contrastar la información, el nivel educativo es el aspecto más relevante, aunque los resultados académicos y los usuarios creadores también suponen una aportación significativa. Una mayor confianza en las fuentes presentes en las redes sociales distingue al perfil activo, mientras que la desconfianza está asociada con los espectadores. Desde la educación mediática se recomienda emprender acciones destinadas a recuperar la confianza en los medios sociales para que puedan ser utilizados de modo crítico, favoreciendo un uso activo y no reactivo de los mismos.

KEYWORDS | PALABRAS CLAVE

Social media, disinformation, information disorder, media literacy, information skills, creators. Redes sociales, desinformación, desorden informativo, competencia mediática, habilidades informativas, creadores.



1. Introduction: The issue of misinformation in the social media era

Scholars and institutions have shown growing concern about misinformation and fake news on social media. According to the report on the state of disinformation produced by the European Commission (2018), disinformation is not only an issue related to content creation, but it can also involve the circulation of content, from commenting, sharing, etc. Tandoc et al. (2018) in their revision of the term "fake news", establish two dimensions to classify it: the facticity, referring to the degree to which fake news relies on facts (low in the case of fabricated news or high in the case of news parody) and the intention to deceive (high in the cases of manipulation or propaganda and low in the cases of news parody and news satire). Wardle and Derakhshan (2017) introduce a useful distinction between three types of information disorder from their falsehood to their harmful dimension: "Misinformation is when false information is shared, but no harm is meant; Disinformation is when false information is knowingly shared to cause harm and Malinformation is when genuine information is shared to cause harm, often by moving information designed to stay private into the public sphere" (Wardle & Derakhshan, 2017: 5). For these reasons scholars are converging on using the term "information disorder" as comprehensive of the multiple nuances of the problem.

Information disorder has been shown to spread more easily, quickly, and widely than other information, and its main means of dissemination is through social media (Papadopoulos et al., 2016; Törnberg, 2018; Vosoughi et al., 2018), emotional content being a successful trigger for its spreading (Luo et al., 2021). The issue has gained increasing attention in recent years, when different global events, such as political elections in many western countries, but also the Brexit process as well as the pandemic global emergency, have shown the profound and dangerous impact that such disinformation processes can cause on a social, economic, and public health level. According to the research "The global disinformation disorder" (Bradshaw & Howard, 2019), there is, in fact, evidence of organized social media manipulation campaigns in 48 countries in 2018 and 28 countries in 2017.

Recent research carried out at a European level tried to "measure" the level of trust and worry concerning disinformation processes; it states that more than 85% of respondents think that the existence of fake news is a problem in their country and 37% say they come across fake news every day or almost every day. With respect to the sources, less than half of respondents (47%) trust online newspapers and magazines, while lower proportions trust video hosting websites and podcasts (27%), or online social networks and messaging apps (26%) (Eurobarometer, 2018). Finally, regarding strategies for contrasting disinformation, according to Eurobarometer (2018), 71% of citizens are totally or somewhat confident that they can identify news or information that misrepresents reality or is false (fake news), while 26% are not confident. Respondents who use online social networks more regularly, and who come across fake news more frequently, are more confident in their ability to identify it. On the other hand, more trust and greater social media exposure are not automatically associated with a lower risk of misperception, since evidence shows that false news can be shared inadvertently and content can even be shared knowing that the information is not accurate, just because it is in tune with an ideological line (Ahmed, 2021; Ardèvol-Abreu et al., 2020; Babaei et al., 2021) or because it boosts engagement metrics on social media (Avram et al., 2020). Moreover, in studies carried out on young people, a tendency has been found to overestimate their critical ability when judging the information they face on social media (Petrucco & Agostini, 2021). A recent study by Soengas-Pérez et al. (2019) involving university students, points out that two thirds of respondents neither oppose news, nor expand information; rather they are satisfied with a single version of the facts and do not consider more points of view. Scholars highlight that in adult contexts as well, there is often a lack of motivation to validate information (Buckingham, 2019).

In many cases, actions performed to contrast disinformation seem not to be the most appropriate: for example, strategies such as identifying, tagging, and penalizing fake news on social networks are not effective: research has shown that the effects are still present once the fake news has been debunked (Lewandowsky et al., 2012; Pennycook & Rand, 2019). Repetition of information facilitates processing and increases its perception of truth (Dechêne et al., 2010; Hasher et al., 1977). In social media environments, the probability of sharing a piece of information grows with the number of times one is exposed to it (Mønsted et al., 2017). These effects have been demonstrated even with invented

news, with its effects being persistent over time, even if the participants forgot they were exposed to the information (Chan et al., 2017; De-Keersmaecker & Roets, 2017; Pennycook & Rand, 2019).

Furthermore, the strategies that the major social media platforms, such as Facebook, Twitter, or Instagram, have put into action are not convincing: both the algorithms and crowdsourcing methods, as well as internal moderators and external fact checking agencies that verify and filter the news seem to address the issue only partially and with many opaque dynamics (Woolley & Howard, 2018; Andersen & Søe, 2020; Allcott et al., 2019). In order to cope with such emergent complexity in a systematic way, policy makers (European Commission, 2018) have deemed it appropriate to focus on five areas of intervention:

- Enhance transparency of the online digital ecosystem.
- Develop tools for empowering users and journalists and fostering a positive engagement with fast-evolving information technologies.
- Safeguard the diversity and sustainability of the European news media ecosystem.
- Calibrate the effectiveness of the responses through continuous research on the impact of disinformation in Europe.
- Promote and sharpen the use of media and information literacy approaches to counter disinformation and help users navigate our media environment.

2. The role of media literacy and digital competences in contrasting information disorder

Among the strategies to contrast "global disinformation disorder", as seen in the previous paragraph, media and information literacy have a pivotal role. Several scholars address the urgent need for media literacy education, which can help audiences to develop the ability to better handle fake news (Mele et al., 2017; Mihailidis & Viotty, 2017). The recent UNICEF report (Howard et al., 2021) outlines the importance of addressing specific actions to children since they can be targets and objects of mis/disinformation, spreaders, or creators of it, but also opponents of mis/disinformation in actively seeking to counteract falsehoods.

According to the Digcomp 2.0 framework (Carretero et al., 2017), which defines general and specific indicators to frame contemporary digital skills, five main areas should be taken into consideration for the overall digital development of individuals:

- Information and data literacy.
- Communication and collaboration.
- Digital content creation.
- Safety.
- Problem solving.

Although ethics are not explicitly mentioned in these areas, the definition of skills "for a digital world" (OECD, 2016) does include the importance of acquiring skills for progress and social wellbeing. This would necessarily imply introducing an integrated ethical-digital model of competencies at all educational levels (Burguet-i-Arfelis & Buxarrais, 2012). Since then, several models have guided the incorporation of these skills in the general educational field (Ala-Mutka, 2011; Area-Moreira & Pessoa, 2012; García-Valcárcel, 2016) and in teacher training (Wilson et al., 2011; UNESCO, 2019; García-Valcárcel & Martín-del-Pozo, 2015).

Much research has been dedicated to trying to measure the level of such skills in different populations, as well as to analysing the relationship between such digital skills and individual development, overall social capital, and general wellbeing. According to recent meta-analyses (Mascheroni et al. 2020), digital skills encourage the take-up of more opportunities: those who use the internet more and have more skills engage in a broader range of online activities than those who use it an equivalent amount of time, but who have lower skills (Livingstone & Helsper, 2010; van-Deursen & van-Dijk, 2014).

Studies have found that children who use the internet more often and engage in more online activities –including a range of activities not limited to those related to schoolwork– tend to score higher on internet skills than their peers who only use the internet for non-leisure-related tasks (Scherer et al., 2017). Users' digital skills are also associated with many online activities that enhance the user's cultural, economic and/or social capital. Nevertheless, the strongest predictor of engagement in beneficial online activities

remains education (Hargittai & Hinnant, 2008). Another central point in the debate is the relationship between online participation and skills. In fact, while some scholars underline how participatory practices of production and sharing of online content have led to an improvement and updating of young people's skills, both digital and non-digital (Jenkins et al., 2006; Guerrero-Pico et al., 2019; Taddeo & Tirocchi, 2019), other scholars (Jenkins & Carpentier, 2013) highlight the limits of the concept of online participation, while others redefine the role and quantitative impact of active users, compared to the majority of passive consumers (van-Dijck, 2009; Pereira et al., 2018). Although adolescents have more digital skills than their parents and teachers, only 25% have received training in assessing information on the internet critically (Ballesteros & Picazo, 2018).

In summary, if some therefore see a positive relationship between greater use of digital media and greater online production and skills, others underline that the greater use of the internet in many cases is not accompanied by real active skills and leads to disadvantages for young people. The relationship between online participation and activism in the offline world is also a complex issue. According to some authors, the ease of collaboration and political activism on social networks does not translate into greater participation by citizens (Bernal-Triviño, 2015); despite young people's intense activity on social networks, they do not tend to be critical or vindictive on social networks, nor do they show interest in social and political problems (López-de-Ayala et al., 2020; Soengas-Pérez et al. 2019; Vizcaíno-Laorga et al., 2019). This clashes with the evidence that many of the social and protest movements of the second decade of the 21st century have been possible thanks to the support of the young (Jenkins et al., 2016). Scholars have also highlighted how information literacy is related to non-conventional forms of political activism, such as signature-seeking campaigns, boycotts, rallies, posting messages to persuade others, sharing others' posts, and joining online campaigns (Kim & Yang, 2016).

Finally, it's not completely clear which type of digital education is most effective in empowering people to contrast fake news. As highlighted by Jones-Jang et al. (2021), accurate identification of fake news was significantly associated with information literacy, but not with other competences such as media or news literacy. To conclude, data and research do not lead to unique results about the relationship between digital competences and "offline" competences, as it is still largely unclear if and how digital skills are interconnected and how they effect, for example, people having the tools and empowerment to efficiently cope with contemporary society. In particular, despite renewed interest in information literacy as a way to combat misinformation, existing academic studies are plagued by insufficient theories and results.

3. Objectives

In this paper, we want to investigate three research questions:

- RQ1. To what extent are the young considerable "creators" and "spectators" and what are the characteristics of such users?
- RQ2. What is the relationship of such user typology with trust in social media?
- RQ3. What is their role in relation to information disorder processes?

We will specifically focus on the relationship between participation, digital content production and information literacy, to understand if assiduous and active use of social networks, as creators and not only as consumers of information, leads to greater accountability toward the information circulating online, and translates into greater attention to fact checking of contents and active contrasting (e.g., responses, reports, etc.) of disinformation.

4. Method

An exploratory correlational analysis was carried out, using a survey to consider the three research questions mentioned above.

4.1. Sample and procedure

The extraction of the sample followed a random selection process in Madrid, Seville and Segovia, cities representing high, medium and low population density in Spain. Participants were randomly selected

at their study centers. The choice of centers followed a quota procedure according to educational level, including secondary schools and vocational training centers, and considering the type of center ownership, public or private/subsidized, until reaching the proportion of the population provided by the Spanish National Institute of Statistics. The data collection process was assisted by the services of a company specialized in field research, and recruitment was performed outside each education center. The questionnaire was applied through a computer-assisted survey. Quotas were managed by gender, studies, and type of center (public or private). Prior to conducting the survey, the participants were informed of the purpose of the study and were informed of the option of withdrawing their participation at any time. Data gathering took place from March to May 2021.

The sample size is 756 people, aged from 16 to 26 (M=19.8, SD=2.8), 41.2% are men, 55.3% women and gender is not identified for the rest. Regarding educational levels, 45.4% of the participants are enrolled in a university degree or equivalent (ISCED level 6), 19.6% in short-cycle tertiary education (ISCED level 5), 23.8% are in high school (ISCED level 4 Post secondary non-tertiary education), and 11.2% are in a middle-grade training cycle or have not yet completed secondary education (ISCED level 3 Upper secondary education). 73.7% of the centers are public. The highest educational level reached by parents is: 10.4% reached postgraduate studies (ISCED level 7), 38.3% have a university degree (ISCED level 6), 16.9% higher grade professional training (ISCED level 5), 24% secondary education (ISCED level 3) and 10.4% did not complete secondary education (ISCED level 2 or less).

4.2. Measurement and analysis

To measure the participants' level of digital activism, a frequency scale, based on existing literature (Litt, 2013) was created. The responses were collected on a scale ranging from never (1), several times a year, several times a month, several times a week, every day to several times a day (6). The option of not answering was allowed in all questions. The first dimension of the scale, defined by users that we will label as "creators", included items that embody an active contribution to social media: "Create and share contents among a group of close friends", "Upload recommendations and ratings about experiences, products or sites I visit" and "Create content and publish it openly"; The reliability of this subscale was high (McDonald's $\omega = .80$). The second dimension, that could be labeled as a "spectators" profile, discloses a passive and social contribution, and it includes the following items: "Browse and view content of profiles I follow", "Watch the content of profiles that appear with suggestions" and "Share content among friends and people I know". The reliability was acceptable (McDonald's $\omega = .73$). The validity of these two dimensions was confirmed by a factor analysis. Table 1 shows the factor-loading matrix after a varimax rotation, the weighting of the items on each dimension ranges from .81 to .66. Each factor's score was calculated by the regression method. Regarding information skills, participants were asked two main guestions: "Have you actively responded to, reported, or removed fake news" and "Have you checked the news read on social networks (contrasting sources, checking if they were verified or similar)". For the answers, the period was limited to the last week and a 5-point frequency scale was used, ranging from never (0) to frequently: five or more times a week (5).

To measure trust in information sources, a 5-point Likert-type scale was used, ranging from "not at all confident (1) to very confident (5). The sources to be evaluated were related to health information and included: scientists, doctors, experts; global health organizations, health authorities; journalists, reporters, media professionals; governments and policy makers; successful people, celebrities, or influencers; Twitter; Instagram; blogs and specialized forums; media on the internet (newspapers, TV channels, radio, etc.); traditional media: radio, television, press, and magazines. Prior to conducting the survey, a pilot study was carried out with a sample of university students to validate the measurement tools. Data analysis was performed with the SPSS V. 27 statistical package. The data values had been checked and validated before the analysis. Descriptive statistics were used to summarize data. Firstly, a Principal Components factor analysis was performed to find out the variables related to the two profiles, after allowing for the effect of socio-demographic variables. Finally, two multiple linear regression analyses were carried out to identify the predictor variables of information skills.

5. Results

5.1. Who is participating online?

Table 1 gives a descriptive overview of the actions performed on the social media. The most frequent activities, reported several times a week or more often, were "Share content among friends and people I know" (65.0%), "Browse and view content of profiles I follow" (53.7%), "Watch the content of profiles that appear in the suggestions" (43.4%). The least frequent activities were "Upload recommendations and evaluations about experiences, products, sites that I visit", confirmed by 46.5% of respondents, only 13.6% saying that they did this weekly or more frequently, and "Create content and publish it openly" confirmed by 57.3% of respondents with only 20.3% on a weekly basis or more. From this data we can see that the creators are a minority, as the previous literature highlights.

Table 1. Frequency of activities on social media and principal components factor analysis ¹										
Items	No answer	Never	Several times a year	Several times a month	Several times a week	Every day	Several times a day		Fac Ioadi	ctor ings²
	%	%	%	%	%	%	%	N	1	
1.1 Browse and view content of profiles I follow	2.2	7.3	15.6	21.3	28.0	22.0	3.7	754		.865
1.7 Watch the content of profiles that appear in suggestions	4.3	11.8	14.3	26.2	22.5	16.5	4.4	755		.655
1.2 Share contents among friends and people I know	1.6	4.0	8.3	21.0	26.3	29.6	9.1	756		.747
1.5 Create and share contents among a group of close friends	9.5	12.0	17.2	24.3	20.2	12.8	3.8	756	.801	
1.4 Upload recommendations and ratings about experiences, products, sites I visit	27.2	26.3	19.7	13.1	6.9	5.4	1.3	756	.795	
1.6 Create content and publish it openly	19.8	22.4	20.9	16.5	10.8	7.8	1.7	756	.807	
Explained									36.2	32.4

Note. 'Barlett spherity test is statistically significant Chi-square=2,183.39, d.f.=21 (<.001) and Kaiser-Meyer-Oblimin=.861 which indicates suitability of the factor analysis. *Weightings below .4 are not displayed.

Table 2 shows the relationship between the two profiles and the demographics after allowing for the effect of educational level variables to respond to the first research question. There is a significant inverse correlation between educational levels and the two types of profiles (r=.086, p=.019 for the creators and r=.265, p<.001 for the spectators); the partial correlation was obtained to determine the relationship of this pattern of activism with the other demographic variables. Only academic performance has a significant and negative relationship with the creators (r=.091, p<.015), in accordance with this, the students with better results participate less in creation activities. The spectators are associated with women (r=.119, p=.001) and negatively associated with age (r=.153, p<.001), with the younger ones being more involved in passive and social activities.

Table 2. Partial Pearson correlation matrix of social media activity patterns with demographic variables considering educational levels					
Controlling educational level	Creators	Spectators Partial correlation (p-value)			
Controlling educational level	Partial correlation (p-value)				
Age	.012 (p=.738)	153 (p<.001)			
Sex (1=male, 2=female)	041 (p=.278)	.119 (p=.001)			
Academic performance	091 (p=.015)	.020 (p=.589)			
Parents' educational level	036 (p=.339)	020 (p=.589)			

5.2. Users' profiles and trust in information sources

In the second research question, the correlation between the two profiles (spectators and creators) and the confidence in the information sources was analyzed, after considering the educational level (Table 3). The sources that have shown a statistically significant and positive relationship with the spectators

are scientists (r=.164, p<.001) and health organizations (r=.182, p<.001). There is also a significant and positive correlation with Twitter (r=.144, p<.001), blogs (r=.114, p<.001) and traditional media (r=.079, p=.030). In all cases the relationship is weak. Meanwhile, people who score higher on the creative profile have much more confidence in all sources, except for scientists and global health organizations, which are not related to the active pattern. It is note worthy that the correlation size with social media sources, such as celebrities (r=.316, p<.001), Twitter (r=.276, p<.001) and Instagram (r=.370, p<.001) is greater than with the conventional media (r=.146, p<.001).

Table 3. Partial Pearson correlation matrix of social media activity patterns with trust on media sources (controlling educational level)					
Monitoring the educational level Creators Spectators					
Trust in () as a source for health information	Partial correlation (p-value)	Partial correlation (p-value)	Mean	SD	
7.1 Scientists, doctors, experts	070 (p=.056)	.164 (p<.001)	4.31	0.876	
7.2 Global health organizations, health authorities	003 (p=.933)	.182 (p<.001)	4.13	0.93	
7.3 Journalists, reporters, media professionals	.125 (p<.001)	.043 (p=.245)	3.21	1.029	
7.4 Governments and policy makers	.147 (p<.001)	019 (p=.603)	2.62	1.106	
7.5 Successful people, celebrities, influencers	.316 (p<.001)	.068 (p=.066)	2.23	1.117	
8.3 Twitter	.276 (p<.001)	.144 (p<.001)	2.59	1.153	
8.8 Instagram	.370 (p<.001)	.046 (p=.212)	2.35	1.174	
8.6 Blogs and specialized forums	.146 (p<.001)	.114 (p=.002)	3.24	1.091	
8.7 Media on the internet (newspapers, TV channels, radio)	.159 (p<.001)	.061 (p =.099)	3.22	1.057	
8.10 Traditional media: radio, television, press, magazines	.146 (p<.001)	.079 (p=.032)	3.26	1.033	

5.3. Predicting information skills

To answer the third research question, firstly the two main variables related to information skills were explored. Generally speaking, behaviors related to information skills do not seem to be very frequently performed by students: only 17% of the sample reported "checking the news (consulting other sources, checking if they were verified or similar)" quite frequently (at least 5 times during the last week), and only 5% answered having frequently (5 times or more during the last week) counteracted (responding to, reporting, or deleting) fake news.

As a second step, two multiple linear regression analyses were conducted to investigate which were the variables that predict such information skills. Table 4 shows the variables included in the analysis.

Table 4. Regression analysis for information skills						
	Reporting fake news	News fact checking				
	SD Beta Coefficient (p value)	SD Beta Coefficient (p value)				
Sex	075 (.042)	008 (.835)				
Educational level	.102 (.009)	.226 (<.001)				
Academic performance	.028 (.452)	.078 (.040)				
Parents' educational level	.079 (.030)	046 (.221)				
Creators	.330 (<.001)	.092 (.014)				
Spectators	.084 (.024)	.004 (.908)				
R (Adjusted R ²)	.339 (.108)	.236 (.048)				
F (d.f.), p-value	15,437 (6,711) p<.001	6,999 (6,712) p<.001				

The first equation takes "to have actively contrasted fake news" as a dependent variable and the variables included in the analysis explain 10.7% of the variance (R²=.107, F6,711=15,437, p<.001). Gender is statistically significant in the prediction of reporting false information: men tend to report fake news more frequently (β =.075, p=.042) than women; the educational level of the participants (β =.102, p=.009), as well as the educational level of their parents (β =.079, p=.030), are strong predicting factors in counteracting fake news. Above all, the regression analysis shows that belonging to the profile of the "creators" is the most important factor in predicting reactions to fake news (β =.330, p<.001). Moreover, spectators play a positive and significant role in reporting false news, although the coefficient obtained is lower than for the creators (β =.084, p=.024).

The second multiple linear regression predicts the actions of "fact checking the news" and explains 4.8% of the variance (R^2 =.048, F6,712=6,999, p<.001). In this case, the educational level of the students (β =.226, p<.001) has the greatest effect in reckoning news checking: as the educational level increases, the activity of checking information is greater; in the same way, participants' academic

performance has a positive and significant effect on the dependent variable (β =.078, p<.040). Finally, belonging to the active user profile of creators has a significant effect (β =.092, p=.014); the other variables included in the regression have no effect on checking the news.

6. Conclusions and discussion

As we have seen in the results, the profile of spectators is the most common among students: they frequently engage in social network activities, despite having a low degree of participation; by contrast, the creators are a minority, and do not contribute their own content very frequently. This is coherent with previous research, which highlights the need to increase the level of digital participation, underlining the importance of developing digital citizenship skills that go beyond the simple consumption of media. An interesting point to focus on is that the profile of creators is not associated with age or gender, neither supported by higher educational level.

Trust in information sources –traditional and digital– reveals a difference between the two types of users. Even though successful figures on social networks generate the lowest level of trust in the whole sample, the creators show greater trust in information sources compared to the spectators. Among the creators there is a clear positioning to have greater trust in both traditional media and online media, including Twitter, Instagram, blogs, and specialized sites. This data is consistent with other studies that reveal that, the more a network is managed, the less risk is perceived (De-Frutos-Torres et al., 2021). In the specific field of information, Eurobarometer (2018) states that regular use of social networks and coming across fake news more frequently increase confidence in identifying it.

A question about how confidence is built may arise from this data. In believing sources, do the creators take quality criteria into account? Or do they trust sources simply because they are familiar with them in their frequent content production? More research, including the use of qualitative methods, should be devoted to understanding how and why such confidence is built, as other scholars suggest (Herrero-Diz et al., 2019). On the other hand, it seems that uncertainty about information sources, together with fear of public exposure (Vizcaíno-Laorga et al., 2019) restrains the actions of the great majority of the young –the spectators– leading them to a vicious circle of mistrust/passivity/non-contrast and disinformation/increase of fake news/mistrust. The suggestion drawn from this research is to try to work on breaking this vicious circle. Another interesting finding of the research is the role played by creators not only in counteracting false news, but also in verifying the sources and therefore acting on critical awareness. Thus, an active role in producing original content by the "creators" could be associated with more information literacy and thus with an empowerment of fact-checking skills (Jones-Jang et al., 2021).

Creators' greater trust seems to make them more critical of networks and more aware of their power, since they perceive themselves as an active part of the network. Better skills for the creative use of social networks could confer greater security and freedom to citizens, not only to be active users (creators) but also to perform a role of cyber-activism (and/or activism). In order to contrast information disorder, it could be useful to work on agency, through the creation of content, as well as to point out the meaningfulness of social relationships as well as on the emotional issues related to the sharing act.

In order to reverse information disorder, as suggested by Figueira and Santos (2019) or Sánchez-García (2021), it would be necessary to go beyond the identification and contrasting of fake news, focusing on reflection-action as a guide for the creation of content and its sharing in close relationships. This leads to considering both actions, creating and sharing, not as individual and impulsive acts, but as processes that require self-criticism, by paying attention to the emotional dimension and the social role that they imply. Therefore, media education must continue to work, as happened historically (Buckingham, 2019), to foster a critical approach to information, but it must also encourage activism towards the information sphere, avoiding criticism being transformed into passive acceptance and systemic mistrust, and promoting critical and participatory approaches to the production of digital content (Santamaría-Cárdaba et al., 2021; Boni et al., 2020; Golob et al., 2021). Together with more diffuse forms of media literacy, information literacy should be emphasized in terms of identification, location, evaluation, and use of information (Jones-Jang et al., 2021). In summary, four main points seem to emerge from such research and should stimulate further investigation:

- The need to work better on critical skills to ensure that they do not turn into mere distrust and disengagement.
- The connection of creation and production skills with information skills.
- The deep intertwining of emergent digital creators with media sources (both digital and traditional).
- The need to pay attention to new digital divides issues, related to gender and education.

As a final point, some limitations of the research should be noted. This is an exploratory study with a correlational methodology that cannot preclude causal inferences. The sample was gathered in three different regions of Spain and results should be validated in other contexts. The data on digital behaviors and attitudes are self-reported and possible errors or biases should be considered. Finally, the behaviors of contrasting information occur very infrequently, as shown in the analysis, which is a drawback in terms of the prediction of this behavior. However, many interesting insights were highlighted regarding the relationship between different approaches to media and skills for the future. A challenge which media literacy must keep addressing.

Authors' Contribution

Idea, G.T; Literature review (state of the art), G.T, B.F, M.A; Methodology, G.T., B.F; Data analysis, G.T, B.F; Results, B.F.; Discussion and conclusions, G.T, B.F; M.A; Writing (original draft), G.T, B.F, M.A; Final revisions, G.T, B.F, M.A; Project design and funding agency, G.T, B.F.

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Unraveling disinformation: Notions and discourses from the Spanish population Desenredando la desinformación:

Nociones y discursos de la población española

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ABSTRACT

Disinformation has become a core concept in communications research, related to media, technological and political phenomena that complexify its definition and diagnosis. Although its approach has been mainly quantitative, focus groups have also been used to understand the perception of the audience of this particular issue. This research is part of this second group of studies, and attempts to investigate the notions and discourses on disinformation in the case of Spain. For this purpose, seven discussion groups were conducted, with a structural sample constructed according to employment situation, ideology and age. The results show a perception of the communicative ecosystem structured in two chronological poles, which contrasts a past of reduced information supply – associated with traditional media – with a current informational environment where there is more media diversity, but also less trust in them. The groups point to the overabundance of information and associated disinformation with decontextualisation, low-quality journalism and the economic and political interests of different actors. Discourses outline a scenario of decline in journalism and the public sphere, which is perceived as polarised and emotional. Disinformation is therefore perceived as a multidimensional phenomenon that is associated with issues of major democratic transcendence rather than merely sending hoaxes through the Internet.

RESUMEN

La desinformación se ha convertido en un concepto central en las investigaciones en comunicación, relacionado con diversos fenómenos mediáticos, tecnológicos y políticos que complejizan su definición y diagnóstico. Si bien su abordaje ha sido eminentemente cuantitativo, los grupos de discusión han sido también empleados para conocer la percepción de la audiencia sobre este fenómeno. Esta investigación se sitúa en esta estela, para tratar de indagar en las nociones y discursos que existen sobre la desinformación en el caso español. Para ello, se realizan siete grupos de discusión, con una muestra estructural construida según la situación laboral, la ideología y la edad. Los resultados muestran una percepción del ecosistema comunicativo estructurada en dos polos cronológicos, que contrapone un pasado de menor oferta informativa, asociado con los medios de comunicación tradicionales, a un entorno informacional actual donde existe más diversidad mediática, pero también menos confianza en los medios. Los grupos señalan la sobreabundancia de información, y vinculan la desinformación con la descontextualización, el periodismo de baja calidad y los intereses económicos y políticos de diversos actores. Los discursos delinean un panorama de declive del periodismo y de la esfera pública, que se percibe como polarizada y emocional. La desinformación se percibe, por lo tanto, como un fenómeno multidimensional que se asocia a cuestiones de mayor trascendencia democrática que el envío de bulos a través de Internet.

KEYWORDS | PALABRAS CLAVE

Disinformation, communicative ecosystem, focus groups, discourse analysis, media, social media. Desinformación, ecosistema comunicativo, grupos de discusión, análisis del discurso, medios de comunicación, redes sociales.

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1. Introduction and state of the art

Disinformation has become a concept of growing interest, and its definition has been associated with the circulation of fake news, although some authors argue it is a symptom of a broader crisis that affects the credibility of political institutions and the media (Bennett & Livingston, 2018). The concept of fake news is complicated and its limits overlap other types of news content such as satire, polarised journalism and propaganda (Molina et al., 2019). Compared to those other terms (Salaverría et al., 2020), fake news is characterised by the author's willingness to lie. For example, propaganda and disinformation share the search for certain political objectives, but propaganda tries to achieve those objectives by giving partial messages that omit a specific perspective, and does not outright deceive. Tandoc et al. (2018: 148) believe the reader shares a responsibility in the conceptualisation of fake news, because "while news is constructed by journalists, it seems that fake news is co-constructed by the audience, for its fakeness depends a lot on whether the audience perceives the fake as real". This is why there has been a high demand for media education that minimises the political and social impact of these fake news pieces (Golob et al., 2021).

The use of lies in public debate is not a new problem, and certain studies note the first journalistic practices attempting to tackle this issue took place at the end of the 20th century in the United States (Amazeen, 2017). However, recent events have increased academic interest in this type of political strategy, especially since Brexit and the 2016 election campaign in the United States (Anderson, 2020). In Spain, there was an increased flow of disinformation during the Catalan independence referendum, associated with the use of bots on social networks (Stella et al., 2018). With the expansion of the Internet, the issue of disinformation becomes increasingly important to the public space. On the Internet, the media are configured to be seen as authority figures that provide information, and the Internet facilitates the generation of pages that, with the appearance of mass media, take advantage of their enormous visibility to send misleading messages with political and commercial objectives (Flew, 2019). Simultaneous to this, datafication facilitates the tracking of the circulation of content, and the analysis of the impact that content has, as well as its engagement (Gray et al., 2020).

In short, the audience finds new ways of producing and consuming content on the Internet, while their interaction and behaviour is recorded to measure the effectiveness of online disinformation strategies. The new possibilities provided by big data analysis have also been of interest to social scientists, who apply computational techniques to study different fields, including public behaviour on social networks (Hjorth & Adler-Nissen, 2019; Nelson & Taneja, 2018; Shin & Thorson, 2017). These studies generally explore issues such as the selection of the information that is consumed, the possibility of believing or rejecting fake news, and the contribution to the spread of fake news pieces by sending them to specific online communities. Thus, qualitative research, although less frequent, has offered results that complement quantitative research on the audience. Discussion groups have been used to study strategies that can help to identify fake news – understanding that this process is not automatic for the public (Mercenier et al., 2022) and that verification is based on inspecting headlines, images and the body of the text together (Photiou & Maniou, 2018).

Similar research has shown that the public adopts one of two essential types of behaviour when addressing the media ecosystem: the first is to verify information by searching for sources of authority (media and interpersonal) and the second is avoiding information flows on the Internet, either by ignoring certain sources or by deliberately seeking entertainment on the Internet (Wenzel, 2019). Humour is, in fact, an incentive to share falsehoods, even when users are aware of its nature (Madrid-Morales et al., 2021). Interestingly, public debate on the disinformation problem has triggered actions such as consuming and disseminating news with greater caution (Duffy et al., 2020). Other studies have explored the population's perception of this phenomenon. In their research with discussion groups, Nielsen and Graves (2017) found a general lack of trust in media and political institutions, such that for the public, fake news was included in other forms of low-quality information, such as tabloid journalism, advertisements and propaganda. The present study follows this line of work and its research objective includes two questions:

O1. Explore the Spanish population's social perception of contemporary information environments and the social representations that exist around the phenomenon of disinformation.

- RQ1. What perceptions do Spaniards have of informational environments? What is their perception of traditional and digital media?
- RQ2. What notion(s) and discourses circulate in the Spanish population regarding the phenomenon of disinformation?

2. Materials and methods

This study adopts a qualitative methodology based on a group discussion technique, and its purpose is to analyse the social discourses systems that exist on disinformation. The design of the sample includes a variety of social groups, each representing different perspectives on information and disinformation systems. The sampling carried out was structural and sought to represent a discursive universe associated with social macrogroups (Ibáñez, 1979), such that the set of discourses collected had to therefore include all fundamental ideological arguments (De Lucas, 1995).

The perception of the informational environment and the experience with disinformation are influenced by three variables: position in the social structure, political ideology, and age. We used these variables to construct the structural sample. We subsequently justify their importance through the October 2019 macrobarometer from the Centre for Sociological Research (CIS) (study No. 3263)¹, which allows us to observe the strong association that these variables exhibit with media consumption.

An individual's position in the social structure condenses their economic and cultural capitals, conditions their media consumption, and shapes their perception of media messages (Hall, 1997). In the sample, position in the social structure has been operationalised based on occupation, as it presents a strong association with the preferred means of obtaining information about the 2019 electoral campaign (Figure 1).



Note. Prepared by the authors with data from CIS study No. 3263.

While people with occupations that require higher education followed the campaign more intensely through the press and radio, people with jobs that did not require university studies preferred to inform themselves through television.

There is consensus in the literature that political ideology influences media consumption (Humanes, 2014). In fact, the best predictor of media consumption in Spain is party identification and ideology (Valera-Ordaz & Humanes, 2022). Following the study mentioned above, we can observe how vote intention and party sympathy have a clear association with the preferred television channel to follow electoral campaigns (Figure 2). Thus, people who vote for PP, Ciudadanos and VOX watch Antena 3 more frequently, while those who vote for PSOE and Unidas Podemos tend to choose La Sexta. The same occurs for the radio and the press.

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Note. Prepared by the authors with data from CIS study No. 3263.

Finally, age is configured as a fundamental variable influencing media consumption, and one that is likely to affect the perception of informational environments and the phenomenon of disinformation. While young people prefer to inform themselves through social networks and digital media, older adults prefer to use traditional media. Figure 3 shows how people aged between 18 and 34 followed the campaign on social networks, while the 65 and over population did so through television.



Note. Prepared by the authors with data from CIS study No. 3263.

The purpose of the sample is to capture the dominant discourses as well as the extremes. That is why, in regard to the variable age, this sample includes young people as well as those over 65. In summary, three variables structure the sample: employment status and occupation, party sympathy, and age, given its significance in terms of media consumption and its predictable influence on the social perception of communicative environments (Figure 4).

In total, seven discussion groups were held in person on 29 and 30 June and 1 October 2021 at the Faculty of Social Sciences of the University of Valencia. Recruitment was carried out by the company CR Godoy, which recruited participants with a questionnaire based on the sociodemographic profiles of the structural sample (Figure 4). In each group there were two moderators of the Mediaflows research group: one led group dynamics and the other ensured that the discussion included the themes contained in the guidelines. Six people participated in each group and there was parity between males and females in all of them. The duration of the group session ranged between 52 and 108 minutes, depending on each group dynamic.



3. Analysis and results

The starting point of the analysis is the narrative configurations, i.e., interpreting the structure of the texts around dimensions that organise the set of discourses and relating them to the social context and the objectives of the research study (Conde, 2009). This procedure manifests the main dimensions that underlie the discussions, to characterise the object of investigation and facilitate delimiting the semantic spaces (Conde, 2014). The semantic spaces comprise sets of expressions and associated themes that are linked to the axes of the narrative configurations. In addition, the validity of the analyses rests on the principle of saturation, such that the narrative configurations are accompanied by verbatim quotes that justify them. Below we present the structured results according to the research questions.

3.1. Perception of information environments

The narrative configuration that structures the perception of the communicative ecosystem defines three axes that comprise its social codification and historical context: a horizontal one of a chronological nature – comparing before and now – and two vertical axes, one depicting freedom of choice, and the other the credibility of information sources (Figure 5).

This map arranges the discourses, and highlights how the discussions about the media are structured around a chronological axis, contrasting a "before" in which there was only traditional media with a "now" that is characterised by a greater variety of information sources. The "before" is associated with a greater credibility of the media, but also with less freedom and ability to compare, while the "now" is associated with more freedom, but less trust.

The discussions point to the greater freedom of choice that consumers now have in the context of the "high choice media environments" (Prior, 2007) that have emerged after digitalisation: "the advantage (...) is the diversity (...), on television you can only watch what they broadcast (...), however on the Internet and social networks you can access all the information you want" (GD1). However, this greater freedom of choice contrasts with the less credibility attributed to the new media of "now", and contrasts with the greater reliability granted to traditional media. A semantic space is therefore configured and it highlights the greater credibility of the information received through traditional means, associated with adjectives such as "more truthful" (GD4), "more reliable" (GD6) and "more professional" (GD3). "It is very difficult for the press, or television or even the radio, to publish fake news, (...) there may be bias and trends and

such, but news is news, and if someone catches you giving fake news, (...) you are going to be hung out to dry" (GD5). However, the credibility of the traditional media is also questioned because of their lack of "objectivity" (GD5). The news issued by journalistic media is perceived to be "distorted to the point that it seems somewhat ridiculous, invented" (GD1). This lack of "neutrality" (GD6), emphasised by all groups, is related to the fact that "the media (...) are politicised" (GD2), and, as a result, they offer biased accounts of reality, to the point of skewing the news and spreading Manichaean speeches, reflecting the thinking "that some people are evil and others are good" (GD5).



Journalists are also perceived to be opinion formers, not neutral informers of reality: "they think their job has a paternalistic nature, that is, 'poor people, I have to teach them' and (...) they go on to give 10% information and 90% opinion" (GD5). A role that the Spanish journalists themselves recognise (Roses-Campos & Humanes, 2019). This is a result of the interpretive and opinion-focused tradition of the Spanish press, described in some discussions as a form of sectarianism: "they are people who...are with me or against me" (GD5).

The politicisation of Spanish journalism is supported by the literature and it is an essential characteristic of the polarised pluralism media system (Hallin & Mancini, 2004; Humanes, 2014). Sampedro and Seoane (2008) describe it as a system of "antagonistic bipolarisation", and note how the Spanish media are integrated into blocks, each associated with one of the two ideological spheres.

Regarding this general perception of journalism as a social force that divides and incites sectarianism – "they want to shape opinion, transmit ideology, so that a certain ideological option is hated" (GD5) – the phenomenon of a hostile media is especially mentioned by right-wing groups (Vallone et al., 1985): "you always have to be politically correct, and anything that goes against this trend, (...) is called fascist" (GD6), "this Évole, wow, I mean, for God's sake! (...) this is what we call freedom? They can shout but I can't talk?" (GD4).

There is a perception that the media are loudspeakers of political correctness and allies of the ideological and cultural battles of the left, and offer media coverage favourable to their causes, such as the rights of the LGBTI collective, feminism, or sex-based violence: "Every single day there's a different piece of news, today it's the trans, off we go then! News (...) about everything, even feminism" (GD6).

In addition, the space made up by the "before", referring to the mass communication model, is related to less freedom of choice, perceived as a diminished ability to compare information, and the "now" is perceived to have a wide range of digital media options, which allows for compensation: "(...) before (...) we only had access to the information that the newspaper showed us (...) so we believed it. Now we have more ways to compare this news" (GD6). However, the diversity of media that emerges with the digitisation of the "now", also results in a greater circulation of false news throughout the public space and greater uncertainty about the reliability of the information, since it is more difficult to identify the sources

that issue it and judge its credibility, especially pieces that are sent through social networks, given that "the sender is usually anonymous" (GD5) and on those networks "everyone has a voice" (GD1) and "everyone is a journalist and they tell lies" (GD4). Thus, there is a general perception that "Facebook is the king of fake news" (GD5), "and that there is also a lot of fake news on Instagram stories" (GD2).

Despite the lower trust in social networks, an exception in the older age groups is worth noting here: if the messages come from close friends and family, then they are indeed trustworthy. In this sense, the results expand on what was found in other studies: citizens not only read the news more frequently if it comes from friends and family (Masip et al., 2019; Hermida et al., 2012; Herrero-Diz et al. 2020), but they also give it more credibility: "The only WhatsApp messages I believe are those that are sent by the family, personal messages, those ones are OK" (GD4). This finding underlines the importance of friends and family as sources of trust, and their role as filters of the messages that are sent through social networks in a context of information overload. A role that evokes, with significant nuances, the role played by social reference groups and opinion leaders as moulders and moderators of the effects of the media, according to the classic "two-step flow of communication" model (Katz & Lazarsfeld et al., 1944) and its evolution in the "multiple-step flow of communication" model (Katz & Lazarsfeld, 1955).

These models gave the media the role of necessary intermediaries, from which opinion leaders filtered the relevant content for their respective environments. Instead, the current context, characterised by a dispersion of media and sources, makes up a different scenario (Bennett & Iyengar, 2008), where the information that circulates via social networks may have an origin outside the media, and where there are more opportunities to misrepresent original content along the way (Bimber & Gil-de-Zúñiga, 2020). In such a context, trust between users is important in the dissemination of disinformation outside journalistic mediation and in spaces where the media no longer has a central position.

In addition, not all social networks are equally trusted: in younger- and middle-aged groups, the degree of credibility of the news received depends on the social network it comes from. The least credible is WhatsApp (GD2, GD5, GD1), to the point that young people come to define fake news as "the message Aunt Loli sends your mother" (GD1) on WhatsApp. The most credible is Twitter. Twitter is used by younger-aged groups to corroborate the veracity of news, probably because both journalists and politicians are especially active on it (Newman & Levy, 2014; Engesser & Humpretch, 2015), and because it is a network that has an open nature, where it is easier to verify information and find sources that provide data in this regard. This, together with the greater distrust young people have towards traditional media, makes Twitter a platform that enjoys credibility among young people.

"There is news on television that is very distorted to the point that it seems somewhat ridiculous and made up. M: I was amazed about the UFMs³ (...) I went to Twitter, just to see and say: 'Okay, where did this come from?' And it was like: your statistics are a percentage of the percentage" (GD1). On the other hand, distrust of social networks is accentuated in older groups, who feel vulnerable to the hoaxes that circulate on them, also as a result of having fewer digital skills, because "we already have problems with technology" (GD4), and "it turns out that mobiles and computers, which were going to help us (...) actually give us problems (...) I have to depend on my daughters to teach me" (GD4), "do I understand the Internet? No, I don't" (GD3).

This is why older groups give more credibility to the information received through traditional media: and age is the backdrop to most discussions about (dis)information, in addition to the "before" and "now" axis: "Facebook to inform you? (...) A lot of fake news, (...) I don't pay any attention to it" (GD4); "(...) the news that is published on Facebook, maybe it is a copy of what I have been told, so I don't really see it as serious (...) H: No, I don't see it as reliable" (GD3).

Also, the supposed freedom of choice associated with "now" and the diversity of media is also questioned. Faced with the politicisation of traditional media, discourses, especially those coming from young and middle-aged people, are that "if they try to manipulate me, I jump on the Internet and research the data I want to find" (GD5). This alleged freedom of consumption therefore coexists, at least in groups with greater cultural capital, with the perception that algorithmic communication on the Internet directs and structures the search and consumption of information, based on browsing history and the data profiles associated with each user: a filter bubble, as described by Pariser in 2011. "But then you go to the Internet

to contrast, what they allow you to see because you are looking up information, and, of course, a list always appears (...) its manipulation because I want to look for something else, but it takes me to where they want me to go, they kind of control what you browse and they are always bombarding you with information about the last thing you searched for" (GD6).

In fact, the hyper-fragmentation of media consumption and the possibility of hyper-segmenting advertising messages translates into business models based on extracting and trading user data (Flew, 2019). Adult and youth groups therefore perceive the "now" as a more plural informational environment, but one that is not problem-free. "If they show you an image, or news piece, of something that doesn't interest you, you can mark it as 'not interested', and you won't receive anything else about that topic. So as it is a controversial topic, and you already have a very clear opinion of it, you won't receive any contradictory information about it and have no chance of changing your mind" (GD2).

3.2. The dimensions of disinformation

Discussions on "disinformation" create a semantic space that highlights the idea of manipulation, and is associated with terms such as "herd", "sheep", etc.: "depending on the channel, (...) they try to herd us like sheep, so they tell us something has happened, even if it is false" (GD2). The discussions mention the idea that "all of us are often part of the herd and we are sheep" (GD1), "manipulated sheep" (GD6), "and we know that everything in this life is manipulated, by the interests of those who are in charge" (GD4).

This rhetoric of suspicion – "you turn on a channel and they only show you the news they want you to watch" (GD5) – reflects the visions of the media as all-powerful agents, and the "hypodermic needle" as a metaphor for its ability to influence the audience by eliminating any possible resistance.

Likewise, the groups reveal various notions of disinformation that should be qualified. First, the groups mention how an overabundance of information makes it impossible to verify its veracity: "Before, you would have four news sources and that's it, but now the amount the Internet has makes it impossible" (GD6). That is to say, despite the fact that the greater media available makes contrasting possible, the saturation of information and the speed with which it is produced, prevent messages from being contrasted, because "it goes so fast that you don't have time" (GD6), which concurs with the idea of disinformation by saturation: "I think that behind the scenes there is the idea that instead of generating more information, an excess of information misinforms" (GD5).

Second, a notion of disinformation as a weapon at the service of political and affective polarisation emerges, used to generate hostile emotions towards those who have other political beliefs. The discussions emphasise that "behind the fake news there is always an interest in discrediting something or someone" (GD5) and that "perhaps I say I am on the right, so I criticise those on the left, and send you that saying 'look at what they are doing'. And at the end you say, 'Oh my goodness! They are terrible!' And maybe it's not like that" (GD6).

In other words, the current communication environments – especially social networks – are linked to the erosion of democracy, and to the promotion of hatred towards those who hold other political opinions, to the point that the need for regulation is suggested: "Using fake news to generate antipathy towards something should be considered a crime" (GD5).

"We might even agree, but if I am only getting news that shocks me, because I (...) am on the left, but I receive shocking news about the right and (...) it makes me think they are animals, but maybe that piece wasn't true (...) and I end up wanting to spit in the face of anyone who is right-wing (...) I think they're radicalising us" (GD1).

In line with this notion of disinformation, the groups emphasise that people selectively chose their media, that their media consumption is politically oriented and they avoid encountering otherness: "the problem is that you have so many sources of information, so what happens? 'That's too right-wing, I'm going to block it (...)' and you are left only with things that interest you" (GD5).

This results in references to filter bubbles (Pariser, 2011), the personalisation of media consumption and the fragmentation of public space into ideological niches (Sunstein, 2009), referring to a semantic space that associates disinformation with "hate" (GD2, GD5, GD7), "tension" (GD4, GD2), "radicalisation" (GD7) and "division" (GD1).

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Along with these notions of disinformation, the idea emerges that disinformation is decontextualised information, which has not passed the meaning-building filter provided by journalism – although this is not explicitly articulated – either because the sender deliberately spreads decontextualised messages, or because the receiver does not read the message well: "It's a news piece that is accompanied by an image sent on WhatsApp... and then the image had nothing to do with it" (GD2); "They tell the news story in the headline (...) 'A woman was murdered.' And when you go to read it well, it happened in Mexico (...) and then people say, 'this bloody chauvinist country"' (GD5).

Finally, there is a notion of disinformation being purely commercial information, and individuals see in the sensationalism encroaching on the media (GD5) – trash TV and advertising in journalistic discourse: "I am watching the news on television and suddenly they change the camera shot and start an advert, the very same presenter who was speaking to you" (GD5) – one of the reasons the media is losing credibility and is a breeding ground for the circulation of disinformation in the public space.

4. Discussion and conclusions

Although disinformation is not a contemporary phenomenon (Amazeen, 2017), this research study highlights the concept that technological advances have encouraged new ways of producing and consuming messages. In this new context, the role of traditional media is diluted by other emerging media, through which content of interest for public debate circulates (Flew, 2019). This has consequences on the guality of the information and on the use of journalistic formats for non-informative purposes. This change in the media system is central to understanding discourses on disinformation, as this research study shows that age is the variable that most significantly structures the Spanish perception of the communicative ecosystems. Regardless of their ideology and occupation, older people trust traditional media more than younger people who give more credibility to social networks. This helps explain the generational differences in behaviour on social networks, i.e. younger people's willingness to share false information (Duffy et al., 2020). We also found that older people trusted second-generation social networks (such as WhatsApp or Telegram) more, not so much the tool, but the social environment in which they operate (the messages sent are from family and friends). This leads to a contradictory scenario where older people trust the media, but are more likely to be affected by disinformation that comes from close sources, which in turn, are the platforms that more often spread false information pretending to be from real journalistic media. Another finding is that disinformation is associated with other concepts such as propaganda, which reveals the significance of the political dimension of these contents (Tandoc et al., 2018), i.e., individuals attribute political interests to false news, and see them as messages that are trying to convince them of certain political positions. Given this, journalism does not seem to be seen as a source of moral authority that channels quality information. The association of fake news with content generated by political interests or by the media for propaganda purposes is an issue addressed in other studies (Nielsen & Graves, 2017). For this reason, although the Spanish media system is characterised by its politicisation both in the processes of broadcasting and receiving of content (Humanes, 2014), the similarity of these perceptions with those of other countries shows that this phenomenon is not exclusively Spanish. This opens the door to comparative research that can explore global trends on this issue.

Disinformation, therefore, is a concept that is perceived in a multidimensional manner. Its description is associated with phenomena that are part of a broader media and institutional crisis: the circulation of biased or false information in the public space, journalistic content as a tool for political and affective polarisation, and information saturation. The need to understand fake news and disinformation as not isolated social facts (Bennett & Livingston, 2018), but as symptoms of broader problems related to the communicative ecosystem, such as disintermediation (Masip et al., 2019), fragmentation of media consumption (Bennett & Iyengar, 2008), and media polarisation is apparent.

Notes

 1 We chose the CIS study No. 3263 because it uses a very large sample (N=17,650), and contains questions about media consumption.

²Standardised adjusted residuals are the standardised differences between the observed and expected frequencies in the assumption of independence of both variables. Thus, when the residuals values are higher than the critical value 1.96 or lower than the value -1.96, it means that there is a 95% probability of an association between variables.

³UFM is an acronym that refers to "unaccompanied foreign minors".

Authors' Contribution

Idea, L.V.; M.R.; G.L.; Literature review (state of the art), D.C.; G.L.; Methodology, M.R., L.V.; D.C.; Data analysis, M.R.; L.V.; Results, L.V., M.R.; Discussion and conclusions, G.L.; D.C.; M.R.; L.V.; Writing (original draft), L.V.; M.R.; D.C.; G.L.; Final reviews, L.V.; D.C. Project design and sponsorships, G.L.; L.V.

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Russian disinformation in Eastern Europe. Vaccination media frames in ro.sputnik.md



Desinformación rusa en Europa del Este. Marcos mediáticos de la vacunación en ro.sputnik.md

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ABSTRACT

The news site ro.sputnik.md is the Romanian language version of the Sputnik news website platform, owned by the Russian government, one of the main channels used by the Kremlin to disseminate mis- and disinformation across Russian borders. The current research aims to identify the frames associated with anti-COVID-19 vaccines, and the news values employed in constructing news discourse on vaccination in ro.sputnik.md media texts. To map the media frames and the lexical and discursive constructions, the research proposes a mixed methods content-based approach, where automated text analysis (frequency, co-occurrence, n-grams) is combined with thematic and discourse analysis. Six emphasis frames are identified in the corpus (N=1,165): Superiority of the Russian Sputnik V Vaccine, Fatal/Side Effects of EU Authorized Vaccines, Limitations of Individual Rights and Freedoms, EU and/or Romanian Authorities' Struggle, Children and Teenagers' Protection, and Big Pharma Conspiracy. The findings show that specific discursive patterns are associated with the negative news value: death, side effects (blood clot, thrombosis, coagulation), restrictions, and interdictions or warnings (serious, risk, negative, panic, etc.); while the conflict news value is associated with warfare vocabulary (defense, threat, battle, fire, gunpowder, etc.); and eliteness, with well-known actors (state leaders, European leaders, famous "conspirators") and countries (powerful international actors, meaningful neighbours).

RESUMEN

El sitio de noticias ro.sputnik.md es la versión en lengua rumana de la plataforma web de noticias Sputnik, propiedad del gobierno ruso, uno de los principales canales utilizados por el Kremlin para difundir información errónea y desinformación a través de las fronteras rusas. La presente investigación pretende identificar en los textos mediáticos de ro.sputnik.md los marcos asociados a las vacunas anti-COVID-19 y los valores noticiosos utilizados para construir el discurso informativo sobre la vacunación. Para mapear los marcos mediáticos y las construcciones léxicas y discursivas, la investigación propone un enfoque mixto basado en el contenido, en el que el análisis automatizado del texto (frecuencia, co-ocurrencia, n-gramas) se combina con el análisis temático y del discurso. En el corpus se identifican seis marcos de énfasis (N=1.165): Superioridad de la vacuna rusa Sputnik V, efectos fatales/secundarios de las vacunas autorizadas por la UE, limitaciones de los derechos y libertades individuales, lucha de las autoridades de la ue y/o rumanía, protección de los niños/adolescentes y conspiración de las grandes farmacéuticas. Los resultados muestran que al valor noticioso de negatividad se asocian fórmulas discursivas específicas: muerte, efectos secundarios (coágulos de sangre, trombosis, coagulación), restricciones e interdicciones o advertencias (grave, riesgo, pánico), mientras que al valor noticioso de conflicto se asocian el vocabulario bélico (defensa, batalla, pólvora) y al elitismo, actores conocidos (líderes estatales, «conspiradores» famosos) y países (actores internacionales poderosos, vecinos significativos).

KEYWORDS | PALABRAS CLAVE

Media framing, news values, content analysis, textual analysis, COVID-19 vaccine, Sputnik News. Marcos mediáticos, valores noticiosos, análisis de contenido, análisis textual, vacuna COVID-19, Sputnik News.

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1. Introduction

1.1. Mis- and disinformation and vaccine hesitancy

The primary purpose of Russian disinformation is to undermine the official version of events (MacFarguhar, 2016) and to "pollute" the information environment, thus creating enough doubt to momentarily paralyse decision-makers when evaluating Russia's actions (White, 2016), which is facilitated by various media channels. The English-language Russian TV network Russia Today (RT) and Sputnik News websites in several different languages are some of the main sources of mis-/disinformation for individual European states (Kragh & Asberg, 2017; Snegovava, 2015; Cvjeticanin et al., 2019). The terms "disinformation" and "misinformation" are defined in contrast with verifiable information, as part of a three-type taxonomy: disinformation is intentionally disseminated false information, misinformation is promulgated by an entity who erroneously believes the information to be true, while mal-information is true, but publicly communicated with the intent to harm a person/institution/country (Ireton & Posetti, 2018). Recently, while the World Health Organization has been dealing with the COVID-19 pandemic, social media platforms and other media outlets have been hosting an epidemic of misinformation, an "infodemic" that is actively endangering public health (Zarocostas, 2020). Between anti-vaccination campaigns and the widespread reach of disinformation, the vaccination rate for highly infectious diseases has been steadily decreasing (Innes, 2019). In the context of the COVID-19 pandemic, the Russian government might be involved in spreading misinformation on vaccines, even though many antivaccination conspiracy theories are generated in the USA (Bârgăoanu, 2021, as cited in Higgins, 2021). The over-abundance of information, which includes online mis-/disinformation, is making it difficult for people to find trustworthy sources to help with decision-making regarding vaccination (Scales et al., 2021). Since "hoaxes about the coronavirus were disseminated mainly on social networks" (Salaverría et al., 2020: 2), social media platforms' role in the "spread of misinformation and denial of scientific literature" is seen in the rise of vaccine hesitancy (Rosenberg et al., 2020: 418; Kang et al., 2017). Vaccine resistance or hesitancy is defined as the "delay in acceptance or refusal to vaccinate despite the availability of vaccination services" (Nossier, 2021; World Health Organization, 2019). Vaccine resistance is further reinforced through factors such as misinformation and lack of trust in the government or the healthcare system (Scannell et al., 2021). This is especially evident on Twitter (Scannell et al., 2021), a platform where the Russian Vaccine Sputnik V has been attracting the most attention when compared to the discourse on other vaccines (Carrasco-Polaino et al., 2021).

At the beginning of the pandemic, vaccination officials feared that skepticism around vaccination could lead to lower vaccination rates (Our World in Data, 2019). According to the IRES poll on vaccination in Romania (IRES, 2021), 23% of Romanians had a negative opinion on vaccines, based on the belief that they have adverse reactions (37%), on lack of trust or agreement on vaccination (15%), lack of public information and fear of manipulation (11%), and distrust in vaccine safety and efficacy (10%). During the fourth wave of the pandemic, Romania registered one of the lowest vaccination rates in Europe: on September 7th, 2021, Valeriu Gheorghit, Romanian military doctor and coordinator of the National Anti-COVID-19 Vaccination Campaign, declared that 31% of the eligible population (12+) at a national level was vaccinated with at least one dose. By the start of November 2021, Romania became the number 1 country in the world in terms of COVID-19-related deaths (Higgins, 2021). The cultural heritage of ex-communist Eastern European states also plays a significant role, as deep-seated vaccine hesitancy is fuelled by political instability, conspiracy theories, and mistrust of authorities. In addition, legislation on disinformation cannot keep up with the rapid and ongoing development of new media (Claussen, 2018). Ivan Krastev, a Bulgarian political scientist, told CNN that lack of trust is high amongst both Romanian and Bulgarian citizens, adding that "even the medical community, doctors, nurses, many are hesitant to get vaccinated, so it is not a surprise that the society as a whole is too" (Kottasová, 2021).

Sputnik News and Russia Today's news reporting is often under scrutiny due to their Russian state ownership: "Of the approximately \$1 billion that the Kremlin allocates annually to the media it controls, about one-third goes to institutions that produce and broadcast news in foreign languages, institutions such as Sputnik and RT" (Voicu, 2018, apud, Shuster, 2015). RT functions as "a tool of foreign policy of the Russian government" due to its dissemination of conspiracy theories and misinformation (Yablokov, 2015: 301), while Sputnik News is instrumental in framing news (Deverell et al., 2021) and constructing strategic narratives to further Russia's public diplomacy efforts (Demjanski, 2020). These media outlets' content is further disseminated through social media platforms such as Twitter, Facebook, and WhatsApp (Müller & Schulz, 2021). The ro.sputnik.md site is the Romanian language version of the Sputnik news platform. Recently, ro.sputnik.md has generated controversies related to its goals: "Sputnik news agency remains one of the main channels used by the Kremlin to conduct disinformation campaigns across Russian borders, affecting the European Union, its Member States, and countries in the shared neighbourhood" (Ștefan, 2020: 113).

In light of the COVID-19 pandemic and vaccine hesitancy, this paper aims to fill the gap in academic knowledge on vaccine-relevant media discourse generated by Sputnik news. The study's purpose is to determine the construction of news media discourse on vaccines and vaccination, by identifying news media frames associated with vaccines, and prominent news values on anti-COVID-19 vaccination deployed in ro.sputnik.md's media texts.

1.2. Theoretical framework: Media frames and news values

Considering the purpose of this research, the study's theoretical framework is based on two different paradigms relevant to media communication: framing and news values. Framing, as a Media Effects research paradigm, is understood as the process of selecting and conveying information based on journalists' framing judgments, which filter into news discourse, and in turn, have some potential to shape or maintain audiences' beliefs and attitudes (Entman & Rojecki, 1993). Frames are defined as the selection of certain facets of reality, which are highlighted in a media text to produce a dominant meaning, through either defining problems, diagnosing causes, making certain moral judgments, and/or suggesting remedies for the reported issue/topic (Entman, 1993). Content analysis of news media frames can be approached via two paths: inductive, meaning an open-view approach to dominant meanings identified in media texts, and deductive, based on predefined variables (Semetko & Valkenburg, 2000).

This dominant-meaning approach to defining frames does not assume that audiences will automatically process media messages in complete dependence on media products' framing, however, as media scholar Robert M. Entman suggests, "if the text frame emphasizes in a variety of mutually reinforcing ways that the glass is half full [...], relatively few in the audience will conclude it is half empty" (Entman, 1993: 56). In communication sciences, the role that frames play in shaping audience attitudes is initially explored under agenda-setting theory, as second-level agenda-setting (McCombs & Shaw, 1972), which is later reconceptualised under framing theory as frame setting (Scheufele, 1999) or framing effects (Druckman, 2001). This research is focused on one such framing effect, an emphasis framing effect, which is concerned with the emphasis type of frames, seen in messages or media objects which focus on specific selected aspects and considerations of an issue, while excluding others, and have the potential to affect decision-making and citizen competence (Druckman, 2001). Research has linked emphasis frames to their effects as observed in different political outcomes (Kaiser, 2020) and certain public attitudes towards specific issues (de-Vreese et al., 2011).

Considering the present study's scope, the analysis of emphasis frames is based on a recent study of audience reception of media messages related to anti-COVID-19 vaccine issues: The Effect of Frames on COVID-19 Vaccine Resistance (Palm et al., 2021), the purpose of which was to examine the effects of both pro- and anti-vaccination message frames, which mimic news articles, on the public's attitudes and beliefs regarding vaccine resistance/uptake. The results indicate that attitudes towards vaccines are swayed towards positive (increased likelihood of getting vaccinated) when the public is confronted with frames that focus on either the safety of vaccines or on how others plan to get vaccinated. The results also show that the public's general attitude towards vaccine to advance their own agenda, as well as frames focusing on how others are not willing to get vaccinated (Palm et al., 2021).

Academic knowledge and research on news values are rooted in Johan Galtung and Mari Holmboe Ruge's research on The Structure of Foreign News (Galtung & Ruge, 1965). The authors identify and therefore create an initial taxonomy of news factors that determine the selection of relevant news, such as frequency, threshold, meaningfulness, unexpectedness, continuity, personification, composition, references to elite countries/people, etc. (Galtung & Ruge, 1965: 70). Their model is based on the concepts of gatekeeping and news selection, which refer to the journalistic practice of deciding which story is newsworthy. The authors' main preoccupation was "how and why an event becomes news and thus has news value"; therefore, the empirical validity of their research places it in a position of landmark research in journalism studies (Joye et al., 2016: 8-12).

News values are defined as the set of criteria applied by news workers in the process of selecting, systemizing, and communicating stories that are deemed newsworthy (Bednarek & Caple, 2017; Harcup & O'Neill, 2016; Joye et al., 2016; Bednarek & Caple, 2014). Bednarek and Caple argue that a discursive approach, focused on corpus linguistic analysis of news values, can yield more comprehensive results, since "news values are seen as values that exist in and are constructed through discourse" (2014: 135). They identify a set of common news values: timeliness, consonance, superlativeness, negativity, impact, eliteness, etc. Based on their qualitative study of mainstream journalism, Tony Harcup and Deirdre O'Neill also offer a comprehensive taxonomy of news selection factors, such as exclusivity, conflict, shareability, drama, relevance, celebrity, magnitude, etc. (Harcup & O'Neill, 2016: 1482).

The present study focuses on some of the enumerated news values, namely negativity, conflict, meaningfulness, and eliteness. Negativity is seen in "references to negative/positive emotion and attitude", while eliteness infuses news media discourse that is concerned with nationally and internationally recognizable names (Bednarek & Caple, 2017: 79). Meaningfulness is seen in the news on events of cultural proximity or relevance (Galtung & Ruge, 1965), when a "foreign event is relevant to and closely matches cultural and historical values of the home country" (Joye et al., 2016: 9). The concept has been re-interpreted to incorporate the notion of proximity in its widest sense possible, therefore, several other (inter)related factors create meaningfulness, such as economical and "historical links, geographical distance, as well as psychological or emotional distance" (Joye, 2010: 588). Conflict is seen in "stories concerning conflict such as controversies, arguments, splits, strikes, fights, insurrections and warfare" (Harcup & O'Neill, 2016: 1482).

2. Materials and methods

The research questions are centered around exploring and analysing the news content of the Romanian/Moldovan edition of the Sputnik news platform (ro.sputnik.md) and its discourse on vaccination and the anti-COVID-19 vaccines: Which emphasis frames are present in the ro.sputnik.md discourse on anti-COVID-19 vaccines? (RQ1); What frequently co-occurring lexis constructs each of the identified emphasis frames? (RQ1a); How does ro.sputnik.md present the Russian vaccine Sputnik V, in comparison with EU authorised vaccines? (RQ1b); How are the main news values (conflict, negativity, eliteness, meaningfulness) discursively constructed in the ro.sputnik.md content? (RQ2).

To answer these questions, a mixed methods content-based approach is employed, where automated text analysis (frequency, co-occurrence, n-grams) is combined with thematic and discourse analysis. The initial dataset consists of all published articles that contain the term "vaccine", which were collected using a web data extraction software, Octoparse 8. To ensure the validity and reliability of the data collection instrument, the ro.sputnik.md site's search engine was used to identify articles containing the Romanian-language lemma for "vaccine", which donned all articles containing the words "vaccine" and "vaccination". Since the search engine provides a total number of articles found, this number was subsequently checked to match the data sample extracted.

The articles referring to anti-COVID-19 vaccines were kept in the final sample (N=1165), while the articles covering other vaccines (N=41) were eliminated. The period resulting after the initial filtering of the article corpus ranges from January 10th, 2020, to November 1st, 2021. To detect frames associated with vaccination and anti-COVID-19 vaccines, an inductive approach was used: the corpus of 1165 articles was manually coded by one coder; in the first stage, any particular definition of the vaccines, causal interpretation of vaccination, or a moral evaluation of the effects of the COVID-19 pandemic identified in the headlines, were coded as frames. During the second stage, the identified frames were refined into six categories (Table 1).
Table 1. Main corpus and frames									
Corpus of analysis	Frame	N	WC	Threshold	Freq.				
Ro.sputnik.md: "vaccine"		1,165	463,088						
	(F1) Superiority of the Russian Sputnik V Vaccine	286	92,434	28	60				
	(F1a) Large Scale Adoption of the Vaccine	125	32,577	20	30				
	(F1b) Efficacy and Safety of the Vaccine	30	12,711	5	15				
	(F1c) Obstacles/Discrimination Against the Vaccine	20	9,855	3	8				
	(F2) Fatal/Side Effects of EU Authorized Vaccines	105	36,321	10	30				
	(F3) Limitations of Individual Rights and Freedoms	84	40,197	10	32				
	(F4) EU and/or Romanian Authorities' Struggle	32	14,975	5	15				
	(F5) Children and Teenagers' Protection	14	4,897	2	6				
	(F6) Big Pharma Conspiracy	9	5,779	2	6				

Note. N=number of articles; WC=word count; Threshold=threshold defining the edge between two nodes in a co-occurrence network; Freq.=minimum word frequency threshold.

Next, the data pertaining to the Superiority of the Russian Sputnik V Vaccine frame was further investigated, and manual coding was employed in the process of determining three sub-frames within the Sputnik V sub-corpus, which focus on either the safety/efficacy of the vaccine, on large scale/international adoption of the vaccine, or on international/European obstacles and discrimination against the Russian vaccine.

All 6 frames and the 3 sub-frames (Table 1) were analysed via semantic networks of co-occurrence, which were generated using a text-mining tool, Orange (orangedatamining.com). To help determine patterns of co-occurrence of words/n-grams specific to each frame, each sub-corpora was imported into Orange as a separate project with distinct threshold and frequency settings (Table 1). This was necessary due to each project's different word count, which requires different threshold parameters settings.

A corpus manager and text analysis software, Sketch Engine, was used to quantitatively analyse the main corpus (word count=463.088 words), as well as the relevant sub-corpora (Table 1). To facilitate the analysis of the linguistic construction of prominent news values, lists of keywords and frequent words/lemmas were generated. Based on the most frequent lemmas and keywords, markers for eliteness and meaningfulness were identified, as well as a vocabulary of conflict and negativity. In order to accurately interpret the data, a concordance/text view was employed, which allowed for an examination of the context in which every word/n-gram appears.

3. Results

3.1. Emphasis frames in the ro.sputnik.md discourse on anti-COVID-19 vaccines

The six identified emphasis frames are distributed as follows: in more than half of the coded corpus, a frame on the Superiority of the Sputnik V Vaccine (53.96%) is employed, while 19.81% of articles report on deaths and side effects due to vaccine inoculation, a frame which was named Fatal/Side Effects of EU Authorized Vaccines. There is also some prevalent discourse on Limitations of Individual Rights and Freedoms (15.84%), and discourse indicating that the European and Romanian authorities struggle in managing the health crisis (6.03%). Children and Teenager's Protection (2.64%) and Big Pharma Conspiracy (1.69%) were identified in similar percentages.

The Superiority of the Sputnik V Vaccine frame encompasses a variety of topics related to the Russian vaccine and constantly emphasizes how this serum is better than EU authorised vaccines (Pfizer, Moderna, AstraZeneca, Johnson & Johnson). The Russian vaccine's advantages are clinically demonstrated: it "can protect against all known variants" (Sputnik, 2021a). The same idea is supported by using statistical evidence: "New data: Sputnik V, 97.6% efficient" (Sputnik, 2021b). In headlines such as "Gamaleya: Sputnik V can protect against all known variants" (Sputnik, 2021a), an appeal to authority is employed (argumentum ab auctoritate), as the Russian Gamaleya Research Institute of Epidemiology and Microbiology is frequently cited by ro.sputnik.md.

The Fatal/Side Effects of EU Authorized Vaccines frame could be identified in headline constructions such as: "Huge scandal: three deceased after Pfizer vaccination!" (Sputnik, 2021c), where the syntagm "huge scandal" functions as a marker for the severity of the situation. There are also allegations that vaccines could cause death, even at an early age (all of them, except Sputnik V): "High-school student deceased after Pfizer vaccine – devastated family, "Sofia was healthy" (Sputnik, 2021d). This frame is constructed through a life-death opposition: "was healthy"/ "deceased after vaccine".

The Limitations of Individual Rights and Freedoms frame is identified as a form of moral evaluation of the pandemic's effects: "A Romanian MEP compares mandatory vaccination with nazism" (Sputnik, 2021e). Negative words such as "nazism" and "mandatory" are used to emphasize potential human rights violations. Following the same idea, another headline reads "Cristian Terheş attacks European Parliament's "democracy" harshly – Video" (Sputnik, 2021f), where Terheş, a Romanian Member of the European Parliament (MEP), criticizes the democratic principles of the EU. Another headline references a Romanian lawyer's statement on freedom, using a metaphor: "Chitic: Our freedom's winter began" (Sputnik, 2021g).

3.2. Emphasis frames: Frequently co-occurring lexis

Co-occurrence networks or semantic networks are frequently used as a text analysis method that enables the visualization of potential relationships between people, organizations, concepts, etc. The Superiority of the Russian Sputnik V Vaccine frame's co-occurrence analysis reveals patterns of intersections between syntagms and words, all centered around the "Sputnik V" vaccine (Figure 1).



Main co-occurrences are found in names of countries: Germany, Hungary, Republic of Moldova, institutions, and organisations such as the "Health Ministry", RDIF (The Russian Direct Investment Fund), the "Russian Gamaleya Research Institute of Epidemiology and Microbiology", the European Commission, WHO. Frequently co-occurring names are (Vladimir/President) Putin (president of Russia) and (Kirill) Dmitriev (Russian Direct Investments CEO), and names of media outlets/journals such as Novosti (Serbian media company), and The Lancet (medical journal). N-grams such as "million doses", "the Russian vaccine", "safety and efficacy", and "clinical trials" are also centered around the Sputnik V Vaccine.

The Fatal/Side Effects of EU Authorized Vaccines frame corpus analysis (Figure 2) highlights the main issues surrounding discourse on side effects of EU-authorized vaccines and their severity: frequently co-occurring nouns/n-grams such as "side effects", "deaths", "thrombosis", "blood clots", "serious", "reactions", together with the main actors: "anti-COVID-19 vaccine", "AstraZeneca", "Pfizer BioNTech", "Moderna", "Johnson Johnson", and countries/institutions such as "USA", "Romania", the "EU", "Health Agency", are connected by words like "cause", "cases", "vaccinated", "administrated", "age", and "died".



The analysis of the EU and/or Romanian Authorities' Struggle frame corpus highlights the relevant news actors: national political figures such as Klaus Iohannis (Romanian president), Florin Cîţu (former Prime Minister and current President of the Senate), Ludovic Orban (former Prime Minister and current Member of the Chamber of Deputies); entities such as PSD (Romania's Social Democratic Party), the Government; countries such as Romania, Republic of Moldova, Russia, USA, France, but also the European Union. Other frequently co-occurring nouns refer to the vaccine ("vaccine doses", "million doses", "anti-COVID-19") and economic concerns regarding the vaccine ("money", "euro") (Figure 3).



There is an emotional emphasis in the Children and Teenagers' Protection frame. The co-occurrence analysis shows that words such as "COVID-19", "children", and "age" occur frequently around words such

as "risk", "immunity", "disease", "cases", and "Pfizer BioNTech", "Moderna", "Romania". This causeeffect relationship presents children as being at risk if vaccinated. Names of authorities such as The Romanian Ministry of Public Health and the Ministry of National Education are also frequent in the corpus.

The Limitation of Individual Rights and Freedoms frame is constructed through the frequent cooccurrence of words/n-grams such as "COVID-19", "vaccine", "people", the "public", "mandatory", "obligatory", "freedom", "rights", "mandatory vaccination" and news actors such as Klaus Iohannis (Romanian president) and Cristian Terheş (Romanian controversial political figure, member of the EP). Terheş's constant attacks towards Brussels are frequently cited by ro.sputnik.md: "EU has become a concentration camp"; "mandatory vaccination is Nazism"; "Brussels will take the fundamental right to life from Europeans"; "in the EU, cockroaches have more rights than humans". The Big Pharma Conspiracy frame is less frequent in the corpus, but follows the respective conspiracy theory's narrative; co-occurrence patterns of words/n-grams which reference vaccines: "Moderna", "Pfizer BioNTech", "vaccine", "dose", are connected through n-grams like "mandatory vaccination", "Big Pharma", "law", "billions of euros" to the relevant news actors: "Iasi University of Medicine and Pharmacy", "students", France, the European Commission, Diana Şoşoac (Romanian Senator of the Alliance for the Union of Romanians, a right-wing populist, and nationalist political party), Vasile Ast r stoae (prominent Romanian medical figure who spread proven disinformation on the epidemiological situation and the disease's severity).

3.3. The Superiority of the Russian Sputnik V Vaccine sub-frames

The analysis of the Large-Scale Adoption of the Vaccine sub-frame corpus (Figure 4: https://doi.org/10.6084/m9.figshare.19328975) shows co-occurrences of names of countries and cities: Russia, Hungary, Republic of Moldova, Germany, Slovakia, Serbia, Argentina, Moscow, Brussels, and institutions: European Medicines Agency, the Russian Direct Investment Fund, the Health Ministry. Other co-occurrences surrounding the Sputnik V Vaccine are "a million doses", "the Russian Sputnik V Vaccine", "vaccinated", "received", "approved", "registered", "used". The Efficacy and Safety of the Vaccine sub-corpus are constructed through frequently co-occurring words such as "safety", "efficacy", "safe", "good", "registered", "product", "clinical trials", the Russian Gamaleya Research Institute of Epidemiology and Microbiology, The Lancet (medical journal), all centered around the "Russian Sputnik V Vaccine". This sub-frame, emphasizing the Efficacy and Safety of the Sputnik V Vaccine is constructed in antithesis with the Fatal/Side Effects of EU Authorized Vaccines frame.

As for Obstacles/Discrimination against the Vaccine, several keywords stand out: countries and cities (Russia, Hungary, Republic of Moldova, the US, Brussels, Moscow, and the EU), and news actors such as Klaus Iohannis, Vladimir Putin, all centred around the "Sputnik V vaccine". Other frequently co-occurring words and syntagms are "human adenovirus", "clinical trials", "question", "messenger RNA", "politics", "president", "safety", and "level". The rhetoric of the three Sputnik V sub-frames conveys a positive representation of the Russian vaccine, which, although efficient, safe, and adopted, used and produced on a large scale, still encounters strong opposition and discrimination from the EU authorities.

3.4. News values

Journalists employ certain news values to select and present events as news stories. Therefore, news values are embedded in and constructed through discourse. The analysis of frequently occurring words/n-grams in the corpus (463.088 words) revealed that news media discourse on vaccines and vaccination generated by the md.sputnik.ro news website is discursively structured via four prominent news values: conflict, negativity, eliteness, and meaningfulness. The sampled articles' texts are constructed, on the one hand, through lexis that is specific to the topic of anti-COVID-19 vaccination and, on the other hand, through highly generic formulas.

3.4.1. Conflict

Conflict is a pre-eminent news value, constructed through several frequently-occurring terms (frequency threshold=10; Figure 5: https://doi.org/10.6084/m9.figshare.19328702), especially war-relevant lexicon: "gunpowder", "threat", "defense", "battle", "fire", "rebellious". Warfare vocabulary appears in headlines such as: "Analyst: Whatever is going on in Romania, in Europe, and in the world

smells like gunpowder" (Sputnik, 2021o). Highly prevalent words such as "defense" are seen in headlines like: "Russia is not pursuing money. Sputnik V is starting to be defended in Europe" (Sputnik, 2021m); "strategic": "George Soros breaks the silence: a fulminating interview – interests, and strategies behind the Pandemic" (Sputnik, 2020c); and "threat": "Hungary puts NATO in its place: it does not see Russia as a threat" (Sputnik, 2021p).

Another conflict-relevant lexis connotes discord, for instance "response": "The Kremlin has responded to The Sun's accusations of theft of the AstraZeneca vaccine formula" (Sputnik, 20211); "tackling": "Experts from India: Sputnik V, effective in tackling Delta strain" (Sputnik, 2021n). The word "ironic" is used to suggest dissention, as seen in headlines such as: "Orban and Arafat, trampled by a FAMOUS businessperson! Ponta, ironic reaction" (Sputnik, 2020b).

3.4.2. Negativity

The analysis of the relevant negative lexis is firstly based on the association with the COVID-19 virus/infections/disease (frequency threshold=10; Figure 6: https://doi.org/10.6084/m9.figshare.19328729). The negative news value is construed through words/n-grams which refer to death: "death", "death rate", "fatal"; disease: "infection", "disease", "oncologic"; side effects: "adverse", "blood clot", "thrombosis", "coagulation"; restrictions and interdictions: "suspend", "sanction", "infringe", "interdict"; or warnings: "risk", "negative", "concern", "shocking", "prevent", "panic".

The most frequent words constructing negativity are "infection": "Norway is demanding the purchase of the Sputnik V vaccine amid a record number of infections" (Sputnik, 2021h), "Mirel Curea's strange infection scandal. Dr. Răzvan Constantinescu's harsh reaction" (Sputnik, 2021i); "risk", seen in headlines in which an authority's opinion is used as evidence to intensify distrust: "A virologist explains the risks of a vaccine created too quickly" (Sputnik, 2020a) or "Doctors, warning about a decision of the Ministry of Health: increases the risk of death" (Sputnik 2021j). The word "death" is the third most frequent negative word and is employed in the news of deaths caused by EU-approved vaccines: "Indonesia suspends a batch of AstraZeneca doses after the death of a vaccine victim" (Sputnik, 2021k).

3.4.3. Eliteness

Eliteness is seen in news discourse on celebrities and nationally/internationally recognisable names, in this case, politicians and medical figures. The most frequent words of news actors were singled out (frequency threshold=50, Figure 7).



Three categories of elite personalities were identified: national/regional leaders, medical figures, and famous conspirators. Names of political leaders are predominant in the corpus: Romanian president and prominent public communicator during the first COVID-19 lockdown (Klaus) Iohannis, Russian president (Vladimir) Putin, (former) Romanian Prime minister (Florin) Cțu, (former) US president (Donald) Trump, President of the European Commission (Ursula) von der Leyen and others (Figure 7). Furthermore, names of medical figures are prevalent: Romanian military doctor and the coordinator of the National Anti-COVID-19 Vaccination Campaign (Valeriu) Gheorghiță, the Ministry of Health (Nelu) Tătaru and the Romanian representative in the WHO steering committee, Medical Doctor (Alexandru) Rafila. In October 2020, Rafila rejoined the Social Democratic Party (PSD) and won a seat in the Romanian Parliament during the 2020 elections, becoming PSD's proposal for the Prime Minister position. In November 2021, he was appointed Health Minister. Key figures in the widely circulated conspiracy theories related to the coronavirus pandemic are also present in ro.sputnik.md content: George Soros, Bill

3.4.4. Meaningfulness

Gates.

Several (inter)related factors construct the news value of meaningfulness (economical or historical links, geographical distance, psychological or emotional distance). The most frequent country name is Russia/The Russian Federation, followed by Romania, The Republic of Moldova, USA, Hungary, Germany, and the UK (Figure 8).



The frequent occurrence of Romania's neighbouring countries (Hungary, Bulgaria, Serbia, Republic of Moldova) illustrate the value of meaningfulness. Emotionally relevant references are linked to the COVID-19 situation in the UK, a country that hosts around 350.000 Romanian-born residents.

4. Discussion and conclusions

The mixed-methods analysis of vaccine-related ro.sputnik.md content reveals several textual and discursive mechanisms of meaning construction. Identified emphasis frames propose a particular definition of the Russian vaccine, giving prominence to its superiority by focusing on specific selected aspects and considerations of the vaccine's reliability, with the prevalent focal point seen in rhetoric and lexis that anchors on its safety and efficacy, its worldwide spread adoption, and on how others (public figures) plan to or are, vaccinated with Sputnik V. The Russian vaccine's reliability is doubled by constant reporting on the Adoption of the Vaccine by certain countries, an underlying discourse on Russian geopolitical influence beyond its borders to Latin America (Argentina, Venezuela, Mexico), Middle East (Syria, Libya, Palestine, Jordan), Europe (Hungary, Slovakia, Serbia), but also to former Soviet republics (Belarus, Republic of Moldova, Kazakhstan, Turkmenistan). Therefore, data analysis reveals how the vaccine was used by the Kremlin as a geopolitical instrument. Furthermore, the Superiority of the Sputnik V Vaccine emphasis

frame builds a wider frame on Russian institutions and the state's power in effectively dealing with major challenges such as the COVID-19 pandemic: this representation of Russia's capacity to respond to the sanitary crisis is indirectly reinforced by antagonist discourse pertaining to our study's identified frame on European and Romanian Authorities and their struggle in managing the health crisis. The adverse narratives identified by similar research on Sputnik content (Deverell et al., 2021) emerge here too, within discourse constructed to discredit the effectiveness of EU-approved vaccines, thus emphasizing the failures of the European Union and of government institutions involved in the decision-making process.

Moreover, the ubiquitous frame on Fatal and Side Effects of Vaccines that were approved by the European Medicines Agency and adopted by most EU member countries builds on a discourse of distrust and fear. Recent results on the effect of frames on COVID-19 vaccine resistance confirm that the negative frames focusing on how others are not willing to get vaccinated (Palm et al., 2021), encourage vaccinehesitancy and vaccine-resistance in the public's general attitude. In the same vein, the framing of restrictions in terms of (severe) Limitations of Individual Rights and Freedoms brings forward civil disobedience and social unrest as public agenda issues. The lexical and discursive construction approach proposed by Bednarek and Caple (2014) for the analysis of news values, generated relevant results in the case of four prominent news values (conflict, negativity, eliteness, meaningfulness) targeted by the present study. On the one hand, peculiarities determined by the specificity of the topic -COVID-19 vaccinationare identified: death, side effects (blood clot, thrombosis, coagulation), restrictions, and interdictions or warnings (serious, risk, negative, concern, panic, etc.). On the other hand, the analysis reveals highly formulaic journalistic constructions: the use of warfare vocabulary in the case of the conflict news value (defense, threat, battle, fire, rebellious, gunpowder etc.); the focalisation of the message on well-known actors (state leaders, European leaders, famous "conspirators") and countries (powerful international actors, meaningful neighbours).

Overall, the methods and tools that were employed provided an accurate mapping of the relevant emphasis frames and the lexical and discursive constructions of the ro.sputnik.md site's content on anti-COVID-19 vaccines and vaccination. Similar strategies of using mixed methods approaches could be used to assess textual media representations and media frames associated with the coverage of issues that have the potential to create public controversies. The research is limited by its data sample, extracted from ro.sputnik.md. A comparison with Sputnik News media outlet's content in other languages could yield more comprehensive results.

Authors' Contribution

Idea, A.A.M.; Literature review (state of the art), T.E.G, T.F.S., A.A.M.; Methodology, A.A.M., T.E.G.; Data analysis, T.E.G, T.F.S., A.A.M.; Results, T.E.G, T.F.S., A.A.M.; Discussion and conclusions, A.A.M., T.E.G.; Writing (original draft), T.E.G, T.F.S., A.A.M; Final revisions, T.E.G, T.F.S., A.A.M.; Project design and funding agency, T.E.G, T.F.S., A.A.M.

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Rhetoric of parliamentary disinformation on Twitter



Retóricas de desinformación parlamentaria en Twitter

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ABSTRACT

Democracy is based on individuals' ability to give their opinions freely. To do this, they must have access to a multitude of reliable information sources (Dahl, 1998), and this greatly depends on the characteristics of their media environments. Today, one of the main issues individuals face is the significant amount of disinformation circulating through social networks. This study focuses on parliamentary disinformation. It examines how parliamentarians contribute to generating information disorder (Wardle & Derakhshan, 2017) in the digital public space. Through an exploratory content analysis – a descriptive content analysis of 2,307 messages posted on Twitter accounts of parliamentary spokespeople and representatives of the main list of each political party in the Spanish Lower House of Parliament – we explore disinformation rhetoric. The results allow us to conclude that, while the volume of messages shared by parliamentarians on issues susceptible to disinformation is relatively low (14% of tweets), both the themes of the tweets (COVID-19, sex-based violence, migrants or LGBTI), as well as their tone and argumentative and discursive lines, contribute to generating distrust through institutional criticism or their peers. The study deepens current knowledge of the disinformation generated by political elites, key agents of the construction of polarising narratives.

RESUMEN

La democracia se basa en la capacidad de los individuos para generar libremente sus opiniones. Para hacerlo, necesitan tener acceso a una pluralidad de fuentes y contenidos veraces de información, y este acceso depende, en gran medida, de las características de sus entornos mediáticos. Uno de los principales problemas de la sociedad actual es el elevado volumen de desinformación que circula a través de las redes sociales. Este trabajo se centra en la desinformación parlamentaria. Observa si y cómo los parlamentarios contribuyen a generar desorden informativo en el espacio público digital. Mediante un análisis exploratorio del contenido de 2.307 mensajes publicados en Twitter por portavoces parlamentarios y representantes de la lista principal de cada grupo en el Congreso de los Diputados en España, se estudian las retóricas de desinformación. Los resultados permiten concluir que, si bien el volumen de mensajes de desinformación es relativamente bajo (14% de los tweets), tanto las temáticas (COVID-19, violencia de género, migrantes o colectivo LGTBI), como el tono y las líneas discursivas de los tweets conforman pautas que contribuyen al desorden informativo, generando desconfianza en las instituciones y entre los propios representantes parlamentarios. El estudio ahonda en el conocimiento de la desinformación generada por las élites políticas, sujetos clave en la gestación de narrativas polarizadoras.

KEYWORDS | PALABRAS CLAVE

Disinformation, Twitter, MPs, political communication, COVID-19, social minorities. Desinformación, Twitter, parlamentarios, comunicación política, COVID-19, minorías sociales.



1. Introduction and state of art

Despite the epistemological difficulty in defining the term, there is a certain consensus in academic literature that disinformation is a significant problem for democratic systems. This includes the creation, emission, dissemination and reception of messages, through various means, that are intentionally false or misleading, and have political and financial objectives that seek to influence specific audiences (Bennett & Livingstone, 2018). Social networks are a key factor in this process as they facilitate the unprecedented spread of disinformation, damaging and polarising the public sphere (Prokopovic & Vujovi, 2020), and erode citizen trust in democratic institutions (Jungherr & Schroeder, 2021).

It is a global problem, and it has become a popular research topic since the 2016 US presidential election, although it is still an incipient field of work (Freelon & Wells, 2020). Scientific literature in the field of political communications has explored disinformation (Cea & Palomo, 2021), but there are still gaps in this area, such as in the field of parliamentary communications. To try to minimise the effects of disinformation campaigns that put democratic principles at risk, different legislative chambers have implemented measures and action plans, including the experimental EU Action Plan against Disinformation before the European Parliament election in May 2019 (Kouroutakis, 2019).

The British Parliament and its Office of Science and Technology, POST (2019), consider disinformation a key issue and one of parliament's main challenges, stating that "content polluters" incited debate on social networks about, for example, the efficacy of vaccines before a parliamentary debate on the issue. Despite studies exploring political disinformation having focused mainly on parties and, specifically, on senior politicians, there are not many analyses of parliamentary discourses on disinformation or of parliamentarians as actors and receivers of disinformation.

This study focuses, therefore, on parliamentarians and aims to explore whether, and to what extent, they contribute to generating informational disorder in the digital sphere. To do this, our study has two characteristics that will help us understand its particularity: first, it considers parliamentary communications networks as political spaces with their own characteristics; and second, it considers the characteristics of disinformation within a complex informational disorder.

1.1. Parliamentary networks on Twitter

Previous studies have confirmed the importance of Twitter in parliamentary communications networks (Esteve-Del-Valle et al., 2021) covering three main topics: A first group analysed the topological characteristics of parliamentary networks to find the most influential parliamentarians (Dubois & Gaffney, 2014). A second group, the largest, studied the interaction between members of parliament (MPs) on Twitter with parliamentarians of similar or different ideological positions (Yoon & Park, 2014; Koiranen et al., 2019). A third group, the smallest, focused on the factors that explain why MPs adopt Twitter (Lassen & Brown, 2011; Chi & Yang, 2014). However, there are few studies on disinformation in parliamentary networks, and in the case of Spain, none.

Bradshaw and Howard (2019) noted that Twitter was one of the most popular platforms for disinformation in Spain. Jungherr and Schroeder (2021) demonstrated how digital platforms become powerful conduits of information and mediate between representatives and the people they represent, which facilitates the delegitimisation of discourses, ideas and democratic institutions, and forces us to rethink the complexity of disinformation.

It is understood that parliamentarians' messages should adhere to and obey agreed interests, based on socially shared objective realities. However, when this does not happen and parliamentary messages are controversial, deliberative and parliamentary democracy is compromised (Jungherr & Schroeder, 2021).

1.2. The characteristics of disinformation

According to Wardle and Derakhshan (2017), there are three types of informational disorder: "misinformation", "disinformation" and "malinformation", depending on whether, respectively, the message contains false, erroneous or misleading information without the intention of harming third parties; the content refers to false, erroneous, misleading, inaccurate or deliberately misleading information (Karlova & Fisher, 2013); and the message contains factual information or confidential issues with malicious intent to harm others. Informational disorder refers not only to the veracity, deceit or falsity of the content of the messages, but also to the rhetoric used, in terms of theme and tone, and the discursive and argumentative construction of the message, making it possible to understand the facts as being misleading, untrue or false, regardless of whether or not they actually are (Hameleers & Minihold, 2020).

Therefore, beyond the interest in detecting hoaxes among parliamentary messages, this research would like to understand how parliamentarians contribute to creating information disorder, accusing others of spreading or deliberately creating false messages, questioning, and delegitimising the actions and efforts of their adversary MPs, and generating institutional mistrust and apathy among citizens (Bennett & Livingston, 2018). It is understood that disinformation can promote false understanding through different means, not necessarily based on false identities, but by using true but misleading content to trigger false inferences (Fallis, 2015), and promoting misperceptions about reality and social consensus (McKay & Tenove, 2021).

Regarding the effects this has, disinformation often seeks to amplify social divisions, through discursive means of "us" and/against "the other", including the propagation of conspiracy theories, and using polarising and sensationalist content that is highly emotional and partisan (Howard et al., 2017). Reddi et al. (2021) noted that disinformation in US politics works at the service of existing power structures and identified anti-black racism, misogyny and xenophobic sentiment as topics susceptible to disinformation.

McFadyen (2021) notes that popular issues in hoaxes are immigration and refugees. At the same time, Das and Ahmed (2021) note that the COVID-19 pandemic has led to an increase in disinformation about the virus, leading to anti-mask, anti-vaccine, and anti-5G protests on a global scale. In her 2019 study, Humprecht found that fake story topics strongly reflect national news agendas, meaning that disinformation is not only a technology-driven phenomenon, but is also shaped by national news environments. With the general purpose of proposing an approach to parliamentary disinformation, this study has the following specific objectives:

- O1. Detect whether parliamentarians post disinformation on Twitter.
- O2. Explore whether they contribute to generating informational disorder through a discursive rhetoric that results in facts being perceived as misleading, not true or false, regardless of whether they are.

2. Materials and methods

The study used a mixed methodology based on a descriptive and qualitative content analysis of the messages published on Twitter by a sample of parliamentarians. We used the Spanish context as a case study because Spain has not been included in many parliamentary and political disinformation studies (Jungherr & Schroeder, 2021) and the political parties have accounted for a significant number of messages. Based on studies by Ng and Taeihagh (2021), we decided to identify distinctive characteristics in disinformation messages manually, in a non-automated manner. A content analysis made it possible to capture signs of disinformation, and focus on contextual elements and nuances of the messages analysed. The SPSS 26 analysis software was used for the descriptive analysis and NVivo 11 for the qualitative analysis, allowing us to create and identify categories by deriving data from the messages. The analysis was carried out in three work phases:

- Phase 1. Identification of disinformation topics at the time of analysis. Two thousand messages were gathered through the Twitter API from the Spanish Maldita and Newtral fact checkers; 150 of the most retweeted tweets from each profile were filtered, and disinformation topics were identified.
- Phase 2. Identification of parliamentary tweets. A total of 16,418 tweets were collected from a sample of parliamentarians (this sample comprised 17 parliamentarians and 1,000 messages from each of them, with the exception of Pablo Echequine, spokesperson for the parliamentary group Confederal de Unidas Podemos-En Comú Podem-Galicia en Común, who had only posted 418 at the time of data collection). We subsequently selected 150 of the most retweeted tweets from each profile (N=2,307), and filtered them according to the categories detected in Phase 1. From the total number of parliamentary tweets, a sample of 344 messages containing disinformation detected in Phase 1 was obtained.

• Phase 3. Identification of the disinformation characteristics tweeted by parliamentarians. A content analysis was applied to these 344 messages. Consideration was given to the categories and characteristics of hoaxes outlined by Tandoc et al. (2018), paying special attention to levels of facticity and deceit, and categorised according to the hoax taxonomy of Molina et al. (2021). It focused mainly on the characteristics of the message associated with rhetoric and an analysis of parliamentary polarisation on Twitter (Esteve-Del-Valle et al., 2021). Other disinformation elements were not considered, such as content creation techniques that manipulated images and videos, sources of false information, or automated accounts or bots (McKay & Tenove, 2021), which would need an additional phase of analysis following this exploratory analysis.

Because we were interested in addressing the construction of disinformation by the most media-exposed representatives of each parliamentary group, our analysis of the tweets was carried out on a sample of messages sent by parliamentary spokespeople (8) and the leading MP of each party (8) with a group in the Congress of Deputies (Grupo Socialista, Grupo Popular en el Congreso, Vox, Confederal de Unidas Podemos-En Comú Podem-Galicia en Común, Republicano, Ciudadanos, EAJ-PNV and Euskal Herria Bildu). Grupo Mixto and Grupo Plural were excluded from the sample as their spokesperson system is rotating and their inclusion altered the representativeness of the group. For those groups whose spokesperson was also the leader of the party (Grupo Parlamentario Republicano, Ciudadanos, EAJ-PNV, Euskal Herria Bildu), the deputy spokesperson for each group was selected. We also included the president of the Congress, who also serves as president of the Board of Spokespeople for the Congress of Deputies, which includes the parliamentary spokespeople. The characteristics and description of the MPs analysed can be found here: https://bit.ly/3snC2Ue. The sample period ranged from 28/04/2020 to 15/07/2021, which meant that the data collection occurred just before the Congress of Deputies rose for the summer break. This period offered an opportunity to capture a standard snapshot of MPs' experiences on Twitter at the close of the legislative activity. No messages or accounts were detected that could not be encrypted or had to be deleted.

3. Analysis and results

3.1. General description of the parliamentary activity

Figure 1 shows the standard activity in volume of tweets, and that the MPs analysed, in general, regularly posted tweets during the recorded period, although several peaks of activity were identified on 8 and 11 March, 20 and 21 April and 24 June 2021. On these days, only the tweets published by two Vox MPs were selected for our disinformation analysis. In neither of these two cases were the tweets related to their party's parliamentary or Congress activity.



Santiago Abascal registered the peak in his activity on 20 April. That day he posted 33 tweets, all about the electoral poster that Vox had put up in the Sol metro station in Madrid for the Madrid Assembly election; the poster read: "One MENA, 4,700 euros a month. Your grandmother's pension, 426 euro's month". Iván Espinosa registered the peak in his activity on 17 June 2021 with 15 tweets about different topics at different times during the day.

These topics included several related to gender issues: "Interesting article by César Antonio Molina, former Minister of Culture with ZP (and successor to Carmen Calvo). He attacks the Complutense University for brown-nosing Begoña Gómez, feminazis, Pedro Duque, and all the stupidity generated by (his) left ideologies https://t.co/6dHXUaanH9" (@ivanedIm, 2021-06-17, 1,145RT).

3.2. Disinformation topics

The analysis carried out in Phase 1 confirmed that the Newtral and Maldita fact-checking platforms mostly discredited hoaxes about COVID-19, the LGBTI community, immigration and gender: 41% of the messages analysed by these fact checkers contained hoaxes on these topics, compared to the others that dealt with various issues of national and international politics, and promotional messages from the fact checkers themselves. This allows us to confirm that the disinformation issues highlighted by Reddi et al. (2021) and by Das and Ahmed (2021) in other countries, have also been identified in Spain.



Note. Tweets downloaded from 17 parliamentary Twitter profiles Most relevant words for COVID-19; Coalition block: dose, Spain, vaccination, millions, pandemic, vaccinate, people, covid-19: Opposition block: government, Sánchez, pandemic, Spanish people, Covid, emergency, deceased; LGBTI collective, immigration and gender; Coalition block: women, equality, today, woman, violence, rights, country, day, against, people, support, Spain; Opposition block: Ceuta, government, Spain, against, Spanish people, minors, our, law, borders, immigration.

Of the most retweeted 2,307 tweets by parliamentarians analysed in Phase 2, we found that only 14.3% (344 tweets) were associated with these disinformation topics (COVID-19, immigration, gender and LGBTI). If this data is insignificant in volume, it is significant in that it reflects the fact that MPs mainly tweet about topics other than those discredited by Newtral and Maldita, or those topics that the scientific literature has highlighted as central to disinformation.

However, the qualitative analysis of the 14.3% of messages from parliamentarians on disinformation issues carried out in Phase 3 shows a clear alignment with the information agenda of that moment: The tweets about COVID-19 referred to the management of the pandemic after the end of the third state of emergency, which ended on 9 May 2021, and management of the COVID-19 vaccine roll-out.

Regarding tweets that referred to immigration, most were about the border incident between Spain and Morocco in May 2021.

Table 2. Examples	Table 2. Examples of hoaxes discredited by Maldita and Newtral and the most retweeted tweets containing similar topics posted by parliamentarians								
Торіс	Fact checkers	Parliamentarians							
Immigration	RT @malditobulo: X No, this tweet about immigrants entering Ceuta is not from Vozpópuli: it is a false account and the video is from terror attacks in Nice (@Maldita, 2021-05-18, 24RT). X X The false tweets attributed to La Ser, Vozpópuli and El País about "rapes", "murders" and "squatters" in Ceuta https://t.co/Jwb98tLcHe (@Newtral, 2021- 05-19. 20RT).	Morocco is invading #Ceuta by sending thousands of assailants spying the cowardly and criminal inaction of the Government that has surrendered our southern border. We demand the deployment of the army and the expulsion of the invaders. I will travel to Ceuta tomorrow to support our fellow citizens (@Santi_ABASCAL, 2021-05-17, 8464 RT).							
LGBTI	There are already 10,000 of us fighting hoaxes on TikTok. Join us! https://t.co/dQifmx1IFN. In #Orgullo2021 we discredited three hoax stories and myths about the LGBTI community that are spread every year https://t.co/9yzodi0Ov5. This is how we smash TikTok https://t.co/9IUV6djnou (@Maldita, 2021- 06-28 32RT).	Those who tell you today that 13 people kicking a kid while shouting 'fucking faggot' is not a homophobic murder are the same ones who told you that eight kids arguing with a plainclothes policeman in a bar in Altasasu was terrorism. Shameless. #JusticiaPorSamuel (@gabrielrufian, 2021- 07-05, 6796 RT.							
Gender	Rocio Carrasco's documentary and 016: the hotline for victims of sex-based violence has not received this many calls since the summer of 2016. https://t.co/KTMABhf3Yz (@Maldita, 2021- 06-11, 26RT).	They would have done it too. This is also why we are #MejoresQueEllos (@ivanedIm, 2021- 07-08, 2428 RT).							
COVID-19	In @malditobulo No, COVID-19 vaccines do not contain "heavy metals" or "magnetic" components that can attract magnets https://twitter.com/maldita/status/13960801 56096311310 (@Maldita, 2021-05-22, 24RT). ★ X It is not true that people who are vaccinated against COVID-19 cannot donate blood because "the vaccine destroys their natural antibodies". #DiaMundiaIDonanteDeSangre #DonaSangre https://t.co/VtBH2BJIWC (@Newtral, 2021-06-14. 799RT).	Wall Street Journal Exclusive: Three researchers from the Wuhan Institute of Virology were hospitalised as early as November 2019. Suspicion grows regarding the connection between the virus and that laboratory. https://t.co/VetRYbkpBt (@ivanedIm, 2021-05-24, 1866 RT).							

Note. Messages downloaded from the respective Twitter profiles

In terms of tweets about LGBTI, the messages predominantly alluded to the murder of Samuel Luiz in La Coruña on 3 June 2021, as well as to the bill for the real and effective equality of trans people and a guarantee of LGBTI rights, passed at the end of June 2021. Regarding messages about gender, they mostly referred to the girls Anna and Olivia who were murdered by their father in Tenerife in mid-June 2021. There were also other messages about the International LGBT Pride Day (28 June), International Women's Day (8 March), the anniversary of the death of Clara Campoamor (30 April) and a tribute to her in Congress for her advocacy of the female vote in Spain (12 April 2021).

The descriptive data show that the Socialistas (30%) and Vox (18.90%) MPs were those who posted the most messages on Twitter on disinformation issues (Table 3), and the PP were the political party that posted the most messages about COVID-19.

3.3. Content of the parliamentary disinformation messages

An analysis of the content shows that 53% of the tweets about COVID-19, and 33.9% about immigration, gender and LGBTI, showed polarisation characteristics. The qualitative analysis detected nuances in the content of parliamentary messages and interpreted disinformation rhetoric aimed at generating institutional and parliamentary distrust.

Group 1. Messages that did not contribute to generating informative clutter. These messages
were not included within the rhetoric of disinformation, as they comprised institutional
declarations; their content did not include criticism nor intention to generate mistrust in
institutions or citizen apathy. Most of these messages were tweets from parliamentarians in
the government coalition (MPs from Grupo Socialista and Confederal de Unidas Podemos-En
Comú Podem-Galicia en Común) and the president of Congress (Table 4).

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Table 2 Dees						
Table 3. Desc	cription of messages posted	by parliamentaria	ns and parila Topic	mentary	group	
Parliamentary group	Name of MP	Immigration, Gender and LGBTI	COVID-19	Both	Total	Total (%)
	Sánchez Pérez-Castejón, Pedro	29	31	0	60	
Socialista	Lastra Fernández, Adriana	35	9	1	45	
	· · ·	64	40	1	105	30.5
	Casado Blanco, Pablo	6	17	0	23	
Popular en el Congreso	Gamarra Ruiz-Clavijo, Concepción	4	15	0	19	
Vox	L	10	32	0	42	12.21
	Abascal Conde, Santiago	23	6	0	29	
Vox	Espinosa de los Monteros de Simón, Iván	31	5	0	36	
		54	11	0	65	18.90
Confederal de	Díaz Pérez, Yolanda	18	4	0	22	
Unidas Podemos-	Echenique Robba, Pablo	10	0	0	10	
En Comú Podem- Galicia en Común		28	4	0	32	9.30
	Rufián Romero, Gabriel	14	2	1	17	
Republicano	Bassa Coll, Montserrat	2	1	0	3	
		16	3	1	20	5.81
	Arrimadas García, Inés	4	3	0	7	
Cuidadanos	Bal Francés, Edmundo	1	9	0	10	
		5	12	0	17	4.94
	Esteban Bravo, Aitor	9	3	0	12	
EAJ-PNV	Legarda Uriarte, Mikel					
		9	3	0	12	3.49
	Aizpurua Arzallus, Mertxe	5	0	0	5	
Euskal Herria Bildu	Matute García de Jalón, Oskar					
	L	5	0	0	5	1.45
President	Batet Lamaña, Meritxell	42	4	0	46	13.37
Total	· · · · ·	233	109	2	344	

Group 2. Messages that favour informative disorder. In them, political criticism of parliamentary opposition and counterparts predominates (Table 5). This criticism manifests in four areas: (a) messages criticising the government, either by indicating its "inability" to manage the health or immigration crisis (messages sent by parliamentarians from the opposition to the government: Grupo Popular, Vox and Ciudadanos), (b) messages criticising the "irresponsibility" of the opposition (tweets posted by the government coalition, Socialista and Confederal de Unidas Podemos-En Comú Podem-Galicia en Comú), (c) messages supporting the government and criticising the opposition (from ERC, EAJ-PNV and Euskal Herria Bildu parliamentarians) and (c) messages from opposition parliamentarians criticising other parties or parliamentarians from the opposition itself (in this case, from Vox MPs who attack the Grupo Popular to reaffirm their positions).

Table 4. Inference table of uncritical messages that do not generate informative clutter									
What do they say?	Who says it?	What do we say they say?							
"Spain is going to make a qualitative leap forward in vaccination. In June, we will receive 13 million doses from Pf.zer. We are rigorously meeting objectives. With this delivery we are on the path towards herd immunity. 97 days left. #YoMeVacunoSeguro https://t.co/yls7IN5tew" (@sanchezcastejon, 2021- 05-13, 641RT). "Happy #Orgullo2021! @Congreso_Es lights up On #DiaDelOrgullo We will celebrate #igualdad, respect, diversity, progress for #LGBT rights and #libertad. #Orgullo2021 #Pride2021 https://t.co/YrUGsOpTN2" (@meritxell_batet, 2021-06-28, 51RT) "The equal pay tool Royal Decree 902/2020 comes into force on 14 April. Companies will be able to easily identify the pay gaps between men and women and can correct them. Equal pay for equal work https://t.co/H9TWgHxwm" (@Yolanda_Diaz, 2021-04-12, 1199RT).	Mainly among parliamentary leaders of the government coalition (Grupo Parlamentario Socialista and Grupo Parlamentario Confederal de Unidas Podemos- En Comú Podem-Galicia en Común) as well as messages from the president of Congress.	They describe actions and institutional positions. This is not seen in critical content. They do not intend to generate mistrust or apathy among citizens.							

The explicit criticism in these messages can be seen in *ad hominem* attacks questioning the veracity of their counterparts' statements – messages issued by Grupo Popular parliamentarians indicating that the government hides information about the health crisis – or the honesty of the representatives – for example, in messages from the Socialista spokesperson.

Table 5. Inference table of critical messages that favour information disorder								
What do they say?	Who says it?	What do we say they say?						
"Listening to Casado today (in a debate regarding COVID and the state of emergency) it is impossible to distinguish his message from the usual one about a general debate on the state of the country with front-on opposition and continuous criticism. And he is half way through. Weird strategy. If there even is one." (@AITOR_ESTEBAN, 2021- 02-24, 127RT). "I hear PP leaders preaching about the State of Emergency a state of emergency that they described as an attack on freedom and that they did not support in Congress. They only care about attacking the Government. Have they no shame?" (@Adrilastra, 2021-05-09, 1418RT).	This is seen in all parliamentary groups.	Critical messages or attacks on parliamentary counterparts. They manifest in criticism of the opposition and the government coalition. These criticisms are seen in <i>ad hominem</i> attacks and are polarising messages.						
"Deaths from COVID-19 in SPAIN exceed the official number by 24,000, according to @Abc_es. The real number that Sánchez hides: 53,000 deaths. The government will have to answer for it in Congress. No matter how hard they try, they won't be able to hide the truth. #NosMienten https://t.co/72GnOLuIOo" (@cucagamarra, 2020-09-13, 340RT). "The Cangas de Onis PP town councillor, Mari Fé Gómez, is one of the politicians who has used her position to jump the queue of hundreds of thousands of people and get the COVID-19 vaccine. Spread the word, because the PP is trving to cover it up" (@Adrilastra, 2021-02-04, 1410RT).	Grupo Parlamentario PP en el Congreso and Grupo Socialista.	Messages about the veracity of the facts or the honesty of the representatives. They question the facts, express doubt about their authenticity and question the honesty of political representatives and the veracity of their speeches.						
 "In a flawless message, Felipe VI shows his closeness to the Spanish people who are going through an awful time because of the pandemic and the crisis. And he defends national unity, constitutional harmony and the exemplary nature of institutional. Together we will overcome this situation with a great King at the helm. https://t.co/4WldVRAhH7" (@pablocasado_, 2020-12-24, 1253RT). "When the "justice" department of a country endorses and justifies hate speech against minorities, democracy has a very serious problem. https://t.co/4ZzHr9GajF" (@PabloEchenique, 2021-07-05, 675RT). 	Grupo Parlamentario Popular en el Congreso, Grupo Socialista, Grupo Parlamentario Republicano and Grupo Parlamentario Euskal Herria Bildu.	Messages about institutions. They create mistrust and discredit different institutions that comprise Spanish parliamentary democracy, their members or actions or, conversely, they generate support for them and their speeches.						

The criticisms in the messages analysed not only seek to discredit the government, opposition or parliamentary counterparts, but also include criticism of other institutions, such as the Spanish monarchy (in messages mainly from ERC and EH-Bildu) or the Judicial arm (fundamentally from the spokesperson for Unidas Podemos) (Table 6).

• Group 3. Messages that reinforce informative disorder. In this third group the messages moved beyond criticism and aimed to: a) generate fear and insecurity in citizens; b) attack specific groups; or c) generate doubts about the legitimacy of the media, highlighting a lack of veracity (under the label of "fake") (Table 6).

Table 6. Inference table of messages that reinforce informative clutter									
What do they say?	Who says it?	What do we say they say?							
"Morocco has used them as human battering rams, and instead of condemning this and making it known to the international community, the Spanish government disperses them throughout the territory, becoming an accomplice, together with the Autonomous Communities, in the kidnapping of these minors. It is an aberration dressed up as humanitarianism. https://t.co/IAOwLdPaym" (@Santi_ABASCAL, 2021-05-22, 3290RT).	Grupo Parlamentario VOX.	Messages that seek to generate a confrontation with external groups, describing them as the "enemy" and using a bellicose tone.							
"Twitter is wonderful and has come up with the perfect term for this thing: magrebitarra [North African ETA terrorist] https://t.co/TYA9KD4O31" (@ivanedIm, 2021-07-08, 2428RT).	Grupo Parlamentario VOX, Grupo Socialista, Grupo Parlamentario Confederal de Unidas Podemos-En Comú Podem-Galicia en Común, Grupo Parlamentario Republicano and Grupo Parlamentario Vasco (EAJ- PNV).	Messages that seek to show the superiority of their own identity through the stigmatisation of other groups.							
"I was initially bothered that the media did not report on the important issue at hand: the covert amnesty that PSOE is negotiating with the PNV to release ETA terrorists. But thank you to those liberals who have insisted on focusing on the North African https://t.co/mbaPYd7air" (@ivanedIm, 2021-07-09, 850RT).	Grupo Parlamentario Confederal de Unidas Podemos-En Comú Podem- Galicia en Común and Grupo Parlamentario VOX.	Messages that question the legitimacy of journalism and the media.							
"Now that those who denounced the Minister for Equality for using an advisor for personal affairs have been sentenced to eight years in prison for extortion, what is the judge going to do with the fake trial that has no evidence instigated by these gangsters? Will it go ahead and let them get away with it? https://t.co/4ykV4UytlK" (@PabloEchenique, 2021-07-10, 983RT).	Grupo Parlamentario Confederal de Unidas Podemos-En Comú Podem- Galicia en Común and Grupo Parlamentario VOX.	Messages that denounce the term 'fake'.							

These messages were mainly posted by Vox parliamentarians and refer to citizen insecurity in a context in which the enemy is identified as "them" – an external agent or even a specific country (Morocco or China) – and where the "disloyalty" of the government was highlighted, as they did not defend Spain's interests against external "enemies". Similarly, tweets attacking specific groups (underaged immigrants and women) are worth noting, as there is an attempt to show the superiority of one group, "us", over these other groups ("them"). These messages were mainly posted by Vox parliamentarians.

Finally, there are messages that question the legitimacy of journalism and the media, especially in tweets posted by the spokespeople for Vox and Unidas Podemos, who also tweet messages that denounce (or accuse) fake content.

4. Discussion and conclusions

Beyond an interest in detecting false or misleading messages among MPs, the purpose of this research study was to explore parliamentary disinformation and investigate to what extent representatives of the Congress of Deputies in Spain contribute to generating informational disorder. We found that the tweets posted by MPs about the most popular disinformation topics (i.e.: COVID-19, Immigration, LGBTI and gender) only accounted for 14% of the total tweets analysed. This finding allows us to conclude that parliamentarians generate messages on a variety of topics and that their influence, in volume of messages, in generating informational disorder is limited.

Second, despite this small quantity of messages, we did note a disinformation rhetoric in the messages posted, not necessarily associated with veracity or deception, but with an argumentative and discursive construction, as noted by Hameleers and Minihold (2020). In this sense, we identified tweets from parliamentarians that contained certain discursive strategies such as accusing other representatives of being false, thus strategically contributing to generating institutional mistrust and apathy among citizens (Bennett & Livingston, 2018). The messages focused on criticising an institution, a government action or attacking a parliamentary counterpart are worth noting, as they reinforce citizens' distrust in political institutions and their representatives. The analysis we carried out allowed us to detect a predominant tendency of messages from parliamentarians aimed at delegitimising the "other" and groups whose ideology does not coincide with their own, through fostering polarised divisions between the internal group, "us", who do the right thing, and the "other", who does the wrong thing, thus creating a framework conducive to disinformation. In addition, the rhetoric of disinformation contained in the messages emphasises the antagonistic divide in society and in politics, where the inner group, the "goodies", is compared to the others, the "baddies", "corrupt" or "liars" (Jagers & Walgrave, 2007), thus contributing to shaping a black and white perspective of parliamentary activity, parliamentary representatives, and by extension, of society, juxtaposed with a corrupt and dangerous elite (Hameleers & Minihold, 2020). This is particularly worrying in the current context of an exponential increase of political discontent. The confrontation between representatives and who they represent usually ends up benefiting emerging political parties, whose discourses and attitudes are often harmful to democratic institutions.

Our analysis also allowed us to identify tweets sent by MPs accusing others of falsifying documents, and using labels to delegitimise or attack political opponents (Egelhofer & Lecheler, 2019). In addition, there were attacks on the legitimacy of journalism in messages from MPs accusing the media of being dishonest and deceiving or manipulating citizens (De-Vreese et al., 2018). Again, these messages are very worrying as they attack key institutions for simply allowing the proper functioning of democratic systems. Take for example, the damage done to the credibility of the media through Donald Trump's repeated attacks on it, usually done through his Twitter account.

Within the set of tweets analysed, there are also messages that emphasise the need for the dominant identity groups to maintain and ensure a uniform racial order (Kreiss, 2021), and an attempt to affirm the superiority of their own identity through the stigmatisation of other groups. In this particular case, the entrenchment of white racial dominance occurs through exploiting pre-existing stereotypes and prejudices, undermining the political autonomy and legitimacy of marginalised people (in this case, immigrants, LGBTI, and women). Our findings provide significant data on parliamentary disinformation networks on Twitter. The results have shown that there are many messages that favour informational disorder and some,

although fewer, that reinforce this disorder. On Twitter, MPs can act as mobilising agents to current polarising dynamics (Esteve-Del-Valle & Borge, 2018) or they can adopt a more dialogic attitude, such as by arguing different positions through the use of reasoning based on facts (Esteve-Del-Valle et al., 2020). The health of the public sphere depends in part on the attitudes that MPs adopt in these new online spaces. Habermas (2006) reflected on the effect that social networks – as information (or disinformation) flows – can have on generating reasoned opinions. We thus expect MPs, as central agents of this new sphere, to act responsibly, considering the consequences their behaviour has in this space. However, the responsibility of ensuring the civic functioning of the online parliamentary public sphere should not fall exclusively to MPs. The Spanish Congress or Senate can, for example, develop digital civic literacy programmes (civic media literacy; Mihailidis, 2018) with the aim of raising awareness among MPs of the pernicious consequences that a harmful use of social networks can have on the health of public debate, and provide them with the necessary tools to prevent them from spreading disinformation content via their social networks.

The main limitation of this study was its limited time and geographical framework, which conditions the issues addressed by the MPs based on the political and informational agenda of that space and time. The selection of the most widespread messages has also meant that other messages that may have contained disinformation were not included in the sample. However, this research is one of the first contributions to the literature outlining how disinformation and discredited content is configured in the communication of parliamentarians, which can be an influential rhetorical device to delegitimise incongruous versions of reality and achieve political success by emphasising consistent realities. In today's digital and fragmented information or disloyalty can be more influential than the dissemination of objective information. Of course, this study only collects a snapshot of the tweets posted by MPs. Although the sampling avoided bias, there is a possibility that sampling from a different period may yield different results. For future studies, expanding the control variables, considering the subject of the tweet sent by MPs and whether they have recently received negative media coverage and, perhaps, taking into account prominence through a medium other than Twitter followers, would be of interest.

Authors' Contribution

Idea, E.C.D.; Literature review (state of play), E.C.D, M.E.V.; Methodology, E.C.D., M.E.V. C.R.F.; Data analysis, E.C.D., C.R.F.; Results, E.C.D., C.R.F.; Discussion and conclusions, E.C.D., M.E.V.; Writing (original draft), E.C.D., C.R.F.; Final reviews, E.C.D., M.E.V., C.R.F.; Project design and sponsorship, E.C.D, M.E.V., C.R.F.

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Quality recognition as a prescriber against disinformation

Reconocimiento de la calidad como prescriptor contra la desinformación



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ABSTRACT

Hybrid media context and the infodemic have increased the threat of disinformation, particularly among young people who mostly consume digital content. This article aims to identify the competencies needed to detect low-quality content linked to disinformation by Journalism and Communications undergraduates from Argentina, Chile, and Spain. Based on a double comparative study by countries and levels of education, it tries to predict the skills of future journalists in recognising false information. From an online questionnaire, the participants (N=300) evaluated the quality observed (minimum, average or excellent) and the problems detected from 12 items published in both conventional and pseudo-media. The comparison of results with the expert group shows that about 60% of the students have difficulties in identifying quality accurately and that this ability is higher in the advanced groups. From a selection of five news items, the participants were only able to successfully report 25.3% of the real mistakes in the texts. The correct identification of these mistakes improves in news related to the COVID-19 pandemic. Conclusions reveal that undergraduates overestimate their ability to detect disinformation, with a self-perception of 3.46 out of 5. The results also indicate that their media diet combines digital media and social media as a priority, while traditional media have a residual nature.

RESUMEN

El contexto mediático híbrido y la infodemia han incrementado el peligro de la desinformación, sobre todo entre los jóvenes, que mayoritariamente consumen contenidos digitales. Este artículo tiene como objetivo conocer las competencias y habilidades para detectar contenidos de baja calidad vinculados con la desinformación por parte de estudiantes de Periodismo y Comunicación de Argentina, Chile y España. A partir de un doble estudio comparativo, por países y nivel de formación, se pretende determinar las destrezas de futuros periodistas en el reconocimiento de información falsa. A través de un cuestionario online, los participantes (N=300) evaluaron la calidad observada (mínima, media o excelente) y los problemas detectados a partir de 12 ítems publicados tanto en medios convencionales como en pseudomedios. La comparación de resultados con el grupo experto muestra que cerca del 60% del alumnado tiene dificultades para identificar la calidad de forma precisa y que esta habilidad es mayor en los grupos avanzados. De una selección de cinco noticias, los participantes solo pudieron reconocer con éxito un 25,3% de los errores que podían observarse en los textos. La identificación mejora en noticias vinculadas con la COVID-19. El estudio revela que el alumnado sobrevalora su destreza para detectar desinformación, con una autopercepción de 3,46 sobre 5. Los resultados también señalan que su dieta mediática combina de forma prioritaria medios digitales y redes, mientras que los medios tradicionales tienen un carácter residual.

KEYWORDS | PALABRAS CLAVE

Disinformation, fake news, information quality, media literacy, university students, journalism. Desinformación, noticias falsas, calidad informativa, competencia mediática, estudiantes universitarios, periodismo.

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1. Introduction and state of the art

1.1. Journalistic quality, credibility in the media, and disinformation

Mistrust in the media is often due to people's perception that the media generate disinformation (Masip et al., 2020). The recent economic and business model crisis has contributed to this (Franklin, 2014; Ryfe, 2019), in turn resulting in a reduction in journalistic quality standards (Gómez-Mompart & Palau-Sampio, 2013; Gómez-Mompart et al., 2015). Various studies have highlighted serious deficiencies affecting its social credibility, including a lack of transparency and representativeness; politicisation; hidden agendas associated with commercial interests; superficial coverage of stories; rupture of control mechanisms, and the spreading of inaccurate or biased news (Lacy & Rosenstiel, 2015; Newman & Fletcher, 2017).

The peculiarities of the new hybrid communication context must also be added to the above problems that conventional media has (Chadwick, 2017). In this context, there are actors who have disinformation objectives that are not always easily identified by a public with poor media literacy (García-Ruiz et al., 2014) and who mainly consume news from social networks (Romero-Rodríguez & Aguaded, 2016a; Newman et al., 2021), detached from the informative matrix. This has facilitated the creation and spreading of hoaxes on digital platforms which is particularly significant in the lbero-American region because of the uncertainty and fear generated by the COVID-19 pandemic (Gutiérrez- Coba et al., 2020). A study on how digital audiences in Argentina, Chile, and Spain assessed online disinformation showed that this group was concerned about biased news and news that had been made up for political or commercial reasons, while they were less concerned about problems associated with a lack of journalistic quality (Rodriguez-Virgili et al., 2021).

These three countries have witnessed the spread of disinformation and the danger it poses to society and security (Salaverría, 2021). During the first months of the pandemic in Argentina, there was growing concern (Nielsen et al., 2020), especially regarding misleading content about COVID-19 and its impact on the country's political and health system (Gamir-Ríos & Tarullo, 2022). In Chile, the group that most trusts social networks and gives the most credibility to false news was found to be the age range of 18 to 24 years (Grassau et al., 2019). Finally, in Spain, the impact of disinformation has been seen in the political (Paniagua-Rojano et al., 2020), scientific (Salaverría et al., 2020), and economic fields (Romero-Rodríguez & Aguaded, 2016b).

1.2. Communications students addressing false content

In recent years, a variety of research studies have explored the need for Gen Z to be trained in media literacy, to equip young people with strategies that can develop a critical awareness of the media and, in particular, of digital platforms (Mcdougall, 2019; Silvaira, 2020). Young people use digital platforms more than any other media to access information (Catalina-García et al., 2019), consolidating a trend that was monitored over years (Casero-Ripollés, 2012) and which in turn motivated research into why university students share false content in different countries (Tarullo & Frezzotti, 2021).

Madrid-Morales et al. (2021) attribute a high political commitment and a desire to have fun as the main motivations for exchanging disinformation, while research by Leeder (2019) found that the willingness of university students to share false news through social networks did not depend on the veracity that they attribute to the content. One of the main problems seen is the difficulty in establishing the reliability of sources. Credibility is associated with factors such as the trust generated by the media disseminating the information (Herrero-Diz et al., 2019), or whether it is shared through the individual's interpersonal network, in an essentially playful content consumption, which seeks to maintain and develop contacts with other users (Eger et al., 2020). However, reliability is not a decisive attribute in media consumption, as shown by Pérez-Escoda et al. (2021), who also argue for media literacy from a critical perspective.

Future journalists from Gen Z attract significant attention, both because of their motivation to fight against disinformation and specific training and the implications that their professional performance will have for society. In this vein, certain studies have focused on how Journalism and Communications students assess the current disinformation environment, to analyse their opinions and attitudes towards (Mendiguren et al., 2020; Martín-Herrera & Micaletto-Belda, 2021), their perception of (Catalina-García et al., 2019; Antunes-Sobral & Nina-de-Morais, 2020; Tejedor et al., 2021b) and preparation to identify

(Cruz & Morais, 2020) fake news. The results of these works have shown that these students are aware of the disinformation problem, have developed a certain distrust towards the information received, and have sometimes believed certain content that was inaccurate, which leads them to acknowledge that there is a certain difficulty in detecting fake news. This vulnerability seems to have been emphasised with the infodemic crisis caused by the COVID-19 pandemic, a period during which most of these students state having received false news (Martín-Jiménez et al., 2021; Tejedor et al., 2021b). Despite most of this research being limited to national contexts, some comparative analyses have shown variations between countries in the way these students deal with disinformation (Catalina-García et al., 2019) and evaluate social networks as channels that foster its spread (Tejedor et al., 2021a).

The focus of this research is a transnational comparative analysis, and its objective is to explore the skills and abilities of trainee journalists in identifying the content that presents serious problems from the perspective of quality and professional ethics. In this sense, we have developed a two-level comparative study: the first explores first-year (n1) and senior students' (na) degrees of training, while the second analyses countries – Argentina, Chile, and Spain – with the aim of establishing differences and similarities. The selection of three Spanish-speaking countries facilitates access to the same texts, while geographic diversity allows us to analyse the extent to which proximity to topics ensures greater or lesser ease in detecting problems of quality associated with disinformation. This study aims to answer the following research questions:

- RQ1 What media do Journalism/Communications students use to access information? Do they vary according to educational level or country?
- RQ2 What is their ability to adequately identify journalistic quality? Do these skills improve when they are addressing pseudo-media or inaccurate content?
- RQ3 Do students adequately recognise poor quality?
- RQ4 How well do students believe they can identify pseudo-information (self-competence)? Does it differ from their actual demonstrated ability?

2. Materials and methods

The purpose of this research is to explore the skills of Journalism and Communications students (N=300) from Argentina (n1=60, na=40), Chile (n1=60, na=40), and Spain (n1=60; na=40) in identifying quality information and false or biased content in media pieces. The study investigates future journalists' information consumption, perceptions, abilities, competence, and skills, which is why we have chosen to omit the names of the five universities the students attend. An anonymous online questionnaire was sent through the LimeSurvey platform, and answered during October and November 2021, taking an average of 30 minutes to complete.

	Table 1. List of publications submitted for evaluation										
ID	Title	Media / Nature	Quality	Scope							
N1	Forest fires in Algeria have been caused by Israeli drones.	Mpr21 / Pseudo (PS)	Poor	INT							
N2	A baby suffered for 10 hours on top of a tray before dying after an abortion.	Radio Popular Multimedios San Luis / Conventional (CON)	Poor	ARG							
N3	Piñera announced his "winter plan" with CNI/Nazi style bracelets.	Primera Línea Revolucionaria Chile / PS	Poor	СНІ							
N4	Pfizer beaches protocol by falsifying tests to obtain FDA approval.	Mpr21 / PS	Poor	INT							
N5	Cristina's path towards barbarism, the fallera who became a jihadist.	ABC / CON	Average	SP							
N6	Evo Morales enjoys an expensive yacht in Argentina.	Eldiario.net / PS	Poor	ARG							
N7	NASA already knows the EXACT date on which a meteorite will destroy the Earth.	Mediterráneo digital / PS	Poor	INT							
N8	People with non-binary IDs vote for the first time.	Mdz /CON	Average	ARG							
N9	Massive support for the 90-year-old woman whose house was taken over by a Moroccan squatter: "We'll help you".	Altavoz de Sucesos / PS	Poor	SP							
N10	French champagne and luxury watches in the Valencia urban development corruption scandal.	ABC / CON	Average	SP							
N11	INDH investigates complaints of torture in the Baquedano metro: they found blood on the floor and ties.	Página 7 / PS	Poor	СНІ							
N12	Biden has enough evidence to conclude that COVID-19 escaped from a Chinese laboratory.	Alerta Nacional / PS	Poor	INT							

To study the skills of the student group participating in the journalistic quality evaluation, we selected 12 digital publications (Table 1) that fell within the scope of the three national countries involved in the study (8) and a global perspective (4). Two of the publications focused on the COVID-19 pandemic and the others addressed issues of politics, society, science, or rights. Most of the pieces were taken from pseudo-media (Palau-Sampio, 2021) (7), and the rest were from conventional media (5) platforms. The twelve publications contain quality and journalistic ethics issues.

The study's participants read the headline and the first paragraphs to evaluate the following: 1) the quality of the piece (poor, average, or excellent) and 2) the problems detected, by choosing from a list of 12 options¹. In addition, they responded to the following: 3) the way they preferred to access information; and 4) their perception of disinformation. The results of the online questionnaire were compared with those of the expert group, made up of nine Journalism and Communications professors from three universities in the countries analysed, who set the comparative values regarding the quality observed and the problems detected. Each of them responded separately to the questionnaire and, after collating the results, a final consensus was established to determine the reference values.

The quantitative data obtained from the questionnaires were subjected to descriptive and inferential statistical analyses, using a test for homogeneity of proportions (Chi-squared) to test response distributions across countries and grades, and a test for independence (Chi-squared) to test the possible associations between the variables – competence, country and year. The analyses were performed using the free statistical software R 4.0.3 (2020).

3. Analysis and results

3.1. Origin of the media diet

The results of the study reveal that nearly three-quarters of the students who answered the questionnaire use digital media to access information, compared to the other quarter who use one of the three traditional channels (press, radio, and television). However, notable variations were observed, both between countries and between course years within the same country.

The students from Argentina, Chile, and Spain present statistically significant differences (p=0.000499) in their main ways of accessing current event information (Figure 1). While social networks are the preferred means of accessing information for six out of ten Argentinian students, in Spain

this proportion drops to 39%, and social networks are used by a quarter of the students in Chile. However, a higher percentage of students (42%) in Chile use digital media as their main channel, which practically doubles the results of Argentina (24%). The sum of digital access translates into a residual consumption of conventional media in Argentina, where barely one in six students opts for television, radio, or the press. This percentage is around a third of the students in the case of Spain and Chile, although with substantial differences in the type of media chosen. While in Chile, the radio plays a prominent role, in Spain and Argentina television is the traditional media with the greatest weight. The printed press is, in any case, a

minority in the countries being studied.

In all three countries, there is a growing trend to obtain information through digital channels as the degree course progresses, while the weight of conventional channels decreases. The distribution of responses by the level of training is not statistically homogeneous in all media and social network options: in Spain, radio consumption is irrelevant in senior course years, while press consumption is more popular; a similar trend can be seen in Chile, although the radio remains the most popular; and, in Argentina, the press disappears altogether while the radio increases slightly.

3.2. Students' ability to adequately identify journalistic quality

The percentage of students who correctly recognised the quality of the news – when compared to the values assigned by the expert group – is approximately 40% of the total number of participants who answered the questionnaire (Table 2). The study data allows us to observe much variability in students' perception of the quality and in the correspondence with news of poor and average quality. The most extreme cases of coincidence between experts and students were with N3 (74%) and N4 (18.7%). In N3, most students identified the poor quality of the news about the former president of Chile, Sebastián Piñera, wearing a Nazi-style bracelet at a formal event. In N4, less than one in five students adequately rated the quality of the news about Pfizer and its vaccine approval. Both pieces of news were published by pseudo-media.

Generally speaking, differences are observed both between countries and course years: the student group from Spain exceeds the average for adequately identifying quality (42.6%), the Chilean group slightly exceeds it (40.9%) and the Argentinian group scored below average (36.9%). The results by course year are consistent with the acquisition of professional skills throughout the degree in Spain and Chile, i.e. the ability of senior students from these countries scored almost seven percent higher. In contrast, in Argentina, there is a drop of two and a half percent in this skill. These results are reflected in the perception of five news items, where first-year students showed greater agreement with the values of the expert group compared to senior students. Conversely, this circumstance was limited to two discrepancies in Spain (N5 and N10) and in Chile (N1 and N8).

Table 2. Correct identification of news quality												
			Argentina			Chile			Spain			
News	Total (n=300)	1st year (n=60)	Senior (n=40)	Average	1st year (n=60)	Senior (n=40)	Average	1st year (n=60)	Senior (n=40)	Average		
N1	48.7%	45.0%	47.5%	46.0%	61.7%	60.0%	61.0%	33.3%	47.5%	39.0%		
N2	57.3%	46.7%	55.0%	50.0%	43.3%	57.5%	49.0%	68.3%	80.0%	73.0%		
N3	74.0%	70.0%	72.5%	71.0%	61.7%	72.5%	66.0%	85.0%	85.0%	85.0%		
N4	18.7%	33.3%	17.5%	27.0%	21.7%	22.5%	22.0%	3.3%	12.5%	7.0%		
N5	43.3%	31.7%	30.0%	31.0%	38.3%	47.5%	42.0%	71.7%	35.0%	57.0%		
N6	34.3%	41.7%	42.5%	42.0%	25.0%	40.0%	31.0%	23.3%	40.0%	30.0%		
N7	30.0%	26.7%	25.0%	26.0%	31.7%	30.0%	31.0%	25.0%	45.0%	33.0%		
N8	29.3%	23.3%	17.5%	21.0%	40.0%	32.5%	37.0%	26.7%	35.0%	30.0%		
N9	33.7%	38.3%	27.5%	34.0%	23.3%	37.5%	29.0%	28.3%	52.5%	38.0%		
N10	43.0%	35.0%	35.0%	35.0%	46.7%	47.5%	47.0%	51.7%	40.0%	47.0%		
N11	23.0%	23.3%	12.5%	19.0%	30.0%	42.5%	35.0%	6.7%	27.5%	15.0%		
N12	46.3%	40.0%	42.5%	41.0%	36.7%	47.5%	41.0%	53.3%	62.5%	57.0%		
Average	40.1%	37.9%	35.4%	36.9%	38.3%	44.8%	40.9%	39.7%	46.9%	42.6%		

RQ2 analyses whether identifying journalistic quality will be more accurate according to the geographical proximity of the students to the information. Of the three pieces published in Argentina (Table 1) – except one, the alleged holidays of the former president of Bolivia, Evo Morales, on an expensive yacht off the coast of Argentina, where he remains isolated – local students showed a higher level of

agreement than their peers. In the three items published in Spain, local students showed, on average, greater agreement with the expert group. For their part, in the texts referring to Chilean issues, conclusive results were not obtained: in the news piece about the former president wearing a Nazi-style bracelet, students showed a worse skill-set than the others, despite their results being closer to those of the expert group in the news about the alleged torture centre.

In the four international news pieces, skills correctly identifying quality were significantly varied according to the theme. The Spanish students showed less skill in assessing the items on forest fires in Algeria (N1) and with Pfizer (N4), while they scored closer to the group of experts than those from Argentina and Chile in the texts referring to NASA (N7) and Biden (N12).

The results indicate that there is no significant relationship between the origin of the publication – conventional or pseudo-media – and the students' perception of the quality of the news. As established by the expert group, the students who answered the questionnaire believed that part of the information published by conventional media met a certain quality level – an average quality – although its recognition (48.1%) was given in a lower percentage than adequate (60%). The evaluation of the pieces extracted from pseudo-media differed more from the benchmark value. Thus, while the expert group established that all the information on these channels had poor quality, the participating students gave an average score to more than half the pseudo-information news pieces (51.2%), which points to difficulties in detecting the poor quality of information regardless of the dissemination channel.

3.3. Acknowledgement of errors

With the aim of analysing the ability of students to detect information quality problems in more depth, a specific theme – referring to rights and freedoms, with ethical implications or one that was very controversial – was selected for each country. From Argentina, a news item referring to an abortion that was not penalised (N2) was chosen; from Chile, an alleged case of torture (N11) was used; and from Spain, an accusation that a person of Moroccan origin took over an elderly woman's house was employed (N9). In addition, two items referring to the pandemic were included: one on the approval of the Pfizer vaccine (N4) and another on Biden's evidence regarding the origin of COVID-19 (N12). The expert group rated the quality of the five pieces as poor and highlighted the specific problems each presented.

The results (Table 3) of the error percentage frequencies correctly identified by the students for the five items indicate difficulties in detecting the problems observed by the expert group, with 25.3% of the total possible errors. The data show that a higher degree of training improves Journalism and Communications students' competence in detecting information quality problems: the percentage of correct observations ranges from 19.9% for first-year students in Argentina to 34.6% for senior students in Spain. The proportion of identified errors differs significantly across the course year (p=0.02396). If looking at ability by country, students in Spain were able to successfully identify a higher percentage of errors (27.7%), followed by those in Chile (26.7%), while students in Argentina detected a smaller number of the problems highlighted by the expert group (21.4%). Thus, the differences between countries can be considered statistically significant when comparing the results between Argentina and Chile (p=0.000002) and Argentina and Spain (p=<0.00001), although not between Chile and Spain (p=0.3687).

Table 3. Errors correctly identified from the total										
		Argentina			Chile		Spain			
	1st year	Senior	Total	1st year	Senior	Total	1st year	Senior	Total	Total
Observable errors	559	426	985	656	495	1151	629	595	1224	3360
Correctly identified errors	358	285	643	451	350	801	417	415	832	2276
% of total detectable correct errors	19.9	23.8	21.4	25.1	29.2	26.7	23.2	34.6	27.7	25.3

Geographical proximity to an event by students may, in some cases, favour a greater ability to successfully identify quality problems (Figure 2), but not conclusively. Although in the evaluation of the N9 news piece, from Madrid, the Spanish student group showed greater skill than the average in the other countries – including first-year and senior students – they still only correctly recognised 12.6% of the

total number of errors. Of the five pieces submitted for evaluation, this was the pseudo-information piece whose quality errors proved most difficult to recognise. In fact, only the absence of contrasting sources (observed by all three groups) and the breach of journalistic ethics (indicated by students from Spain) were significantly identified.

In the same vein, Chilean students showed a greater ability to successfully detect quality problems in the N11 piece – both the first-year (19.5%) and senior (20.4%) students. However, that piece follows the N9 piece, which has the lowest percentage of expert group-student group agreement in Chile (19.9%). In this case, senior students from the three countries correctly recognised that the information did not contrast sources and certain groups also identified inappropriate wording (senior students, Spain) or the presence of speculation to the detriment of the data (Chilean first-year and senior students).

The N2 piece, from Argentina, was the piece that had the highest percentage of respondents correctly identifying its total errors. Despite that, the local student group obtained the lowest rate of correct answers: the country's senior students correctly indicated 49.4% of the inaccuracies, 11% less than the group from Chile, and 27% less than the group from Spain. Most correctly recognised that the news piece did not correctly identify the sources, in addition to not contrasting them (senior students, Chile), was not written appropriately (senior students, Spain), and mixed objective data and opinion (senior students, Argentina and first-year and senior students, Spain).

Finally, the two pieces about COVID-19 offered better results than N9 (9.8% overall average) and N11 (14.7%) in terms of the students' ability to detect information quality problems, being only behind the skills demonstrated in the N2 piece (57%). Senior students from Spain more accurately detected the errors in N12 (31.8% of errors correctly identified) and N4 (20.4%). Students were less successful in the Pfizer news piece (N4), in which the identification of errors ranged between 15% (first-year students, Argentina) and 25.6% (senior students, Spain), especially regarding the mixing of objective data and opinion and the non-verification of sources. In the case of the N12 news piece, the percentage of properly identified errors was higher, ranging from 25.7% (first-year students, Argentina) to 42.1% (senior students, Spain), especially regarding the incorrect management of the sources.

3.4. Perceived self-competence in identifying disinformation

The students participating in the study express an average to high self-perception of their ability to differentiate information from pseudo-information, with a score of 3.46 out of 5 (Table 4), which represents maximum competence. The chi-squared test confirms the existence of a statistically significant

relationship (p=0.000499) between the students' ability to detect disinformation and their country and course year.

The self-competence perceived by the course shows an increase in ability as the course progresses, with an average increase of almost five tenths between first-year students (3.28) and final-year students (3.73) from the three countries. However, the differences between countries and course years are substantial. In Chile, more than a third of senior students believe they are very competent in detecting disinformation, while this figure drops to 25% in Argentina and 15% in Spain. In all three cases, the increase compared to the maximum assessment scored in the first year is relevant. At this level of undergraduate studies, the average abilities (score of 3 and 4 out of 5) offer important differences, with 90% of Chilean students scoring their competence within these ranges, compared to 83% in Spain and 72% in Argentina.

Table 4 Identification of multiturend calf commetence											
Table 4. Identification of quality and self-competence											
in identifying disinformation											
Argentina Chile Spain											
	1st year	Senior	1st year	Senior	1st year	Senior					
Agreement with the quality established by the expert group	37.9%	35.4%	38.3%	44.8%	39.7%	46.9%					
Average	36.9% 40.9%					42.6%					
Total						40.1					
Self-perception of the ability to detect disinformation (1 to 5)	3.23	3.65	3.48	3.95	3.13	3.6					
Average		3.4		3.67		3.32					
Total						3.46					
1	5%	3%	2%	5%	0%	0%					
2	15%	10%	2%	3%	15%	13%					
3	40%	33%	50%	20%	58%	30%					
4	32%	30%	40%	38%	25%	43%					
5	8%	25%	7%	35%	2%	15%					

The average self-competence score given to detect disinformation varies among the three countries, ranging from 3.32 (Spain) to 3.67 (Chile). When self-perception of the ability to detect disinformation is compared to the ability to correctly identify quality, the results reveal a major contrast. In the case of Chile, a higher score in being sure of oneself does not have a comparable score in the identification of quality. Among the Argentinian students, there is an average score in certainty, but the actual ability to detect weaknesses in journalistic quality is lower. Additionally, Spanish students have less confidence in their potential but score higher in detecting problems in quality, although the overall results barely exceed the global average by two percent.

4. Discussion and conclusions

In the context of disinformation and the uncertainty of its effects (Bennett & Livingston, 2018), this study focuses on the important issue in the training of future journalists (Ireton & Posetti, 2018): their ability to recognise journalistic quality as the touchstone in identifying fake content. In recent years, various investigations have analysed the media competence of university students and their perception of disinformation (Mendiguren et al., 2020; Catalina-García et al., 2019). This comparative study delves deeper and assesses the critical skills of students called to lead the fight against disinformation.

The results show six out of ten students have significant difficulties in identifying the quality of the information, which suggests they might have serious problems during their future careers given that the recognition of journalistic standards is an essential quality for this job (Meyer, 2019). Although skills improve as the training progresses, the evolution is far from optimal, since it does not reach even half the students. Similarly, although the differences between some of the countries are significant, none achieve excellent results. Skills do not even improve much when assessing news pieces from pseudo-media, which shows the difficulties students face in a hybrid context of communication.

The obstacles in identifying disinformation are revealed when comparing the errors students detected with those the expert group highlighted. Along with the results that only a quarter of the errors were successfully identified, this study focused on the five news items which offered other significant findings regarding these capabilities. First, the correct identification of errors in quality is greater in news related to the pandemic, which indicates that students may be more alert to information related to COVID-19 as a result of awareness campaigns about the infodemic (Salaverría et al., 2020). Second, the difficulties in detecting disinformation in pieces that have circulated in students' own countries and that had already been rejected by verification platforms and conventional media highlight two issues. The first issue is the limited effects that discrediting these pieces had (Guess et al., 2018), even among a group such as journalism students. The second issue is the effects that polarisation (Vicario et al., 2019) can have on identifying problems of quality in issues such as the decriminalisation of abortion in Argentina and the "threat" of migration fostered by the extreme right in Spain. Third, these data contrast with the self-perception students have of their abilities, much higher than the results found in this study.

Although the results on media consumption among journalism and communications students reflect the general trend of the population towards a greater preference for social networks and digital media (Newman et al., 2021), it is significant that the senior students in Spain – those who identified the most errors correctly – is the group that most consumes their news through the press. This suggests that their commitment to a media of recognised quality could favour their ability to detect false content.

The conclusions of this research study pose a serious challenge for the training of journalists. The acquisition of skills to produce current event information that is carried out in educational centres must be complemented with training in improving students' critical capacity to select and evaluate journalistic content and in the use of collaborative verification tools (Bhaskaran et al., 2017). The practice of consuming quality information, and its adequate recognition through the characteristics that identify it, should be understood as useful tools for the training of journalists and tools that can give students sufficient criteria to provide informative certainty in a hybrid communication context characterised by the increase in the circulation of false content.

The limitations of this research study can be opportunities to conduct other studies such as using a larger sample, new journalistic themes, and formats, and other comparative proposals between different universities in the countries analysed, with the aim of contrasting the scope of the results. Similarly, extending this research to focus groups that could offer a qualitative in-depth study of the difficulties encountered would be of interest.

Notes

¹Does not identify sources; Does not contrast sources; Based on speculation, no data; Does not provide data confirming the headline; Mixes objective data and opinion; Breaches journalistic ethics (treatment of vulnerable groups or rights and freedoms); Inappropriate writing style for a news piece; Contains grammatical errors; Discordant relationship between headline/content; Includes unidentified acronyms; Does not identify the location of the event; Others.

Authors' Contribution

Idea, D.P.; Literature review (state of the art), A.C., D.P., R.T., P.C.; Methodology, D.P., A.C.; Data analysis, D.P., A.C., R.T., P.C.; Results, D.P., A.C., R.T., P.C.; Discussion and conclusions, D.P., A.C., R.T.; Writing (original draft), D.P., A.C., Final reviews, D.P., A.C., R.T.; Project design and sponsorships, D.P., A.C.

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The life of COVID-19 mask memes: A diachronic study of the pandemic memescape



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ABSTRACT

Taking as its point of departure a fine-tuned definition of an Internet meme (vis-à-vis a memetic construct), this paper reports the findings of the first diachronic study of memes, the focus being on mask memes on the vast COVID-19 mask memescape evolving in the wake of the pandemic, relative to the changing socio-political situation. The study capitalises on a diachronic corpus of user-tagged COVID-19 mask memes (posted online from January 2020 to January 2021) collected from Google through a Python script. Based on a grounded-theory approach, ten memetic categories (clustered into four groups) are extracted and examined through a multimodal discourse analytic lens. The diachronic quantitative analysis shows that the memetic constructs, inspired by the current socio-political situation/events and facilitated by the socio-political context (e.g. going into lockdown), seem to persist, albeit with varied intensity, for the best part of the year, with many individual memes going viral. Memes' and memetic constructs' long lifespan is indicative of users' primary goal, which is to share interesting and/or humorous (not always newly minted or relevant) items for the sake of fun, regardless of the memes' nature (i.e. autotelic humour for its own sake or users' commentaries on the surrounding reality).

RESUMEN

Tomando como punto de partida una definición precisa de un meme de Internet (frente a un constructo memético), este artículo pretende compartir los resultados obtenidos del primer estudio diacrónico sobre memes, centrado específicamente en los memes de mascarillas en el amplio panorama de memes surgido a raíz de la pandemia del COVID-19, asociado a la cambiante situación sociopolítica. El estudio utiliza un corpus diacrónico de memes con mascarillas para el COVID-19 etiquetados por usuarios (publicados en Internet desde enero de 2020 hasta enero de 2021) extraídos de Google mediante un script de Python. Sobre la base de un enfoque de teoría fundamentada, se extraen y examinan diez categorías meméticas (divididas en cuatro grupos) a través de una lente analítica de discurso multimodal. El análisis cuantitativo diacrónico muestra que los constructos meméticos, inspirados por la situación/acontecimientos sociopolíticos actuales y facilitados por el contexto sociopolítico (por ejemplo, el confinamiento), parecen persistir, aunque con intensidad variada, durante la mayor parte del año, lo que permitió que muchos memes se volvieran virales. La longevidad de los memes y los constructos meméticos es indicativa del objetivo principal de los usuarios, que es compartir elementos interesantes y/o humorísticos (no siempre nuevos o relevantes) por diversión, independientemente de la naturaleza de los memes (es decir, humor autotélico por sí mismo o comentarios de los usuarios sobre la realidad circundante).

KEYWORDS | PALABRAS CLAVE

COVID-19 mask, diachronic corpus, meme, memetic construct, humour, viral. Marcarillas COVID-19, corpus diacrónico, meme, constructo memético, humor, viral.





1. Introduction

1.1. Background and purpose of this study

Previous research has shown amply that humorous Internet memes can serve as users' responses to, and commentaries on, the current socio-political or socio-cultural facts, with COVID-19 being no exception. The COVID-19 pandemic has inspired a plethora of relief-giving (Bischetti et al., 2021) online humour. In turn, this has given rise to a flurry of research that, with very few exceptions (Murru & Vicari, 2021; Dynel, 2021), addresses mainly the recurring topics of memes (Lemish & Elias, 2020; Aslan, 2021; de-Saint-Laurent et al., 2021; Norström & Sarna, 2021). This paper contributes to the COVID-19 humour research, based on an automatically generated corpus. Rather than analyse topics, this contribution answers a twofold research question: it distils the categories of the memes in the light of their form, content and stance (Shifman, 2013) and, most importantly, it examines these categories diachronically. Such a diachronic approach does not seem to have been adopted in meme research so far, while online humour (taken as a whole) has been subject to diachronic analysis only intermittently (Demjén, 2018; Archakis & Tsakona, 2021).

This study zooms in on COVID-19 mask memes, a salient and socially relevant COVID-19 topic (besides quarantine and lockdown), circulated from January 2020 to January 2021, the time which brought the first shocking news, numerous controversies and diverse opinions about mask-wearing (unlike other counter-measures before the arrival of vaccines: social distancing and hand hygiene).

This project is premised on the assumption that the memescape that addresses a current and "hot" topic, such as that of COVID-19 mask memes, will respond swiftly to the changes in socio-cultural and political arenas. Based on the assumption that memes reflect the current events (Ross & Rivers, 2017; Dynel & Poppi, 2021; Norström & Sarna, 2021), the central hypothesis is that COVID-19 mask memes should vary across the months, emerging in the wake of the socio-political developments concerning the pandemic and its effects only to fall into oblivion when the memes' novelty has worn off, or when the specific issues have become irrelevant. The examination of the automatically generated corpus, in qualitative and quantitative terms, yields interesting conclusions about the circulation of not only COVID-19 mask memes, but also memes in general. First, the definition of an (Internet) meme is fine-tuned to better account for individual items and memetic virality.

1.2. Memes

According to the original biology-rooted definition proposed long before the digital age, a "meme" is a cultural unit, a piece of cultural knowledge, that infects individual minds through copying or imitation; thereby, it proliferates among individuals and across societies through replication, potentially undergoing necessary mutation, very much like the "selfish" gene (Dawkins, 1976; Blackmore, 1999; Shifman, 2013; Wiggins & Bowers, 2015). Hence, as Wiggins (2019) summarises, the Dawkinsian meme is an idea that spreads virally (originally outside of the Internet and contemporarily via the Internet) without any discernible modification or remixing. However, this idea of a change/remix is a crucial definitional component of an "Internet meme", which is how it is distinguished from a viral one. The latter snowballs across online platforms in an unchanged form (Shifman, 2013; Wiggins, 2019) and may serve as the basis for an emergent meme (Shifman, 2013).

Consequently, the key difference between the two notions is variability; "whereas the viral comprises a single cultural unit (such as a video, photo, or joke) that propagates in many copies, an Internet meme is always a collection of texts" (Shifman, 2013: 56). The pending queries are how similar these "texts" (or rather, multimodal, digital items) need to be and how this similarity can manifest itself in order for the items to constitute a meme.

Based on Shifman's (2013: 7) proposal, the "texts" that form "a meme" are "a group of digital items sharing common characteristics of content, form, and/or stance", which allows for much leeway in terms of what qualifies as an item belonging in a meme. Thus, Shifman's (2013) conceptualisation presents a meme as being constituted by numerous digital items taken together, which is often misquoted and misunderstood. This brings the discussion to the problem of the polysemy of the term "meme", which Shifman's definition skilfully straddles.

A meta-analysis of the ample communication and socio-cultural research on Internet memes leads to a conclusion that there seem to exist two markedly different approaches to this notion, with many works making use of both senses without actually recognising the polysemy. On the one hand, in line with the Dawkinsian conceptualisation, an Internet meme is conceived as a viral idea or a cultural item that gets replicated in various online instantiations necessarily through mutation and remixing (Mielczarek, 2018; Wiggins, 2019). In this sense, memes are thought to be viral (Wiggins, 2019) in line with Dawkins's thought even if, at the same time, they should not be mistaken for digital items known as "virals". On the other hand, presumably, a more popular definition (which is in line with its folk understanding) presents an Internet meme as the very instantiation of a viral idea, namely as a multimodal digital item, typically humorous and "circulated, imitated, and/or transformed via the Internet by many users" (Shifman, 2013: 8-41). Overall, memetic productivity and creativity are the epitome of the social media culture labelled "remix" (Lessig, 2008) or "convergence" (Jenkins, 2006). Incidentally, on platforms dedicated to meme circulation, novelty and creativity are the central goals, with users earning their kudos by submitting items that are well received (e.g. awarded or upvoted) by other users.

In order to avoid confusing different understandings of what an "Internet meme", or just a "meme" (taken by default in studies on online communication), is and conflating virals with memes, a distinction is drawn between a "meme" and a "memetic construct". A meme is thus understood here as each individual multimodal instantiation of a memetic construct that, in turn, coincides with the Dawkinsian meme, that is the viral idea manifest in different iterations. A memetic construct that echoes across specific memes may concern content, form or stance; it may materialise, for instance, as an ideological meaning or a memetic template endowed with an inherent interpretation to be merged with the message carried by whatever is superimposed on it.

While a memetic construct may take up a stable position on memescape, specific memes typically arise only to "fall into virtual oblivion, outdone by newly minted iterations" (Mielczarek, 2018: 71). Many authors (Knobel & Lankshear, 2007; Shifman, 2013) have noted that memetic constructs are elusive, ephemeral entities showing a transient nature: they appear all of a sudden, generate some interest and quickly become a thing of the past. However, some memes and memetic constructs may resurface with old or new meanings in line with the basic premise of remix culture (Mielczarek, 2018). Moreover, as this study indicates, individual memes may actually go viral, being reposted in the same form across platforms.

2. Materials and methods

A Python script was built to collect randomised diachronic data from Google Images through a newly installed browser, Selenium. In the targeted search done on 28th February 2021, two queries were applied in English: "COVID-19 mask' + 'meme" and "coronavirus mask' + 'meme" with a data range parameter (after: YYYY-MM-DD before: YYYY-MM-DD) for each of the targeted months in order to retrieve items posted online from January 2020 to January 2021. Given the recurrence of the same items in the adjacent months (due to immediate repostings), memes posted every second month were ultimately selected as the representative dataset, capable of showing changes (January, March, May, July, September, November and January). Also, April was added to the set, given that many countries were on lockdown, at least for some part of the month, which is when meme productivity was expected to be the highest. Thanks to the new method of data collection (Dynel & Poppi, 2021), the automatically collated items bearing the user-generated tags in English constitute a randomised sample of the memescape, without favouring any platforms, which might have their own agendas, and without being determined by user engagement. Most importantly, this method minimises personal bias present at the stage of data collection whenever researchers compile humorous data manually, which duly reflect scholars' or their informants' individual preferences for some types of humour over others.

Working with this original corpus (n=3,497) divided into months, the research assistant subsequently manually removed merchandise advertisements and unequivocally unrelated images (falsely tagged). In another step, we deleted collages of various previously encountered memes and duplicates recurring within one month, both of which testify to specific memes going viral and receiving high user engagement. Thus, the main dataset (n=1,008), amenable to manual analysis, shows the following distribution of memes

across the eight months: January (n=102), March (n=131), April (n=203), May (n=112), July (n=99), September (n=168), November (n=180), and January 2021 (n=141).

The data were examined following a *grounded-theory* approach so that the categories would emerge from the corpus, dictated by the masks' roles in the memes. This also meant taking account of the memes' form, content and stance (Shifman, 2013). In general terms, the data were approached through a multimodal discourse analytic lens (Machin & Mayr, 2012). Hence, each meme was regarded as comprising multiple semiotic resources (Baldry & Thibault, 2006), with multiple visual and verbal modalities being relevant (e.g. the camera angle and distance, pose and gaze, and components' positioning).

Following an iterative procedure, the author identified ten mutually exclusive meme categories. The data were ultimately annotated through manual double-coding done by the author and her research assistant, who was instructed about the ten categories. The initial result of the double annotation was followed by a discussion of the subtle multimodal components so that agreement could be reached on each item with two different qualifications (n=71). Ultimately, all the memes in the corpus were divided into the ten categories, which proved the saturation of description. These ten categories fall into four groups (except for two broad ones, coinciding with specific memetic constructs), as presented in Section 4.

3. Analysis and findings

3.1. Qualitative findings

The corpus, comprised of eight monthly sub-corpora, is divided into ten mutually exclusive categories clustered into four groups centred around: 1. The type of mask worn by a subject in the image ("reports", "parodies", "pranks" and "spoofs"), 2. Evaluation of mask-wearing ("corrective", "chastising" and "skeptical"), 3. Masks being commonplace ("sign of the times" or "pre-COVID 19 times"), and 4. Masks as tools (not the conceptual focus) facilitating memetic humour construction ("props" or "background").



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As shown in Dynel (2021), many COVID-19 mask memes involve subjects, or what Kress and van-Leeuwen (2006) call "represented participants", that are typically people but also animals shown in the images by "interactive participants", i.e. the new media users who (re)post the memetic content online. Sometimes, the represented participant may coincide with the interactive participant, as is the case with selfies posted online for the first time, or the two may be collaborators. By contrast, represented and interactive participants may be strangers, the former being oblivious to their becoming the foci of memes, as is the case with the category dubbed "reports" (Figures 1A-1C).

Reports concern the memetic construct of masks and other items of clothing sincerely worn by subjects for protection against COVID-19. These subjects are typically captured in photographs unknowingly in public spaces by observers who find the protective measures so bizarre as to be amusing. These include make-shift items, such as the peculiar composition of plastic (Figure 1A), and other uncanny manifestations of protection, such as the multiple surgical masks worn simultaneously (Figure 1B) or the mask on the pet's head (Figure 1C). These photographs seem to have been taken at the beginning of the pandemic (as evidenced by the month of the original postings), when informational confusion about the new virus and the dearth of protective measures caused panic-stricken citizens to go to any lengths to avoid the virus. The strangely dressed humans and animals can be said to have unintentionally become the source of amusement, with the humour being the intended outcome of the meme (re)posters' online practices.

The "reports" category can be formally juxtaposed with memes also centred on subjects with peculiar masks or full attire, albeit worn (or only presented as if worn) in public spaces mainly for the sake of fun rather than protection, such as the newspaper beak (1D) or the dragon's head (1E). This category comprises two memetic constructs, "pranks" and "spoofs" (Dynel, 2021), which may sometimes be difficult to tell apart in practice, given users' Photoshop skills and lack of contextual evidence (such as the passer-by laughing at the subject in 1D). The label "prank" concerns subjects who mean to amuse other people they encounter in public places, whether or not cognisant of the pictures being taken and their imminent meme status. Spoofs, in turn, involve subjects whose looks are purposefully manipulated with the use of digital technologies, for the sake of only online receivers' fun, with the general idea being to poke fun at a subject's weird protection that they are (allegedly) wearing. Both pranks and spoofs contain an element



Another related category, mask parodies (Dynel, 2021), is a memetic construct that encompasses images, typically selfies, of subjects at home, exhibiting their newly designed masks, which they clearly have no intention of wearing in public but which are meant to humorously echo creative self-made masks (cf. the reports category). A case in point is the meme in 1F. It reports the unfortunate result of copying the popular advice involving the transformation of a padded bra cup into a mask; the predictable failure is due to the cup size, with the woman's masks being much too big for her and her children. This category also includes images of subject-less masks, such as those carved from bacon (1G). Overall, the three categories of memes rely on peculiar, often creative, masks being a source of humour, either as intended by the subjects, who may coincide with meme producers (pranks/spoofs and parodies), or without this intention (reports). It is also the concept of an ordinary medical mask per se or an otherwise known type of mask that may be a source of humour, as the following two categories illustrate, both relying on cultural references (Figure 2).

The category labelled "sign of the times" shows a salient memetic construct: masks being superimposed on faces known from various cultural artefacts, whether historical or contemporary, such as works of art (e.g. statues or paintings like Van Gogh's self-portrait in 2C), publically known individuals (e.g. Grumpy Cat in 2A), or cultural symbols, such as Benjamin Franklin on the US one-hundred-dollar bill (3B). Such memes play with the idea of the prevalence of protective masks in the COVID-19 times. Sometimes, an additional humorous effect arises when special features of the represented person are considered, as is the case with van Gogh's mutilated ear that would have made it impossible for him to wear a surgeon's mask.



The related category of pre-COVID-19 masks pertains to memes that feature various kinds of masks worn before the COVID-19 era, whether by fictional characters (Hannibal Lecter in 2D) or famous people (Michael Jackson in 2E). This memetic construct indicates that the topic of COVID-19 masks evokes users' memories of pop-culture masks, whether or not used for anti-viral protection. The protective function of masks is the topic of three other meme categories (Figure 3), two of which endorse adequate mask-wearing (3A-3D), whilst the third one questions the need for mask-wearing and its efficiency (3E-3F), collectively

reflecting the long-standing medical, political and legal debates held both on the personal level and in public media. In these memes, it is the topic and stance that determine the memetic construct at hand.

"Corrective" memes present medical rationale supporting the role of masks in limiting the spreading of the virus and offer advice on how masks should be worn properly. This is done, for instance, through the multimodal simile (3A) or the visual representation of the adequate vs inadequate (and sometimes even absurd) mask-wearing practices with the help of a dog (3B). In this vein, the "chastising" category encompasses memes that express a negative evaluation of people wearing face masks wrongly (as in 3C, below the nose, as done by Sheila Jackson Lee, a US politician presented by the meme creator as holding a special function during the Coronavirus crisis in the USA), or wearing masks that cannot possibly guarantee protection (cf. 3D, which shows a photograph of a television screen with a brass orchestra wearing masks with holes allowing the musicians to play but making the masks useless as protective measures). By contrast, memes classified as "skeptical" criticise masks based on the assumption that they do not stop the virus from spreading, as represented through the multimodal metaphor in 3E, as well as indicate some people's imperviousness to the repeated requests that masks be worn for the sake of mutual safety (cf. 3F, which merges a cynical statement with a metaphorical representation of a relaxed attitude).

Overall, the three categories of memes take mask-wearing as the central topic, with users presenting their stances on this issue. These have been isolated from among the memes constituting an eclectic group that relies on masks but does not address the topic of mask-wearing as the central focus and (unlike all the other previous ones) does not evince one memetic construct in the form of a single topic. This group contains a category dubbed "props", which is juxtaposed with the one that merely involves the use of masks as the "background" (Figure 4).



The "props" category is very broad and seems to be closest to memes understood as standard multimodal jokes, whilst the other categories discerned so far appear to be specific to COVID-19 mask memes. This heterogeneous category cannot be broken into any neat subtypes. However, some of the memes that use masks as their joke props can be thought of as humour based on wordplay (cf. the Corona beer inspiring fear in other drinks in the fridge hiding behind a mask in 4A) and visual play (the exotic-holiday beach image involving the use of surgical masks as waves in 4B) without much informative import or stance-taking, whilst referring to COVID-19 masks in one way or another. The point of these memes is just to make light of masks, which serve as joke props in the memes. Other memes in this wide-ranging category take masks as their point of departure to make personal commentaries, as is the case with the meme in 4C. It features a pop-cultural, intertextual reference to Bane (Batman's masked opponent from "The Dark Knight Rises") with a quotation from the film (top) followed by a comment on the COVID-19

sun-tan (4E). By contrast, albeit tagged "mask memes", some items seem to involve masks only as secondary items helping form the background of memes, rather than constituting their pivots. Such is the case with the plague doctor's mask accompanying the text that addresses the history of plagues occurring every 100 years in 4F. Moreover, memes belonging to this category may not be primarily, or only, about COVID-19 per se, as is the case with the critical meme in 4G that metaphorically juxtaposes unwise mothers' (irrational) means of coping with the coronavirus and lice at schools: an angry rebellion with no protective measures applied (represented by a bare-handed fight scene from "Fight Club") and a counter-action taken in protective gear from head to toe, respectively.

3.2. Quantitative and diachronic findings

The sizes of the monthly corpora of individual memes, with no duplicates included within each month (n=1,008), are indicative of the interest a given category (except for props and background coinciding with a memetic construct) generated among meme posters in the specific months (Figure 5). The colours represent the groups of memes: 1. The type of mask worn by a subject in the image (reds), 2. Evaluation of mask-wearing (greens), 3. Masks being commonplace (blues), and 4. Masks as tools in memetic humour construction (violets).



The general quantitative findings emerging from the collected corpus are hardly surprising. As predicted, the most memetically productive month in the corpus is April 2020 (n=203), the month of international lockdown, which is reported to have significantly affected the use of digital media on the whole (Nguyen et al., 2020). The stay-at-home time must have promoted users' social-media memetic productivity concerning the COVID-19 pandemic. By contrast, the smallest number of posts in July (n=99), together with the rather low number in May (n=112), is a natural consequence of nations coming out of lockdown and the holiday season in many countries, when most restrictions were lifted, potentially causing people to spend less time engaged in memetic production online. Therefore, all the categories were in a slump in May and July only to bounce back in September. The second least amply represented month is January 2020 (n=102), the month when the information about the new coronavirus only started pouring in, and the topic could not yet have been of top priority.

It had been expected that "reports" would be the category showing the highest frequency of occurrence in January 2020, which saw the first reports about the virus in China and, soon afterwards, in other Asian countries, as well as about the dearth of medical masks there, with panic caused by the lack of precise medical instruction. At the same time, there was no imminent, palpable threat to the entire globe blocking the humour experience at the expense of the subjects (Bischetti et al., 2021 on the spatial and temporal distance from a tragedy as a factor in the experience of humour).

However, while the "reports" category did achieve its peak in January (n=24), it also had significant representation in March (n=13), April (n=21), September (n=15) and November (n=15). Surprisingly, reports were salient in later months too, often in the form of reposts, potentially testifying to the perceived humorousness of the images showing the desperate people and their self-made protection (on themselves or even their animals) to be made fun of, even at the time when the grave COVID-19 consequences were recognised worldwide.

On the other hand, the categories of parodies, pranks and spoofs enjoyed their greatest popularity in the months following January 2020 and the reports from Asia. Each achieved its peak in April (parodies: n=43, pranks and spoofs: n=15), which is the indication of people wanting to have fun under lockdown. Taken together, parodies (n=174) outnumber pranks and spoofs (n=55), which may have to do with the ease of production.

Presumably, it takes either more courage to go out in a peculiar costume or more luck to see and take a picture of a person in peculiar attire; likewise, one may need more technical skills to convincingly manipulate an image than to take a picture of a self-made mask (whether of their own design or merely copying what someone else has already done) or a selfie in a peculiar mask worn at home. Overall, parodies, pranks and spoofs form the second biggest group in the corpus (n=229), and their presence is marked not only in April (n=58) but also in other months, most notably: November (n=36), March (n=32) and September (n=28).

Similar to parodies, pranks and spoofs, the sign-of-the-times and pre-COVID masks were, in general terms, amply represented across the months, starting in March (when masks began to be commonly used worldwide), altogether constituting the third largest group of memes (n=155). The top four months are April (n=40), September (n=27), November (n=22) and March (n=20). These two categories are also a form of memetic play, based on the simple assumption that masks have become commonplace or that they were widely used and known in the past. At the same time, the exceptionally high number of pre-COVID-19 mask memes in April may be an indication that users were on the lookout for the validation and normalisation of masks, however peculiar the masks they were referring to could be (cf. the mask worn by the fictional serial killer Hannibal Lecter).

Insignificant differences across the months aside (corresponding with each monthly corpus size), the corrective and chastising memes (n=106), as well as the opposite category of sceptical memes (n=23), showed almost an even distribution across the months for the best part of the year following January 2020. This category seems to reflect the long-lasting discussions and controversies around the efficiency of masks as protective measures, as well as the salient cases of media personas wearing their masks inappropriately. Based on the data at hand, it can be hypothesised that meme creators tend to trust the efficiency of masks, with sceptics being in the minority.

"Props" is the category that features most prominently across the months (except for April, when it is slightly superseded by parodies), with the lowest (and yet still significant) count (n=23) in May, and the highest result (n=49) in September. With these scores, it is the largest category (n=275) in the corpus, taking into account even grouped categories (cf. the reds, greens and blues in Figure 5). This is hardly surprising since this is a large category that encompasses numerous memetic constructs. Some diachronic variety can be observed across the months, inspired by, and reflecting the social, cultural, and political context, as observed by users. For example, given the early reports about COVID-19 originating in Wuhan, the first few months of the global pandemic saw memes such as the one in 6A based on an advertisement of masks sent (ironically enough) from Wuhan and human-tested there, as the meme author's highlights indicate.



Additionally, the corpora from January and March (the month the pandemic was announced across the world, following the reports of the virus in China and other Asian countries in January, and Italy in February) contain memes about people being scared of getting infected and memes criticising people spreading the virus by travelling, while memes posted in the later months as the pandemic is raging tend to comment on lockdown, quarantine, and absurd governmental decisions, among other things. Moreover, some memes from the props category start appearing after specific events, as is the case with a public recommendation made by Dr Anthony Fauci, the director of the National Institute of Allergy and Infectious Diseases, about the benefits of double-masking, which the 6B meme creator ridicules through a multimodal hyperbole. However, some memes seem to be topically universal in the COVID-19 world, such as the playful meme in 6C that alludes to the pandemic-induced need of mask-wearing as if it is worse than a bank robbery from a bank employee's perspective. Needless to say, memetic constructs may feature in many memes, as is manifest in 6D, which centres on a screenshot of news presenting an information notice that contains a typo ("bananas" vs "bandanas"), inviting humorous activities in response, three of which are shown at the bottom of the meme. Interestingly enough, the bottom-right-hand-corner example must be a repost of an independent meme featuring the same information notice in it.

Finally, the presence of the marginally relevant "background" category in the corpus seems to be the consequence of (over-)tagging that users perform in order to boost the findability of their memes. At the same time, the preponderance of such memes testifies to the user-perceived salience and/or normalised prevalence of masks in the socio-cultural world affected by the COVID-19 pandemic. On a general note, the findings indicate that memes and memetic constructs are not as short-lived as might be expected. Apart from the fact that memetic constructs persist over the months under investigation even if their relevance is limited, individual memes tend to be reposted not only within but also across months, sometimes going viral. Within the corpus, a substantial number of items (n=59) occur in more than one monthly subcorpus, and the most recurrent meme (6C) resurfaces four times across the months.

4. Discussion and conclusions

Addressing the topic of COVID-19 mask memes, this study has contributed new findings to the research on memes on methodological, theoretical and empirical grounds. Having refined the definition of (Internet) memes in order to juxtapose them with the proposed notion of memetic constructs (i.e. Dawkinsian memes) and virals, this paper depicted the results of an empirical investigation of a diachronic corpus of user-tagged memes collected automatically through a Python script and then groomed manually.

With regards to the empirical findings, ten mutually exclusive categories of memes (exhaustive of the dataset) were discerned through a grounded-theory approach, based on the role of the mask and the form, content and stance (Shifman, 2013) with the use of multimodal discourse analysis. Except for two categories (props and background), most of the categories coincide with memetic constructs specific to COVID-19 memes in terms of form and content (reports, parodies, pranks and spoofs, and the sign of the times) or only content (corrective, chastising, sceptical, pre-COVID-19 masks and props). As their content shows, some memes serve the expression of users' genuine beliefs and opinions, albeit presented in a humorous fashion. This concerns especially the corrective, chastising and sceptical categories, as

well as part of props, whereby users endorse or contest health authorities' regulations and governmental decisions or question fellow citizens' behaviour. However, other memes allude to facts in the background but essentially amount to specimens of "autotelic humour", that is humour for its own sake. The latter practically always holds for memetic trends such as parodies, pranks, spoofs, and the sign of the times, which are a clear indication that users just want to have fun by sharing humorous content.

Whether representing autotelic humour or bearing non-humorous content, memes and memetic constructs are inspired by, and hence reflect, socio-political facts, including the very necessity to wear masks, or they may derive from specific events, which is when their birth date can be determined. Thus, the topics of the memes prevalent at different points in time, can give insights into users' perceptions and evaluations of the current surrounding reality. However, memes or memetic constructs sometimes linger much longer, even if their frequencies may differ across the months for reasons that cannot easily be accounted for. As predicted, users' memetic activity seems to be facilitated by the socio-political context, a crucial factor being lockdowns, which promote greater memetic productivity. Nevertheless, this productivity does not always entail creativity.

Contrary to the well-recognised postulate that memes should be distinguished from virals, in tandem with the default assumption that memes are not just reposted but constantly mutate (Shifman 2013; Wiggins, 2019) in line with the central premise of remix culture, the diachronic corpus included numerous repetitions within and across the months. Memes repeating within the same month (deleted from the corpus at the outset as being irrelevant, given the purpose of the study) may be easily explained: having seen an interesting digital item, a user immediately reposts it elsewhere for other social media users to enjoy, regardless of the presupposed creativity principle that governs meme production on dedicated platforms.

What is much more interesting is the same memes being reposted months after they had been posted, when their novelty must have worn off and when they may have lost their socio-cultural relevance. This is the most striking in the case of the "reports" category, found in all the monthly datasets. The early memes poking fun at the panic-stricken (primarily Chinese) people resorting to various home-made protective measures may have been interesting and amusing at the beginning of 2020, but their presence on the memescape in the later months, when COVID-19 was the international reality, is less obvious, especially in the case of the multiple reposts. It appears that, notwithstanding the pandemic, users can still enjoy memes that disparage unknowing butts.

Generally, the recurrence of the less fresh and even irrelevant memes and memetic constructs in the space of one year may potentially be explained by the fact that, because of the "hot" topic, COVID-19 memes become so popular that they are shared and enjoyed by users who might not engage in memetic practices on social media otherwise and follow the easy path of reposting. The repetition of the very same memes across time on different platforms (that sometimes feature "top COVID-19 meme" lists) indicates that memes can indeed go viral, being made available to multiple audiences. This contradicts the academic stipulation that memes should be distinguished from virals, given that memetic content is programmatically subject to constant modification (Shifman 2013).

Overall, this study has shown that, once they come into being, COVID-19 mask memes and memetic constructs can lead long lives on memescape, even if they might be considered topically irrelevant. If users' goal is just to have fun and share whatever they deem amusing, one year is definitely too little for some of the COVID-19 viral memes and memetic constructs to die. What can be proposed as a topic of future studies is further changes in mask memes in the later months of the pandemic or after its (still) longed-for end. More generally, this work submits methodological developments to meme scholars: script-based crawling of tagged memetic data (to minimise researcher bias) and a diachronic approach to studying memes.

Authors' Contribution

Idea, M.D; Literature review (state of the art), M.D; Metodology, M.D; Data analysis M.D; Results, M.D; Discusion and conclusions, M.D; Writing (original draft), M.D; Final revisions, M.D; Project design and funding agency, M.D.

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Virtual reality with distractors to overcome public speaking anxiety in university students



Realidad virtual con distractores para superar el miedo a hablar en público en universitarios

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ABSTRACT

The ability to communicate effectively is a crucial aspect of education. For college students, learning how to speak in public is essential for their academic and professional future. However, many students report fear of speaking in public, the so-called Public Speaking Anxiety (PSA). This study aims to implement a training program using Virtual Reality (VR) with distractors to reduce the college students' anxiety. Anxiety was measured with two methods: electrodermal activity and self-report. We also analyze gender differences. There were an experimental and a control group. Both groups had to deliver the same speech twice: pre-test (before training); and post-test (after the training program) while participants' electrodermal activity was measured. Only the experimental group was trained with VR. Students also completed the Public Speaking Anxiety Scale and a survey to examine their experience. The results showed that the VR training reduced the anxiety levels significantly in the experimental group, but there were no significant differences in the control group. The data also revealed a higher level of anxiety in male than in female students. Finally, participants reported a positive impression of the VR training. These results showed the effectiveness of Virtual Reality software with distractors to reduce public speaking anxiety.

RESUMEN

La capacidad de comunicarse de manera eficaz es un aspecto fundamental en la educación. Para los estudiantes universitarios, aprender a hablar en público es esencial para su futuro académico y profesional. Sin embargo, muchos estudiantes manifiestan tener miedo a hablar en público, lo que se conoce como ansiedad a hablar en público (PSA en inglés). Este estudio tiene como objetivo implementar un programa de capacitación utilizando Realidad Virtual (RV) con distractores para reducir la ansiedad de los estudiantes universitarios medida con actividad electrodérmica y métodos autoinformados. Para ello se utilizó un grupo experimental y otro de control. Ambos grupos tuvieron que pronunciar el mismo discurso dos veces: prueba pretest (antes del entrenamiento) y postest (después del entrenamiento) mientras se midió la actividad electrodérmica. Solo el grupo experimental fue entrenado con RV. Los estudiantes también completaron una escala de ansiedad al hablar en público y una encuesta para examinar su experiencia. Los resultados mostraron que el entrenamiento con RV redujo significativamente los niveles de ansiedad en el grupo experimental y no hubo diferencias significativas en el grupo de control. Los datos también revelaron un mayor nivel de ansiedad en los estudiantes varones que en las mujeres. Finalmente, los participantes reportaron una impresión positiva del entrenamiento con RV. Estos resultados muestran la efectividad del entrenamiento de RV con distractores para reducir la ansiedad al hablar en público.

KEYWORDS | PALABRAS CLAVE

Virtual reality, public speaking, anxiety, education, communication, university students. Realidad virtual, hablar en público, ansiedad, educación, comunicación, estudiantes universitarios.



1. Introduction

Public communication is critical for career success. College graduates acknowledge the importance of acquiring skills in oral communication and public speaking. The ability to effectively deliver a speech is frequently perceived as crucial for graduates' adequate performance in the working environment (Smith & Sodano, 2011; van-Ginkel et al., 2019), for career success, and effective participation in the democratic society (Chan, 2011). However, today's college students might not be getting adequate oral communication education. In an analysis of oral communication education in Alabama (USA), Emanuel (2011) identified four critical concerns that could indicate similar issues affecting the field throughout the United States and beyond. Firstly, education on public speaking is insufficient. Secondly, oral communication education is relegated to a module rather than a core course in the curriculum. Thirdly, college faculties are unprepared on the topic. Fourthly, courses tend to be narrower than broader in scope within the education curriculum. Moreover, as the majority of people experience at least some kind of anxiety when facing the public, college students rarely will be willing to voluntarily choose a public speaking course if they can avoid it (Docan-Morgan & Nelson, 2015).

As a result, graduates often lack the competence required to speak in public. Chan (2011) has identified insufficient communication skills and related oral abilities, especially in science graduates. Therefore, addressing this issue is fundamental for education institutions. To answer this uncertainty, the present study applies a Virtual Reality (VR) training with distractors to teach public speaking in college classes to reduce anxiety levels and, consequently, improve oral communication skills. An experimental methodology was designed to test the effectiveness of a VR program with distractors to reduce students' anxiety, measured using electrodermal activity and self-reported methods before and after training.

The main contributions of this study will be threefold: a) to show the usefulness of a VR program as similar as possible to a real situation that generates distractors and asks questions to lower anxiety; b) to use a combination of methods to measure the level of anxiety: electrodermal activity (physiological response) and self-report (perception); c) to examine gender differences in anxiety.

1.1. Public speaking anxiety

In front of the public, one of the main problems faced by any communicator is stage fright. A full 85% of the general population suffers some fear when speaking in public (Burnley et al., 1993). The context in which undergraduates cope with this fear throughout their college years is challenging. A study conducted by Ferreira et al. (2017) measured the prevalence of fear of public speaking among 1,135 college students. Their work found that 63.9% reported suffering this fear. In a close look at these data by gender and voice quality, the results proved that female students had low participation as speakers in groups and perceived their voices as high-pitched, increasing the probability of exhibiting fear of public speaking. The results also showed that up to 89.3% of the students would like their undergraduate program to include public speaking courses. Also defined as Public Speaking Anxiety (PSA), this social phobia has been characterized as a distinct subtype of social anxiety disorder with a 12-month prevalence rate. According to Pertaub et al. (2002), people with social phobia usually suffer from an intense fear of social performance. This fear makes them act in a humiliating or embarrassing way because they think others will judge them negatively. At a physiological level, the body reacts preparing itself for either a battle or for running, which has been known as the flight-fight response. In this situation, during a public performance, the fear of embarrassment in front of the audience can be intensified by the audience's verbal or nonverbal response.

The Beatty and Behnke's (1991) adaptation of Schacter and Singer's model of emotional response (1962) is one of the most extended models of PSA. This model includes two arousal dimensions: cognitive and physiological. In this study, we analyze these two dimensions: the cognitive dimension by using a Public Speaking Anxiety Scale and the electrodermal activity (EDA) to measure the physiological levels of PSA. EDA has been widely used as a clinical sign of stress-related psychophysiological disorders (Hugdahl, 1995). Some studies have explored electrodermal responses to laboratory stressors (Carrillo et al., 2001), for instance, stressful films (Kohler et al., 1995). However, there is still a scarcity of studies that include this measure to test PSA in response to a public speaking task (Carrillo et al., 2001; Yadav et al., 2019). In general, oral communication skills have received little research attention (De-Grez et al., 2009).

1.2. VR to reduce public speaking anxiety

To solve PSA's problem, VR seems to be a promising sphere. In recent years, literature has accumulated some practical classroom experiences to teach oral presentation skills (OPS) (González-Zamar & Abad-Segura, 2020). The research by Boetje and van-Ginkel (2020) focused on the importance of practice to develop oral skills. The results showed that participants benefited from practicing a third time on VR. This kind of experience proved that facilitating practices in a controlled virtual environment should be part of educational institutions' curricula. In the study by van-Ginkel and colleagues (2019), the students practiced their presentation in a virtual environment and received feedback in competencies such as cognition, behavior, and attitudes towards presenting. The effects were compared with a control condition, which was a face-to-face presentation task with expert feedback. Results revealed significant improvements from pre- to post-test in all the competencies. These studies support the benefits of using VR and, more specifically, its application as a feedback tool, proven to be a useful process highly welcomed by participants (De-Bofarull, 2003; De-Grez et al., 2009).

Recent empirical studies have explored simulation with VR as a tool to treat and quantify PSA (LeFebvre et al., 2020; Yadav et al., 2019). The study by Yadav et al. (2019) analyzed whether systematic exposure to public speaking tasks in the VR environment could help alleviate PSA. The results indicated significant improvements in terms of both self-reported and physiological indices. Reeves et al. (2021) examined 360° video VR exposure therapy as an effective intervention for treating PSA.

Other studies have focused on the role of the audience and its implications on public speaking success. Söyler et al. (2016) designed a virtual auditorium that included major physical and vocal cues experienced by a speaker addressing a crowd in an auditorium. The resulting simulator helped subjects overcome PSA. Additionally, results proved that VR could be used to identify cues to which speakers are more sensitive. helping identify the root causes of the participant's PSA disorder. Other studies by Pertaub et al. (2001) examined the audience's reaction, assessing whether a speaker's anxiety response depends on the type of feedback received from a virtual audience (positive, negative, static). In general, these results showed that the patients experienced an attenuation of their anxiety due to prolonged exposure to the stimulus, a process known as habituation. A recent study by Radianti et al. (2020) provided a systematic mapping to identify design elements of existing research dedicated to applying VR in higher education. Their results highlighted that the focus has been put primarily on the usability of the VR application rather than being applied regularly in actual teaching. However, the actual body of research on virtual reality programs to train oral skills is either based on non-empirical evidence, examines a low number of subjects, or does not contemplate distractors as part of the training program. Based on previous studies, we can formulate our first hypothesis: (H1) The level of students' anxiety will be significantly higher in the pre-test than in the post-test in the experimental group after the VR training program with distractors.

1.3. Gender differences in public speaking

Gender differences in social anxiety disorder (SAD) have not received much empirical attention despite the large body of research on other disorders. Little is known about how to adjust feedback strategies for differences in the users' socio-cultural parameters, such as gender or age (Strand, 1999).

The role of gender in the control of speaking anxiety has remained a topic of controversy. Gaibani and Elmenfi (2014) proposed a guide to identify the effects of gender differences on public speaking anxiety. These authors found opposite positions. Some authors documented a linear relationship between gender and speaking anxiety (Intarapraset, 2000). In these studies, women displayed higher anxiety than men (Behnke & Sawyer, 2001) and were more prone to speaking about anxiety (Mejias et al., 1991). In the same line, Mohamad & Ab-Wahid (2008), among English as a second language college students, concluded that female students experienced more anxiety than male students while speaking in class. According to these authors, this happened because girls experienced lower self-confidence influenced by their interest in friends who could be judging them (Gaibani & Elmenfi, 2014). By contrast, Levitt (1980) showed that male students felt a higher anxiety level when conscious of their anxiety. This relationship was not observed among females. The study by Mills (2006) on gender and performance anxiety at academic conferences explored the role of power and gender moderating performance anxiety and concluded that

this anxiety was influenced by the speaker's level of internalization (or rejection) to the gender stereotypical views acting in the public sphere. On the other hand, recent studies do not show gender as having a significant effect on overall anxiety (Matsuda & Gobel, 2004; Wang, 2010).

In the specific field of psychophysiological there has been an increasing interest in studying gender stress reactivity (Carrillo et al., 2001; Davis & Matthews, 1996; Girdler et al., 1997; Lash et al., 1995; Matthews et al., 1991; Steptoe et al., 1996). Carrillo et al. (2001) concluded that gender could act as a moderator but not as a cause for different performances. Mood, anxiety, and hormonal background could affect the response. Results showed that men and women did not differ in anxiety, hostility/aggressiveness, or the task's appraisal. There were no gender differences in Heart Rate (HR) and the frequency of the skin conductance responses (NSRs), but women had higher finger pulse volume (FPV) in all periods, except during the task. However, at this moment, no studies have compared the EDA responses to public speaking in men and women. As most of the studies conclude that women report more anxiety than men, we formulate the following hypothesis: (H2) The level of anxiety will be higher in female students than in male ones.

2. Materials and methods

2.1. Design

The experiment to measure anxiety level consisted of two tests (pre-test and post-test VR training) by two genders (male and female) mixed factorial design.

2.2. Participants

We chose students from two major European universities. The participants were selected from those who enrolled in public speaking courses and voluntarily wanted to participate in the study. There were 100 students, fifty-eight were female, and 42 were male (19-21 years old). This group was divided into two groups of 50: an experimental group (30 females and 20 males) and a control group (28 females and 22 males). The sample size was formed according to the psychophysiological studies in communication (Potter & Bolls, 2012). The university approved the study protocols and all the participants signed the informed consent.

2.3. Stimuli

For the experiment, students wrote their scripts as part of the training. These scripts had the same length in all the cases: three minutes. Duration was measured using a chronometer to avoid differences among students. Students in the control group received the usual training in the public speaking course which consisted of two main parts: the first part was devoted to writing the script of the speech. They learned how to select, structure, and write the information. Once they had the final script, the training was focused on the performance (voice and gesture). Those in the experimental group were also trained with virtual reality. The VR platform used for this experiment was Psious. Psious is a virtual reality platform for psychology and mental health, designed especially for the treatment of phobias. This platform includes hardware, VR glasses, and biofeedback sensors. For this experiment, we used the therapeutic environment devoted to fear of public speaking. In this environment, participants are immersed in an auditorium with a lot of people in the audience.

The use of this platform has two main advantages. The first one is that researchers can control in their own computer what is happening in the virtual environment and change the conditions, for example, the loudness of people talking, being in silence, or the number and attitude of the attendees. The second, and most important advantage, is the possibility to add distractors throughout the presentation. The subject is placed on the stage on a podium with lights and television cameras. The researcher can then add, at any moment of the presentation, people murmuring, laughing or coughing, or objects sounding (i.e., a phone). Also, at the end of the speech, some avatars can stand-up and ask questions to the speaker in different levels of complexity that the researcher can choose, from easy (What is the main application of your project?) to difficult questions (I disagree with your main statement; could you prove that it is true?). In this study, we used three different distractors: an attendee coughed, an attendee left the auditorium, and an attendee

asked a challenging question at the end of the speech. We measured the skin conductance level at these specific moments. We think that these characteristics are essential to differentiate this research from other studies with passive VR platforms.

2.4. Dependent variables

2.4.1. Physiological level of anxiety

We conceived the anxiety level as the sympathetic nervous system's response to a novel situation such as a public presentation. This measure is an indicator of emotional, cognitive changes and the sympathetic nervous system's response to a novel situation such as a public presentation. Anxiety was measured as skin conductance, called electrodermal activity (EDA) (Dawson et al., 2016). To do so, two 8mm AG/AGCL electrodes, connected to a GSR+ sensor (Shimmer technology) were placed on the palmar surface of the subject's non-dominant hand. The GSR+ unit is suitable for measuring the electrical characteristics or conductance of the skin. After the experiment, the data were processed by taking the 180 seconds of the speeches (3 minutes).

2.4.2. Anxiety scale

We used Bartholomay and Houlihan's Public Speaking Anxiety Scale (2016). This scale comprises 17 items related to cognitions, behaviors, and physiological manifestations of speech anxiety. The scale is formed by three subscales that measure cognitive, behavioural and physiological aspects. Students rated these items on a 5-point scale, where the lowest value was a little, and 5 was a lot. The scale has five reversed code items. The three subscales showed a very high internal consistency according to the Cronbach's Alpha coefficient (cognitive, α =.738, behavioural, α =.900, physiological, α =.801).

2.4.3. Survey

We completed the Public Speaking Anxiety Scale with a survey formed by some questions related to the VR experience. The first ones were two questions in which students had to assess in 7-point scales to what extent the VR had helped to deliver a better presentation and if this training had reduced their anxiety level. The second group was formed by two open questions in which the students listed the main advantages and disadvantages of using VR to reduce PSA. The third group had two questions in which students had to rate if they would use VR again to prepare their public presentations and recommend VR to other colleagues.

2.4.4. Procedure

The process for conducting the study was as follows. The experiment was performed in the Public Speaking course at two major European universities as part of the training. The students of both universities started the course with the training in oral communication skills. The first part was devoted to writing the script of the speech. They learned how to select, structure, and write the information. Once they had the final script, the training was focused on their performance. The first time that they delivered the speech in front of the rest of the students, we attached the electrodes to measure the electrodermal activity while they gave the discourse. Before the delivery, we took the baseline by registering the electrodermal activity in relaxation, and the students completed the Public Speaking Anxiety Scale (pre-test). Then the students gave the speech. They were standing up in an auditorium with the public, with a chronometer in front of them, lights, and a lavalier microphone.

The session was video-recorded. After this experience, students were divided into two groups: control and experimental. The control group had five sessions of intensive public speaking training with an instructor. The training sessions included distractors (e.g., a person coughing, an attendee's question) during the speech rehearsal. The VR training was started for the experimental group. A total of five trial sessions were conducted. All the students practiced with the same platform and environment. Also, the distractor was the same. In the last part, the final public presentations were delivered again by participants on both groups, and the skin conductance was retaken. Here the students had to perform the final presentation that they had previously prepared and rehearsed. This final measurement of the electrodermal activity was used to analyze whether the VR training had reduced anxiety. These measurements were completed with the Public Speaking Anxiety Scale (post-test) and a survey to determine the students' perception of this experience and how much they felt VR helped them. Therefore, both self-report and physiological measures were applied to this project.

3. Analysis and findings

All the statistical analysis has been performed with SPSS. The results were analyzed by applying an analysis of variance in a 2 (measures) X 180 seconds (time) repeated-measures ANOVA for the dependent variable level of anxiety. First, data on the measurement of anxiety level through skin conductance were taken by subtracting each subject's baseline. The results of the last measurement (post-test) were lower than in the first (pre-test) in both groups, experimental and control. The electrodermal activity decreased in the experimental group from (M=3.57; SD=.39), in the pre-test to (M=1.71; SD=.32) in the post-test while, in the control group, EDA diminished from (M=4.07; SD=.49) to (M=3.01; SD=.41), as Figure 1 shows.



However, there were only significant differences in the experimental group in the measurement, F(1.49)=14.57, <.001, v²partial h2=.229, and in the interaction between the measurement and time, F(1.49)=1.98, <.001, v²partial h2=.039, but not in the control group, F(1.49)=2.85, =.098 v²partial h2=.055. Figure 2 shows the differences between the first measurement before VR (pre-test) and the second measurement (post-test), throughout the speech in the experimental group.



As shown in Figure 2, the first measurement is continuously rising with a maximum of 4.23 and a minimum of 3.09; therefore, a difference of 1.14. On the other hand, the second measurement does not have a full upward progression. It shows a minimum of 1.72 and a maximum at the second minute of

2.57. The difference is 0.85, considerably less than in the first measurement. From the second minute onwards, a descent begins, which brings the anxiety level back to the first minute's values.

The distractors were placed at seconds 40 (the attendee coughed) and 60 (one of the attendees left the auditorium). We measured the skin conductance level at these specific moments. The first distractor was a person coughing in the second 40. We calculated the baseline from the five seconds previous to the onset and then compared both pre-and post- VR. The results were significant for measure, F(1.49)=7.93, =.007, v²partial h²=.139, and for time, F(1.49)=7.46, <.001, v²partial h²=.132. Throughout time, the changes can be observed in Figure 3.



The second distractor was an attendee that left the auditorium at second 60. We followed the same procedure as that in distractor 1. The results were significant for time, F(1.49)=5.16, <.001, v²partial h²=.058. The differences can be observed in Figure 4.



At the end of the speech, all the students had to answer a complicated question. One person in the audience (an avatar in the VR scenario) stood up and asked the question. We measured the reaction from the question to the answer, a total time of 35 seconds. The results were significant in the measurements F(1.49)=26.51, <.001, v^2 partial $h^2=.438$, and time, F(1.49)=17.61, <.001, v^2 partial $h^2=.341$. The measurement post-test was lower (M=2.57; SD=.46) than the pre-test (M=5.93; SD=.43). Figure 5 shows the differences.

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In relation to gender, there was a significant difference between men and women, F(1.49)=192.14, <.001, v²partial h²=.015, and a significant interaction between gender and measurement, F(1.49)=10.99, <.001, v²partial h²=.001 in the experimental group. Overall, men (M=3; SD= .75) recorded a higher level of anxiety than women (M=2.37; SD=.89). Regarding the interaction between measurement and gender, men recorded a difference between the first and second measurements of 1.66, while in women, it was 1.96. Therefore, even starting from a lower anxiety level, women managed to reduce it, with a significant difference, to a greater extent than male students.

Secondly, the Public Speaking Anxiety Scale results showed significant results in the three scales between the pre and the post-test in both groups, control and experimental. The results were significant for the cognitive scale, F(1.49)=260.17, <.001, v²partial h²=.570, the behavioural scale, F(1.49)=65.74, <.001, v²partial h²=.251, and the physiological scale, F(1.49)=237.14, <.001, v²partial h²=.547. In the cognitive scale, the values in the post-test (M=1.87; SD=.39) were lower than in the pre-test (M=2.71; SD=.32). In the behavioural scale, the results were also lower in the post-test (M=2.30; SD=.51) than in the pre-test (M=2.93; SD=.57). Finally, in the physiological scale, the values in the post-test (M=2.42; SD=.48) were also lower than in the pre-test (M=3.43; SD=.45). Table 2 shows the values.

Table 1. descriptive statistics of the public speaking anxiety scale						
Scale	Group	Measurement	Mean	SD	Effect size	
Cognitive	Control	Pre-test	2.74	.32	570	
		Post-test	1.90	.38		
	Experimental	Pre-test	2.68	.32		
		Post-test	1.85	.41		
	Total	Pre-test	2.71	.32		
		Post-test	1.87	.39		
Behavioural	Control	Pre-test	2.90	.53	.251	
		Post-test	2.29	.51		
	Experimental	Pre-test	2.96	.61		
		Post-test	2.31	.51		
	Total	Pre-test	2.93	.57		
		Post-test	2.30	.51	.547	
Physiological	Control	Pre-test	3.34	.46		
		Post-test	2.52	.51		
	Experimental	Pre-test	3.52	.42		
		Post-test	2.32	.44		
	Total	Pre-test	3.43	.45		
		Post-test	2.42	.48		

There were significant differences between the control and the experimental group, but there was a significant difference in the interaction group by measurement in the physiological scale, F(1.49)=8.21, =.005, v²partial h²=.040, but not in the cognitive and behavioural. Students in the experimental group felt that the physiological manifestations had decreased to a larger extent than the control group. Therefore, the public speaking training helped these students in the three levels: cognitive, behavioural, and physiological,

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but the VR training contributed specially to reduce the perception of the physiological symptoms. The survey was only completed by the experimental group as it was about their VR experience. The answers were analyzed with the software Nvivo. In the two first questions, on a 7-point scale, the students considered that VR helped them deliver a better presentation (M=5.14; SD=1.03). However, the training

did not reduce their anxiety level (M=3.83; SD=1.4).

In the second group of questions, on the one hand, the advantages that the students mainly highlighted were focused on the fact that the training increased their level of confidence and helped them reduce nervousness. Most of them mentioned that the VR distractions significantly helped them concentrate and avoid getting distracted in presentations. On the other hand, the students mentioned fewer disadvantages than advantages. Most focused on the fact that it was not a very real experience, that they were not real people, the image's quality was not optimal, and the dizziness that sometimes occurred when they wore the glasses. Finally, students said they would use VR again to prepare for their public presentations (73%). Only 27% said they would not. When asked if they would recommend VR to other colleagues, the answer was also mostly affirmative. 82% said yes, and 18% said no.

4. Discussion and conclusions

The goal of this study was to determine whether a virtual reality (VR) program with distractors, added to the usual training applied to college students delivering a public speech, could reduce their levels of anxiety measured using self-reported methods and electrodermal activity (EDA). We also analyzed gender differences. No previous studies had examined the effectiveness in reducing anxiety by combining EDA and self-report and using a VR training with distractions. Also, few studies had studied gender differences.

This study's first hypothesis postulated that the anxiety level would be higher in the pre-test than in the post-test after the VR training program with distractors. The results supported this first hypothesis in both groups, control and experimental. However, these results were only significant in the experimental group. The level of activation and anxiety, measured with electrodermal activity (EDA), was significantly lower in the post-test after the VR program than in the pre-test before the training. In the post-test, the EDA levels were lower, but the second measurement did not have a full upward progression, as in the pre-test. Also, there was a decrease in the post-test, which brought the anxiety level back to the first minute's values. These results reinforced other studies that have shown VR to be a useful tool for reducing anxiety and stage fright (van-Ginkel et al., 2019; Howard & Gutworth, 2020). Although VR's effectiveness as a training tool has shown different levels of success, most studies, such as this research, have proven their benefits for social skills like public speaking.

However, one of the most pivotal parts of this study was introducing distractors to reduce the students' anxiety and exercise public speaking skills. We placed distractions (an attendee coughing and an attendee leaving the auditorium) at two different moments of the discourses (seconds 40 and 60 respectively). In both cases, the EDA levels were significantly lower in the post-test compared to the pre-test. Moreover, at the end of the speech, all the students answered a complicated question. Once again, the EDA levels decreased in the post-test compared to the pre-test with significant differences. Therefore, this study shows that training with distractors is essential. Firstly, as it reproduces a more real situation and secondly, since some studies have shown that the audience's physical and vocal cues are crucial contributors to PSA. These distractors can increase PSA and make public speaking a traumatic experience (North & Rives, 2001; Pertaub et al., 2001; Söyler et al., 2016). The use of systematic exposure to feared situations ("exposure therapy"), such as the VR program in this study, has effectively overcome anxiety.

The self-report results also reinforced the effectiveness of the VR training to reduce stage fright. The Public Speaking Anxiety Scale showed that there were significant differences in the three subscales: cognitive, behavioural and physiological in both groups. Therefore, the usual public speaking training was effective in the self-perception level, but additionally, the VR application was more effective in the experimental group to reduce the physiological symptoms with significant differences with the control group.

Regarding the survey, the students reported that the VR training helped them concentrate on what they were saying, make fewer mistakes, feel more relaxed and confident, and have less tension. The main

advantages for these students were that VR increased confidence, helped them become less nervous, and allowed them to interact in front of a large audience when rehearsing the speech. The students rated the experience as positive globally and considered that VR helped them deliver a better presentation. The main disadvantages were the software's quality, which was a bit blurred, the fact that the characters did not seem very real, and the dizziness that some people felt when wearing the glasses for a long time.

The second hypothesis of this study stated that the level of anxiety would be higher in female students than in the male ones. Contrary to previous studies (Behnke & Sawyer, 2001; Mejias et al., 1991; Mohamad & Ab-Wahid, 2008), male students registered a higher level of anxiety than female students, as in the study by Levitt (1980). Therefore, these results did not support our second hypothesis. In addition, male students reduced the anxiety level in less quantity in the post-test. These data mean that VR training was more effective for females than for male students. These results break the stereotype that shows that men suffer less anxiety than women. One possible explanation is that one thing is what people expressed explicitly in self-reported scales and questionnaires and other what the physiological levels show, as, in fact, our results also indicate. According to different studies (Behnke & Sawyer, 2000; Mejias et al., 1991; Mohamad & Ab-Wahid, 2008), women systematically report higher anxiety patterns than men. Therefore, the self-perception of anxiety could not coincide with the real physiological response. Either way, due to the different results, more studies are needed to study this subject.

In conclusion, the main contributions of this study were threefold: a) we demonstrated the effectiveness of a VR program with distractors and questions to lower students' anxiety; b) we combined different methods, electrodermal activity (physiological response) and self-report (perception) to measure anxiety and achieved more reliable results; and c) we showed gender differences in anxiety with male students showing higher levels and less reduction in the post-test. This study's findings have implications for how VR technology can be embedded in higher education communication courses. This research suggests a practical activity that can be implemented in university classes with positive learning results. The results also support the "at-home practice" using smartphones, VR glasses, and free body movement.

The results of this study should be interpreted within the context of this research. First, we used a VR software which, as all those available in the market now, has some limitations, especially regarding the design. Therefore, further research could extend these results with different technology, especially looking for more realistic scenes and characters. The possibility to use Extended Reality instead of Virtual Reality could solve this problem. Another area that needs further study is the gender differences found in this study. Contrary to previous studies, in this case, male students' physiological anxiety level was higher than female participants'. These gender differences may be produced due to many factors. Therefore, this is an area that requires further research. Finally, the field of applications for educational purposes is still unexplored. In this regard, future research could suggest different training models and elaborate new applications.

Authors' Contribution

Idea, E.R.; Literature review (state of the art), O.L.; Methodology, O.L., E.R.; Data analysis, E.R.; Results, O.L., E.R.; Discussion and conclusions, O.L., E.R.; Writing (original draft), O.L., E.R.; Final revisions, O.L., E.R.; Project design and sponsorship, E.R.

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Political hate speech of the far right on Twitter in Latin America

Discurso político de odio de la ultraderecha desde Twitter en Iberoamérica



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ABSTRACT

The purpose of this research was to study the spreading of political hate speech by the far right through Twitter. A mixed methodology was employed, combining both quantitative and qualitative tools, within the framework of digital ethnography. Five characteristic cases of campaigns linked to political hate speech were chosen, meeting the four criteria set: Latin American scope with representativeness in terms of breadth and impact, political motivation, more than 100,000 tweets, and massive use of fake accounts. The analysis was performed with T-Hoarder, Gephi and MAXQDA. The conclusions drawn are that these campaigns do not occur spontaneously. Rather, a destabilizing political intention lies behind them, sponsored by organizations with considerable ability to disseminate messages and with extensive funds. The massive presence of false accounts, the repetition of certain spelling errors in identical form and the striking increase in the number of accounts just before campaigns are evidence of the automation of these processes. The constant use of aggressive and disparaging terms associated with hatred triggers extreme polarization and a climate of tension, threatening the building and consolidation of democracy itself. Apart from punitive measures, there is a need to implement educational proposals.

RESUMEN

La finalidad de esta investigación ha sido estudiar la difusión de los discursos políticos de odio de ultraderecha a través de la red social Twitter. Se ha seguido una metodología mixta, combinando instrumentos cuantitativos y cualitativos, en el marco de la etnografía digital. Se eligieron cinco casos característicos de campañas vinculadas a discursos políticos de odio que cumplían los cuatro criterios seleccionados mediante técnica Delphi: ámbito iberoamericano con representatividad por amplitud e impacto, motivación política, más de 100.000 tuits y uso masivo de cuentas falsas. El análisis se realizó mediante T-Hoarder, Gephi y MAXQDA. Las conclusiones muestran que estas campañas no surgen espontáneamente, sino que existe una intencionalidad política desestabilizadora detrás de ellas; vertebradas desde organizaciones con pautas de difusión muy marcadas y fuentes de financiación potentes. La presencia masiva de cuentas falsas, la repetición de determinadas erratas de forma idéntica y el llamativo aumento del número de cuentas en los momentos previos a las campañas evidencian la automatización de estos procesos. El uso constante de términos agresivos y despreciativos asociados al odio, consigue generar polarización extrema y un clima de crispación que constituye una amenaza a la construcción y consolidación de la propia democracia. Más allá de las medidas punitivas, se considera necesario implementar propuestas de carácter educativo.

KEYWORDS | PALABRAS CLAVE

Hate speech, social network analysis, Twitter, critical analysis, freedom of expression, human rights education. Discurso de odio, análisis de redes sociales, Twitter, análisis crítico, libertad de expresión, educación para los derechos humanos.

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1. Introduction and state of affairs

It is significant that there is an increasing use of the expression "hate speech" both in the mass media and in academic literature (Matamoros-Fernández & Farkas, 2021; Paz et al., 2020). The Committee of Ministers of the Council of Europe defined this term as "all forms of expression which spread, incite, promote or justify racial hatred, xenophobia, anti-Semitism or other forms of hatred based on intolerance, including intolerance expressed by aggressive nationalism and ethnocentrism, discrimination and hostility towards minorities, migrants and people of immigrant origin" in its Recommendation R (97) 20, issued on 30 October 1997.

Although there would not appear to be a definitive consensus as to its definition (Grau-Álvarez, 2021), it does seem clear that hate speech is generally seen as referring not so much to an individual factor, but rather as something affecting a given group, encouraging intolerance, stigmatization, or aggression and violence towards it (Amores et al., 2021). It has been stated to be a form of speech attempting to trigger in hearers a deep feeling of rejection towards a group of people, made the scapegoat for the threats, or for the real or imaginary problems from which this audience believes it is suffering (Pérez-Calle et al., 2019: 157).

An analysis of hate speech is worthwhile because of its social, cultural and educational implications, its influence over the creation of a social and political climate, and in particular the link between the growth in online hatred and the perpetration of hate crimes (Müller & Schwarz, 2021). Indeed, Article 510.1 of the Spanish Penal Code defines hate crimes as involving encouragement, promotion or incitation, whether direct or indirect, of hatred, hostility, discrimination or violence against a group, a part thereof, or individuals on the grounds that they belong to that group, for racist, anti-Semitic or other motives relating to ideology, religion or beliefs and the like. It lays down penalties for those spreading such views by any means whatsoever. Of the eleven categories within which the Spanish Ministry of Home Affairs classified hate crimes in 2020, those under the heading of political ideology are the second most common in number, and this category has grown most in recent years, above all in cyberspace.

This makes it crucial to study political hate speech focused on attacks for ideological reasons (Esquivel, 2016). This goes beyond discourse which is merely offensive or unpopular, but is covered by freedom of expression (Martínez-Torrón, 2016), in order to reach a level that can be considered hate crime. Nowadays, speech of this sort is expanding through social networks, since it seems to have found in them a suitable channel for dissemination, having as they do a proven influence over the shaping of public opinion.

This is the case for Twitter. Although it has only a moderate volume of use (Newman et al., 2021), its tweets and discussions have a considerable impact, since quite a few mass media concentrate a significant part of their attention on the interactions spread by this means, influencing the social and political agenda (Bane, 2019; Casero-Ripollés, 2020). For this reason, Twitter was chosen for the present study. Other factors were the ease of extracting data that it permits (Villodre et al., 2021) and the fact that it is one of the social networks allowing hashtags (HTs) or labels to be added to messages, which can thus come to generate trends on the network.

It is true that Twitter sometimes functions as an echo chamber (Pariser, 2011), reinforcing the ideological stances of like-minded virtual communities, and leading to less interaction with other communities (Guo et al., 2020). However, what Atilano (2019) calls "fissures" occur, with a greater range in what users read, as opposed to what they say (Shore et al., 2018).

In particular, the work focused on political hate speech linked to far-right ideology, which covers the extreme right and the radical right. It is characterized by three features, quoted by Mudde (2021) in describing the "radical populist right": authoritarianism, populism and "nativism", a combination of nationalism and xenophobia (Camargo, 2021; Guerrero-Solé et al., 2022). On these lines, the analysis concentrated on such messages of a political nature, transmitted via Twitter, and showing hate speech. The intention was to learn how they spread over the network, how they influence stances and generate trends in reaction, and what effects they can trigger in reality. Such a study would appear essential, moreover, if their impact is to be headed off or countered, not only through approaches that are legislative and punitive, but also from a preventive angle within the area of education (Chetty & Alathur, 2018).

2. Material and methods

The aim of this research was to investigate hate speech coming from the far right, arising specifically from ideological motives and propagated through Twitter. The methodology chosen was a mixed approach (Bagur Pons et al., 2021; Chaves-Montero, 2018), combining quantitative research tools (T-Hoarder and Gephi), needed to cope with the volume of data to be analysed, with more qualitative instruments (MAXQDA), so as to achieve a greater understanding and a more in-depth view of the phenomenon under consideration (Rebollo, 2021).

This line of investigation lies within Digital Ethnography (Hine, 2015; McGranahan, 2019), an online research method that takes its inspiration from ethnography, and serves to comprehend social interactions in present-day contexts of digital communication. Digital Ethnography (Pink et al., 2019) is an interdisciplinary approach, drawing on viewpoints and perspectives from communication, anthropology, and computer sciences to study the linkages between social practices and the production of meanings through technological mediation (Bárcenas & Preza, 2019). It has become established as one of the most frequently used research tools in on-line contexts (Airoldi, 2018; McGranahan, 2019).

2.1. Sample

Five campaigns were selected, related to ideologically-motivated political hate speech propagated via Spanish-language Twitter. These matched four criteria selected by using the Delphi technique, which relies on reaching consensus in successive rounds of questionnaires and structured debates, in this instance of a panel drawn from various universities, involving ten academics and experts on communication, social networks, education, and sociology in the Spanish and Latin American sphere addressed by the research. They had to be:

- Representative cases, directed against governments, or public figures within them, that had a progressive or social ideology, considered left-wing.
- Campaigns whose motivation and objective were clearly political, their intention being to cause off-line mobilizations in society against these governments.
- Mass campaigns, defined as having more than 100,000 tweets related to a given hashtag, which would distinguish them from traditional political campaigns on a smaller scale.
- Campaigns making extensive use of false accounts, with an eight-digit reference. This is because, when large numbers of accounts are created, Twitter by default assigns them a user identity ending in eight figures, needing human intervention to change it. Likewise, campaigns using many recently created new accounts, in existence for under one year (Luque et al., 2021).

The five instances chosen were the following. An idiomatic English version of the title of each is given in square brackets, together with a brief explanation.

- #SáncheVeteYa (Spain) Note spelling error, Sánchez with missing Z. [Sánchez Must Go refers to Pedro Sánchez, leader of the PSOE (Socialist party) and Spanish Prime Minister]
- #IglesiasVeteYa (Spain). [Iglesias Must Go refers to Pablo Iglesias, leader of the left-wing Podemos party and Deputy Prime Minister]
- #AndrésNoMientrasOtraVez (Ecuador) Note spelling error, Mientras for Mientas [lie], with added R. [Andrés Stop Lying – refers to Andrés Arauz, presidential candidate of the centre-left UNES coalition]
- #GolpeDeEstadoK (Argentina). [K's Takeover refers to Cristina Fernández de Kirchner, Vice-President from the left-wing TODOS coalition]
- #FraundeEnMesa (Peru) Note spelling error, Fraunde for Fraude [fraud], with added N. [Electoral Fraud refers to allegations about the election of Pedro Castillo as President by a narrow margin].

Apart from the criteria noted, a further reason to select these campaigns was that they took place between May 2020 and June 2021, coinciding with the Covid pandemic and the ensuing enhanced use of social networks (Cervantes & Chaparro, 2021). Three of them were specifically picked out because of their spelling errors, which were replicated identically by at least 20,000 accounts, this being an indicator of the use of bots or automated accounts (Puyosa, 2017), as employed in deliberate political campaigns. After all, it is out of the question that 30,000 individuals would make the same spelling mistake at the same time (Calvo et al., 2019; Persily, 2017; Vargo et al., 2017). In all, 1,442,781 tweets and retweets (RTs) were collected directly through the Twitter Application Programming Interface over different periods of time.

Table 1. General data for cases analysed									
	#SánchezVeteYa (18/04/2020)	#IglesiasVeteYa (18/04/2020)	#FraudeEnMesa (08/06/2021)	#AndrésNoMientas OtraVez (22/03/2021)	#GolpeDeEstadoK (25/08/2020)				
Country	Spain	Spain	Peru	Ecuador	Argentina				
Tweets with correct hashtag	414,538	249,471	125,500	216,000	326,286				
Tweets with erroneous hashtag	73,761		5,425	31,800					
Total accounts	55,220	44,895	20,866	23,739	48,530				
Accounts created over last year	9,368 (16.9%)	7,706 (17.1%)	3,833 (18.3%)	2,292 (9.6%)	9,168 (18.9%)				
Accounts with eight digits	4,013 (7.2%)	3,464 (7.7%)	1,861 (8.9%)	1,317 (5.5%)	3,480 (7.2%)				
Percentage of eight- digit accounts in erroneous hashtags	7.9%		12.4%	6.2%					
Percentage of Retweets	74%	78%	77%	75%	74%				
Percentage of Replies	9%	8%	7%	13%	9%				

2.2. Research tools

T-Hoarder was used to download the tweets linked to the selected hashtags, using the open-code T-hoarder_kit method, which fulfils requirements for objectivity and transparency (Congosto, 2017). Thereafter, T-Hoarder and its algorithm were utilized to classify tweets and their relational metadata, on the basis of activity and impact (Villodre et al., 2021), along thematic lines using three orientations: time, space and relevance (Congosto, 2017). This first phase provided the foundations for using the Gephi program, an open-source interactive tool for visualizing and studying large network graphs and complex systems, looking for patterns and trends (Cherven, 2013). Gephi was employed to analyse the frequency and impact of messages, so as to undertake graphic modelling according to total RTs received, with spatial ordering using the ForceAtlas2 algorithm.

A selection of the most representative data obtained with T-Hoarder was then put through the MAXQDA Analytics Pro program (Release 20.4.1) to achieve a more qualitative approach. A first filtering of the messages picked out those containing terms repeated more than 200 times. Focus was then concentrated on terms related to hate speech (scorn, rejection, humiliation, harassment, disparagement or expressions of hatred towards individuals because they belong to a given group). The "Word Combinations" tool of MAXQDA was employed to determine which words linked to the most frequently repeated terms appeared or contributed to highlighting this hate speech. Finally, the "Keyword-in-Context" tool served to relate the selected terms and the words connected to them in their actual context, allowing localized analysis of the production of the discourse in question. The schematic for this procedure may be consulted through the hyperlink: https://doi.org/10.6084/m9.figshare.16649467.v4.

3. Analysis and outcomes

3.1. Results of scrutiny with T-Hoarder and Gephi

Five graphs produced with Gephi are presented below, one for each of the five campaigns studied. To create and shape each diagram, the following elements were taken into consideration: (a) the number of nodes, that is Twitter accounts looked at; (b) the number of edges, in other words interactions between accounts; and (c) modularity, in that the percentage of interactions is used to establish communities, understood as more cohesive subsections of the graph, or groups of nodes more strongly interconnected one with another, which are shown in the same colour in the graphs.

The spatial ordering of these nodes was achieved by means of the ForceAtlas2 algorithm, which takes into consideration a range of functions in performing this spatial distribution. Two of particular note were: (a) closeness, which sees a node as nearer to another the higher the number of interactions there are between them, and (b) intermediation, putting a node between two others when it has interacted with

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them, so that, for example, if a node A has interactions with two nodes, B and C, it is placed on the graph in the space between them. Figure 1 shows two large clusters. The right-hand grouping has many more nodes, edges and communities, and a greater degree of concentration, implying that there is a considerable percentage of interactions between the accounts. In contrast, the left-hand grouping is much more diffuse and is located at a distance from the right-hand community because of its eccentricity, in other words its lack of interactions with this other cluster, as its percentage of interaction is much lower. Because of its diffuseness, the left-hand cluster is of quite some spatial extent, even though the number of accounts in it is much smaller. This indicates that there is no great co-ordination among them, unlike in the right-hand cluster.



The distance between the two communities clearly demonstrates polarization, as the left and the right have virtually no interactions. In the right-hand cluster a contrast may be observed between the upper half, comprising the communities coloured yellow, orange, blue, and greenish blue, where there are no nodes with any significant degree of retweeting, and the centre and lower half, where there are concentrations of accounts with a major number of RTs. The accounts seeming largest in size can thus be interpreted as an opinion matrix, the structure for political communication creating opinions and receiving many RTs¹, as distinguished from the dissemination matrix, which is the set of accounts spreading messages, often false, automated or trolling centres, their names not appearing on the graph, signifying that they send RTs but do not receive them. Finally, an appendix to the cluster may be observed to the lower right, separated by reason of its limited interactions. This represents a community of Venezuelan accounts not interacting with the others, and goes to show the international reverberation of this campaign.

Of the visually largest accounts, the matrix of opinion in the right-hand cluster, several stand out, particularly that of the tweeter with greatest impact in this campaign, @juanfraescudero, Juan Francisco Escudero, a person closes to the far-right political party Vox. Similarly, there are Hermann Tertsch (a Member of the European Parliament for Vox, and an associate of the Floridablanca Network, a foundation belonging to the Atlas Network), Macarena Olona of Vox, Luis del Pino (a member of the Hazte Oír association and writer for the Libertad Digital online newspaper, both organizations linked to right-wing, extreme right-wing and ultra-Catholic sectors) or the anonymous tweetstar using Willy Tolerdo as an account name.



Figure 2 looks at the campaign launched by the losing candidate for the presidency of Peru, Keiko Fujimori, during one of her press conferences. It is possible to observe two large clusters, clearly polarized. On the left there is a single community complaining about the campaign, or mocking it, because there was no proof of any electoral fraud. On the other side, two main communities can be seen, with the accounts receiving most retweets lying at the bottom of the chart, the most prominent owned by a presenter from Willax TV, Diego Acuña (@diegoacuoficial). This is at one end of the graph, since many accounts interact only with this account, plus a few accounts in its community. Willax TV spread fake news about supposed electoral fraud in Peru (Quesada and Fowks, 2021). During the campaign, it made the claim that Pablo Iglesias had travelled from Spain to Peru to help Pedro Castillo. This hoax was also put around by right-leaning Spanish mass media, like esRadio, and led to demonstrations in front of the hotel where Iglesias was alleged to be staying (Newtral, 2021).



Figure 3 shows a single cluster without polarization, in which the accounts receiving most retweets are in a central position, indicating that these come from various communities, on the basis of the centrality of intermediation. This is the opposite case from the previous instance. Although there are various different communities, as indicated by the colours, they form one group and the same action front for spreading

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messages favourable to the man who, at that time, was a candidate for the presidency of Ecuador, Guillermo Lasso (@lassoguillermo), and against Andrés Arauz, the rival candidate. One prominent account is that of Carlos Andrés Vera (@polificcion), a member of the Ecuador Libre foundation, part of the Atlas Network, headed by Guillermo Lasso himself. Other noteworthy accounts belonged to Fernando Villavicencio, the director of the Periodismo de Investigación news service that, together with Carlo Andrés Vera, spread videos, later shown to be doctored, of the candidate Andrés Arauz during the electoral campaign that went viral.



Figure 4 is the graph covering the campaign relating to a claimed "Kirchnerist" putsch, the adjective being based on the married surname of the Vice-President of Argentina, Cristina Fernández [de Kirchner]. It is feasible to identify a large cluster made up of various communities and an outlier community polarized against it.



The accounts with the most RTs are fairly central, receiving interactions from the range of communities forming a common front against the Argentine government. Almost all the more prominent accounts are anonymous, like @2023macri or @chauoperetak, or they are of digital media spreading fake news and hate messages, like @laderechamedios or the account of the digital journalist Eduardo Prestofelippo "El Presto" (@elpresto2ok), who was arrested for online threats to kill the Vice-President. All of these are in

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the media ambit of the foundations, supported by Atlas Network, promoting Javier Milei and José-Luis Espert, right-wing libertarian political candidates, in Argentina, and politicians and groupings like Bolsonaro, Trump and Vox elsewhere.

Figure 5 shows a single cluster of several communities with scarcely any polarization, where the vast majority of accounts that stand out are on the right-hand edge and quite close to one another. The campaign was directed against the man who, at that moment, was Deputy Prime Minister in the Spanish Government. This was a campaign by right-leaning parties against the Government, but focused principally on the most radical part of the coalition, rather similarly to what happened in the Argentinian case. In this attack, certain anonymous accounts stand out, for instance @frayjosepho, @nicobolivariano or @guajesalvaje, as do the accounts of the far-right Vox and right-wing Partido Popular parties, such as the latter's online communications director Ismael Quesada, as well as @pablocast13, a member of the same party's youth movement. Likewise, there were journalists or media of the same tendency, such as Carlos Cuesta Arce (who has worked for the online OkDiario) or the Caso Aislado news website, both known to have published false news.

3.2. Results of scrutiny with MAXQDA

The next sections lay out the results of an analysis of the tweets selected on the basis of the frequency of words most often repeated (used more than 200 times). A visual representation was produced in the shape of a word cloud, as a function of frequency of use (Ballestar et al., 2020). Word clouds are a widelyused method because of their efficiency in summing up large quantities of data and giving an impression of the ideological views that lie behind a textual discourse. Finally, the results from the keywords in context study are presented.

3.2.1. Results for frequency of words most often repeated in the campaigns

In the word cloud generated for the campaign #SánchezVeteYa, it may be observed that the words most often repeated involve expressions associated with the misspelt HT lacking the Z. The highest frequency figures relate to the following: #iglesiasveteya [Iglesias must go], #gobiernocriminal [government of crooks], #sanchezaprision [jail for Sánchez], #iglesiasaprision [jail for Iglesias], #gobiernodimision [government must resign], #socialcomunista [Social-Communist], #nichobolivariano [nest of reds], #golpedeestado [putsch] and #dictadura [dictatorship]. The most central expressions involve clear references to demands for the resignation of the government led by Sánchez, and there are abundant aggressive and insulting expressions. There were also expressions relating to the crisis and pandemic. The full word cloud may be consulted at the website: https://doi.org/10.6084/m9.figshare.16649260.v1

In the word cloud for the campaign #IglesiasVeteYa, a number of the most common expressions in the previous campaign may be seen to recur, for instance #iglesiasveteya [Iglesias must go], #sanchezveteya [Sánchez must go], #iglesiasaprision [jail for Iglesias], and #golpedeestado [putsch]. There are some new appearances related to the management of the pandemic by the government, one of them equating the measures adopted with lies, #gobiernodelbulo [hoax government], and another referring to health measures taken, #mascarillas [facemasks]. There is a high frequency of expressions that are not merely negative or critical of the government, but actually hostile, such as #gobiernocriminal [government of crooks], #gobiernodeinútiles [government of incompetents]. The word cloud in question is available for consultation at the web address: https://doi.org/10.6084/m9.figshare.16649296.v1

The word cloud generated for the campaign #AndresNoMientasOtraVez shows a similar pattern to the two previous campaigns. The HT with the spelling mistake of the added R, is repeated. Expressions re-appear that involve accusations, or are insulting and alarmist in nature, instances being #miente [lies], #renuncia [resign], #corrupcion [corruption] or #escándalo [scandal]. There are often also insults #borregodatecuenta [wake up idiot]. Similarly to the other campaigns considered, there are allusions to the Covid pandemic (https://doi.org/10.6084/m9.figshare.16677760.v1).

As for the Argentinian instance, expressions and HTs are spread that denounce a supposed takeover #golpedeestadoenargentina [coup d'état in Argentina], #democracia [democracy], #golpista [putschist], #dictadurak [K dictatorship], among others. It is possible to note high-frequency use of words constituting

very serious accusations against a democratically elected government, described as #traidor [traitorous], #golpista [putschist], #ilegal [illegal] and #totalitario [totalitarian], as observed, indeed, in all the campaigns, although not with such virulence. References to the pandemic are also present here, as may be seen at the web address: https://doi.org/10.6084/m9.figshare.16654786.v1

Finally, the word cloud generated in the campaign #FraudeEnMesa can be seen to have as its most common expression the misspelt HT, with added N, itself. There is an attempt to spread suspicions about the democratically held elections through expressions like #impugnadas [challenged] or #robar [theft], and accusations like #criminal [criminal]. Similarly, insults even at a personal level are repeated once again, such as #tunohascambiadopelon [you've not changed, baldy] (https://doi.org/10.6084/m9.figshare.16654864.v1).

It is true that neither the campaigns studied, nor the specific messages spread by them, constitute an actual hate crime in themselves, so that no legal complaints were filed about encouraging them. However, it is obvious that in many of the messages transmitted in tweets, the language used may be seen to be hostile and intolerant towards a given group merely because it holds a different ideology.

3.2.2. Analysis of keywords in context

On the basis of the most often repeated combinations of words and those selected for keyword in context analysis, the following results emerge. Aggressive language is used in all the campaigns considered, with insults and expressions suggesting lack of legitimacy and accusations forming part of the tweet texts, given here as idiomatic translations in italics.

- Adolf Hitler was born 131 years ago. Remember that National SOCIALIST dictator came to power in a crisis, taking advantage of a State of Emergency! We need autopsies NOW to understand what is going on. Meanwhile Iglesias and Sánchez must go [campaign @iglesiasveteya].
- Shitty idiots. It's been seen what he's made of, this puppet worked with the same government he's so critical of until he was out on his ear, just because ... [campaign @andresnomientraso-travez].
- Always remember that not all idiots are Communists, but all Communists are idiots [campaign @golpedeestadok].

The government, even though democratically elected, is depicted as criminal and very serious accusations are levelled against it (fraud, criminality, plotting takeovers), which appeal to emotions and confrontation.

- The only solution for all this chaos, this huge betrayal, is military action, of course. Sánchez's bunch of crooks need to be brought to trial [campaign @sancheveteya].
- These are very SERIOUS facts! The far left and Communists are rigging an INSTITUTIONAL takeover and we need to speak up and protest! [campaign @iglesiasveteya].
- On 19 DEC there was an institutional coup d'état smashing our National Constitution and we're under a totalitarian regime. Let's act! We're covered by Article 36 [campaign @golpedeestadok].
- Accounts are used to spread accusatory messages (corruption, fraud, lies) without any proof, and often without even the slightest evidence
- This is for sure. We're under a full-blown dictatorship. Critics of this Social-Communist Government's management of affairs will be put on trial. The police spokesperson said so in a press conference [campaign @sanchezveteya].
- Sergio Massa promised to get rid of corrupt politicians and ended up joining them to ruin the country [campaign @golpedeestadok].
- The great "criminal organization" might have the election stolen from it. Something's amiss, isn't it? Or is it that the real criminal organization used your loathing so you wouldn't look where you needed to? [campaign @fraundenemesa].

Hostile language is used against groups with an ideology defending equality or fairness. Very often they are singled out and called criminals, with governments who share this progressive ideology being accused of being murderous regimes, terrorists, usurers, frauds, Communists, Chavistas, Fascists.

- Guests of killer regimes, sponsors of terrorists, housing profiteers, grant tricksters, and tax cheats, trying to give lessons about morality [campaign @iglesiasveteya].
- These Communists are just like ticks that sink their fangs into victims and kill them slowly! FUERZA ARGENTINA AGAINST COMMUNISTS [campaign @golpedeestadok]. Note: Fuerza Argentina is a right-wing organization claiming to be trying to save the country from the clutches of corruption.
- #AndresNoMientrasOtraVez you're like every other idle, useless, lickspittle, lying Communist [campaign @andresnomientrasotravez].

References to COVID-19 are present in all the campaigns analysed. Governments are blamed for the crisis and how it is managed, and even accused of premeditated murder of the victims of coronavirus.

- Sánchez is right about one thing, we must unite, but united against the crooked, putschist, totalitarian government we have in Spain [campaign @sanchezveteya].
- The chaotic handling of temporary layoffs has put 50,000 firms on the verge of bankruptcy #SancheVeteYa #GobiernoSanchezDimision #GobiernoDimisionYa» [campaign @sancheveteya].

It can be seen that this speech is attempting to cause a deep feeling of rejection towards a specific group, dehumanizing it simply because it has a different ideology (Pérez Calle et al., 2019). In this way, social networks, rather than acting as a space for freedom of expression, are converted by certain sectors into a tool for encouraging political hate speech.

4. Discussion and conclusions

It does not seem that political hate speech emerges spontaneously and in a random way. Rather, it shows a clear political intention, stirred up by certain groupings with the aim of destabilizing democratic governments or public figures representing them. Such discourse comes from, and is encouraged by, groups that are in the minority but very powerful (Atlas Network, Hazte Oír, and similar), strongly linked one with another and having very deep pockets to fund their plans (Albin, 2021). The campaigns analysed here follow a highly noticeable configuration of diffusion of messages, acting like a sort of digital militia, which even attempts to pick out and pursue on line anybody who questions the ideas being spread (Busón, 2020). In this way those involved become what are known as haters (Recuero, 2017).

In all these cases, a common pattern can be detected. Groups linked to the far right organize campaigns through a number of authentic accounts, which are immediately followed by the action of a large number of fake accounts intended to convert certain given hashtags into trends on Twitter and thus to influence the state of public opinion. Among the evidence that was found of the automation of these processes, it is possible to quote the repetition of certain spelling mistakes identically as hashtags are disseminated, or the considerable presence of false accounts. All of the campaigns analysed had between 6% and 10% of automated accounts, the main function of which is to send RTs to the opinion matrix, when the normal figure lies between 1% and 3%. Moreover, there was a significant increase in the percentage of this type of account in hashtags with errors. A third factor is the striking growth in the number of accounts created just prior to campaigns and also used to spread them, an increase in excess of 20%. A noteworthy example may be seen on the following hyperlink: https://doi.org/10.6084/m9.figshare.16695127.v1.

As has been demonstrated in previous research (Luque et al., 2021; Stanley, 2019), such campaigns are disguised as supposedly real news, though not offering trustworthy sources (Molina & Magallón, 2019). One of their aims is to create an illusion around imaginary enemies or dangers, so that the public at large will come to see as threats the political and ideological proposals associated with groups, governments, and parties that are politically and socially progressive, left-wing or pro human rights. To that end, so-called "political term dictionaries" are drawn up to impose a given highly-biased political viewpoint, with constant repetition of aggressive, insulting phrasing such as "criminal", "Fascists", "shit of a Communist", and the like (Busón, 2020), as may be seen in the campaign #IglesiasVeteYa.

This form of political speech tends to focus interest on emotional matters (Molina & Magallón, 2019; Richards, 2010), appealing to irrationality, so that news is swallowed uncritically and shared rapidly, hence gaining visibility and going viral, thanks to matrices of diffusion that act as transmitters. The bellicose language and attacks, going down even to a personal level, contribute to emotional polarization (Magallón & Campos, 2021) against the "other", generating a climate of confrontation, fear, exasperation and permanent conflict. The hope is that the matrix for the contrary opinion will react to these political hate messages, in order for their content to go viral through interaction with opponents, as seen in the campaigns #FraudeEnMesa and #SánchezVeteYa.

The campaigns considered attempted to create a social climate questioning democracy (Revenga, 2015) through discrediting politics as a mechanism for participation and representation, by calling democratically elected governments "putschists". They spread the message that elections are not to be trusted because electoral fraud has become a part of the system itself, whenever the leaders they favour are not successful. The strategy from the far right is gradually being adopted and shared by conservative sectors, retweeting and disseminating its messages. What is most serious is the possibility of these becoming performative in nature, since in the cases analysed the political hate speech spread through Twitter seems to have had some capability to trigger a climate of political hatred in offline social reality. This leads to a situation in which it becomes increasingly difficult to construct bridges of understanding in real life, or to seek agreements between those who differ, on the basis of the common good, tolerance and social justice.

Spanish law, indeed Article 20 of the Constitution itself, guarantees a right to freedom of expression of ideas or opinions. However, this is not an absolute and unlimited privilege, but must be exercised in such a way as not to infringe the rights of others, in particular their rights to honour, dignity, equality and nondiscrimination (Grau-Álvarez, 2021), as recommended in the "Code of Conduct on Countering Illegal Hate Speech Online" signed by the European Union with Twitter and other social networks. Hence, the route forward is not just legal punitive measures against political hate speech, but also education (Glucksmann, 2005) that will prevent it and give future generations the tools needed to analyse and respond to it.

Messages, news and campaigns arriving via social networks are nowadays the prime source of reading material and content for a large number of people, especially younger folk (Andrade-Vargas et al., 2021). One of the tools that has been implemented in this context in formal education in Spain, was the subject "Education for Citizenship and Human Rights" instituted by the Basic Law on Education (LOE) of 2006. It is true that in 2013 the Basic Law on Enhancing the Quality of Education (LOMCE) eliminated this subject, but the new Basic Law Amending the Basic Law on Education enacted in 2020 (LOMLOE) reinstates a subject entitled "Education on Civic and Ethical Values". According to Article 121 of the law, the subject is intended to make pupils into future citizens committed to the values of democracy, and to develop in them digital skills and a critical media literacy that teaches them to read and interpret the world around them. This may be a key opportunity to provide them with tools for analysing and responding to political hate speech on networks. All the same, it must be admitted that such tools do not always show significant effectiveness (Guan et al., 2021).

Finally, it must be noted that among the limitations of this piece of work are both the restricted number of campaigns analysed, not permitting any greater generalization of results, and the current limited impact of the Twitter network itself, as indicated. Finally, there are the limitations of the MAXQDA software in respect of the quantities of data it allows to be input and analysed. In future investigations it would be of interest to bring in further analytical tools to allow an enhanced analysis of the impacts of political hate speech on social networks, as well as its effects on the general public and the process of political decision-making.

Notes

¹The expression "matrix of opinion" is used here in the sense described, somewhat different from normal usage, which considers it a structure transmitting an idea in the form of speech or contents. This is in order to distinguish these accounts, creators of opinions, from those merely passing them on (the "matrix of dissemination").

Authors' Contribution

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ABSTRACT

The impact of technological tools in the educational field is unquestionable. The smartphone has established itself as the device with greater versatility and applicability in the academic/personal context of the subjects. For this reason, the following study addresses, from a longitudinal qualitative approach, the knowledge, use, benefits, and difficulties of the pedagogical application of smartphones, as well as the training needs perceived by higher education teachers, understanding the evolution of this trend in the last seven years. The participating sample is made up of 32 lecturers belonging to five Spanish universities, through the realization of six focus groups during the 2014-2015 and 2021-2022 academic years. The main results show that the lecturers value favorably the possibilities of the tool for communication and information search. However, in recent times more skeptical and critical evaluations are perceived, considering that the smartphone has not brought about the expected qualitative leap in the teaching methodologies applied in the classroom. Promoting the critical, responsible, and context-specific use of the mobile device, while effectively applying its technological possibilities in the creation of constructive pedagogical experiences in a temporally and spatially specified manner, may be one of the keys to a harmonious and not overloaded coexistence between academic and life experiences mediated with and without technology.

RESUMEN

La repercusión de las herramientas tecnológicas en el ámbito educativo es incuestionable. El smartphone se ha instaurado como el dispositivo con mayor versatilidad y aplicabilidad en el contexto académico/personal de los sujetos. Por este motivo, el siguiente estudio aborda, desde un enfoque cualitativo longitudinal, el conocimiento, uso, beneficios y dificultades de la aplicación pedagógica de los smartphones, al igual que las necesidades formativas percibidas por el profesorado de Educación Superior, comprendiendo la evolución de esta tendencia en los últimos siete años. La muestra participante está conformada por 32 docentes pertenecientes a cinco universidades españolas, a través de la realización de seis grupos focales durante los cursos 2014-2015 y 2021-2022. Los principales resultados evidencian que los docentes valoran favorablemente las posibilidades de la herramienta para la comunicación y búsqueda de información. Si bien, en los últimos tiempos se perciben valoraciones más escépticas y críticas, llegando a considerar que el smartphone no ha propiciado el salto cualitativo esperado en las metodologías docentes aplicadas en las aulas. Promover el uso crítico, responsable y ajustado a cada contexto del dispositivo móvil, así como aplicar eficazmente sus posibilidades tecnológicas en la creación de experiencias pedagógicas constructivas concretadas temporal y espacialmente puede ser una de las claves para la convivencia armónica, y no sobrecargada, entre las experiencias académicas y vitales mediadas con y sin tecnología.

KEYWORDS | PALABRAS CLAVE

Smartphone, mobile learning, qualitative research, focus group, Higher Education, lecturers. Smartphone, aprendizaje móvil, investigación cualitativa, grupo focal, Educación Superior, profesorado.

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1. Introduction

Information and Communication Technologies (ICT) have become an essential tool for human life in the 21st century. Their ease of use and their multiple functionalities are contributing to these technologies penetrating increasingly broader spheres of life and work, among which university classrooms have not been excluded (Ramírez-García et al., 2020; Ricoy & Fernández, 2013). ICTs have reached the educational system, specifically, the world of higher education, and have contributed to the evolution and transformation of the more traditional pedagogical dynamics, providing flexibility and richness to the teaching-learning-assessment processes, favoring learning in informal settings, and making the university an institution which is open and contextualized to the society in which we live (Lozano & Sánchez, 2018; Valtonen et al., 2021). Furthermore, recent research (Aguiar et al., 2019; Gupta et al., 2021) suggests that ICTs are going to generate a 180-degree change in the educational paradigm, including organizational criteria, materials, resources, and evaluation, and are advocating for students to acquire the sense of responsibility and self-direction as basic skills. In this respect, students highlight the need to have technological devices provided by the universities themselves and for teachers to use technology in teaching processes in a justified and relevant manner (Valtonen et al., 2021). Mobile devices are consolidated, in social terms, as the most used digital tools by the population today. Specifically, according to the latest report from the Spanish National Observatory of Technology and Society (ONTSI, 2021), the smartphone is configured as a universal device, used by four out of every five Internet users.

In this context of the democratization and global distribution of smartphones, one of the virtues users most value is, without a doubt, ubiquity, and mobility; the possibility they offer of being connected at any time and in any place. This characteristic is basic in an increasingly decentralized scenario for higher education, where physical spaces and spaces bound by university campuses are no longer determining elements in the learning and social interaction of students, but rather transcend towards a more global sphere via the connection to technological devices (Arain et al., 2019; Ramírez-Montoya & García-Peñalvo, 2017; Yáñez-Luna & Arias-Oliva, 2018). In this sense, there are multiple experiences (Aguas-Díaz et al., 2020; Artal et al., 2017; Ballesteros-Ballesteros et al., 2020; Cabero et al., 2017; Fernández & Tabuenca, 2019; González-Fernández & Salcines-Talledo, 2015; Jordano et al., 2016; Masero, 2019; Marçal & De Castro, 2017; Pérez-Gutiérrez & Cobo-Corrales, 2019; Romero-Rodríguez et al., 2021; Urrea & Sauleda, 2020) which, in recent years, have incorporated the use of smartphones into university classrooms through emerging methodologies, such as Mobile Learning, whose hallmark is the use of mobile devices to conduct educational actions (Santiago et al., 2015).

However, despite the notable development of programs and applications for smartphones, and the wide diffusion of these devices among students, their use for educational purposes remains scarce (Mergany et al., 2021). As described by Area-Moreira et al. (2018), the predominant university teaching model continues to be expository, without having taken advantage of the incursion of ICTs to make a qualitative leap towards student-centered pedagogical approaches that favor autonomous, active, and social learning processes. Even with the situation caused by the COVID 2019 pandemic, in which face-to-face teaching has been seriously compromised, public universities continue to rely primarily on the didactic tradition of face-to-face teaching (Area-Moreira et al., 2021). In the same way, the mere implementation of ICT in the classroom is not a guarantee of a critical-reflexive use, but rather requires –among other factors–a responsible and digitally competent teaching staff, capable of selecting and discriminating between the available resources: those that correctly adjust to contemporary reality and, therefore, guarantee methodologies adapted to the times, which are active, inclusive, and innovative (Aguilar-Gavira & Benítez-Gavira, 2020; González-Fernández et al., 2015).

In this respect, as stated by Nolasco and Ojeda (2016), the data points to the existence of a direct relationship between the knowledge, attitudes, and expectations that teachers express regarding the use of technology and the real success of its incorporation into the classroom. Therefore, the role of teachers is key in the results of these educational experiences. It seems that, as Traxler (2021) points out, the mobile learning paradigm, despite being two decades old and having attained many practical, pedagogical, and conceptual achievements, is now running out of steam because it has failed to adapt to a world in which mobile technologies are pervasive, ubiquitous, and intrusive, where people and communities can control

their own learning. Similarly, Mesquita-Romero et al. (2022), say that two decades has been enough time for educational administrations to effectively apply their digitization strategies.

In this regard, innumerable recent research works (Casanova et al., 2021; Ferrero-de-Lucas et al., 2021; Lu et al., 2021; Mercader & Gairín, 2017; Montalvo, 2019; Salcines-Talledo et al., 2017) and studies after the emergence of ICT in the classroom (Baelo & Arias, 2015; Castillo et al., 2010; Flores & Del Arco, 2013; Henríquez et al., 2014; Machuca, 2009 ; Marín, 2004; Maroto, 2007; Miratía, 2012; Valerio & Paredes, 2008), have delved into this field of knowledge, analyzing the patterns of pedagogical use that teachers -and, more specifically, university professors- make of technologies, and have outlined some general profiles based on their knowledge, attitudes, uses and training needs. In addition, the most recent studies (Álvarez-Flores, 2021; Hernández et al., 2018) focus particularly on the critical-reflexive skills that are mentioned above, going beyond the vision of ICT from an exclusively technical perspective to adopt a more global approach, where the critical and safe use of the network occupies a privileged place. It has been reported that the mere extensive use of the media does not guarantee the acquisition of digital and media skills that citizens of the 21st century need, converting the preparation of the youngest members of society in the critical techno-social use of these devices into a great inexcusable challenge for the educational system (Mesquita-Romero et al., 2022).

Faced with this reality of the expansion of ICTs in the world of higher education, one characteristic of these technologies is noteworthy: the phenomenal speed of their evolution and development. As expressed by Grande et al. (2016), ICTs, in addition to having a greater scope than any technological resource to date, stand out for their speed of change, manifesting vertiginous transformations with an impact comparable to fundamental technological developments, such as the printing press or the steam engine. In fact, it seems that technology is guiding society towards transience and imminence, in a model permeated by the constant search for new stimuli and experiences. In his latest essay, Han (2021) reflects on how the smartphone is leading society to an insatiable consumption of information and stimuli, to the detriment of the magic of the solid, tangible, and silent. In this context, it would be coherent to think that, since the incorporation of ICT and, more specifically, the smartphone, into university classrooms, the changes and the quantitative and qualitative evolution of their use is remarkable. Furthermore, the uses, knowledge, attitudes and expectations of teachers, as key agents in the process, are dependent on these giant leaps and technological advances. For all of the above, this research seeks to study this field of knowledge in greater depth, considering the aim of addressing the reality of the knowledge, use, benefits and difficulties of the pedagogical application of smartphones, as well as the training needs perceived by teachers of higher education working in five national universities, by studying the evolution of this trend over the last seven years.

2. Material and method

2.1. Sample

The sample of this study is made up of thirty-two university professors and lectures (53.12% men and 46.88% women) from five Spanish universities: The University of Cantabria, the University of the Basque Country, the University of Zaragoza, the University of La Laguna and the University of Valladolid. A non-probabilistic, intentional, and opinionated sampling was used for their selection (Sáez-López, 2017), ensuring the diversity of the participants relative to the branch of knowledge, teaching category and years of teaching experience. In this regard, teachers from all branches of knowledge, different teaching categories, with professional experience ranging from three to thirty-three years participated in the study. The participation of teachers was in the form of six focus groups distributed in two periods of time: the first during the 2014-2015 academic year and the second during the 2021-2022 academic year.

2.2. Tools

A semi-structured ad-hoc template was designed with questions for the development of focus groups, as a qualitative data collection technique to examine concepts, perceptions, mental images, beliefs, emotions, interactions, thoughts, experiences, processes, and experiences. collectively manifested in the language of the participants (Hernández-Sampieri & Mendoza, 2018). The semi-structured question guide created for the focus groups consisted of seven large blocks, each one with different questions and a final summary and closing block (See Annex 1: https://figshare.com/s/07db0c68aed2dbcf8a41).

The validation of the information collection technique was performed by a content analysis using expert judgment, with the aim of knowing whether the questions posed were adequate and relevant to collect information on the concepts to be dealt with. To do this, five expert judges were consulted, selected based on their extensive knowledge of the specific topic and their experience in conducting qualitative research. Along with the focus group question guide, following Escobar-Pérez and Cuervo-Martínez (2008), a template was also sent to the judges for the evaluation of the instrument (See Annex 2: https://figshare.com/s /f8117add4f71ee42c700).The judges gave a highly positive assessment of the script of the questions and thanks to their comments and assessments the instrument was improved by introducing sub-questions, examples, and nuances in the wording.

2.3. Procedure

The qualitative research follows a longitudinal design to address the evolution of the phenomenon under study over a period of seven years. The information collected in the six focus groups was recorded and transcribed for later content analysis with the support of the Atlas.ti 6.0 program, which allowed the content to be codified and categorized, and was able to select relevant citations and establish networks. In this case, a deductive-inductive categorization was conducted. The research was based on categories in the focus group script, but new categories also emerged at the time of analysis.

In order to provide greater validity and credibility to the results, a process of triangulation of researchers was carried out (Okuda & Gómez, 2005; Ruiz, 2003) for the coding of the data and the analysis of the categories, obtaining a Kappa coefficient of .80. Table 1 shows the matrix with the categories, subcategories and codes used in the analysis of qualitative data.

Table 1. Matrix of codes, categories and subcategories established for the analysis of the qualitative data						
Knowledge	Conceptual Associations	CON_ASO				
	Self-perception Degree of Knowledge	CON_AUT				
Use	Personal	USO_PER				
	Academic/Professional Communication and Management	USO_ACA_CG				
	Academic/Professional Teaching	USO_ACA_DOC				
	Integrated	USO_INT				
Benefits	Personal	BEN_PER				
	Academic/Professional	BEN_ACA				
Difficulties	Personal	DIF_PER				
	Academic/Professional	DIF_ACA				
Training	Learning Experience	FOR_EXP				
	Training Needs	FOR_NEC				

3. Results

The results obtained after analyzing the content of the focus groups based on the matrix shown in Table 1 are described below. As such, the manifestations of the participating teachers on the issues raised through citations and networks are organized around the applied categories. Furthermore, the evolution of the perceptions is presented according to the time dimensions: the academic year 2014-2015 and the academic year 2021-2022.

3.1. Knowledge

The conceptual, emotional, or operational associations made by the teachers in response to the word "smartphone" provide knowledge on the ideas, sensations and concepts that they link or that relate to the term. Two networks are presented below (Figure 1 and Figure 2) with the associations made by the participating teachers in the 2014-2015 academic year and by the participants during the 2021-2022 academic year.



One can see that terms such as "connection", "technology" and "utility" appear in both time periods, related to the description of the device and the possibilities it offers. However, there is an increase in the most negative associations, such as "dependence", "attachment", or "stress", in the more recent manifestations.



Regarding the subcategory "Self-perceived Knowledge", the participants of the focus groups in the 2014-2015 academic year consider, for the most part, that their level was that of a "medium-low" user, while the participants in the 2021-2022 academic year said their level was "medium" user. In other words, teachers currently have a slightly higher self-conception of their teaching competence for the use and handling of the tool.

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3.2. Use

The type of smartphone use by higher education teachers is collected in the analysis units coded around the subcategories "personal use" and "academic-professional use". Both the participating teachers during the 2014-2015 academic year and during the 2021-2022 academic year, refer to a personal use associated, generally speaking, with communication and information:

- "I use it mainly for communication. I have email and WhatsApp. And then I always have the translator... I have installed and used the GPS, I have also installed the weather program... I use what I see that interests me and it is mainly for communication" (USO PER 14-15).
- "I use it a lot as a personal newspaper. I think it is the modern-day way since until now we have read a print version of a newspaper and now we do it on this type of device" (USO_PER_14-15).
- "I, fundamentally, like V, use it mainly for communication. I also use it to look up information, because access is everything on the internet, be it repositories or whatever... But fundamentally, if I stop and think, I use it for communication and information search" (USO PER 21-22).
- Regarding the academic-professional use of the smartphone, it is worth noting, in the two samples (2014-2015 and 2021-2022), a predominance in its use is mentioned for communication and management purposes in the professional field:
- "I use it more and more, although I thought I wouldn't, for e-mail. I almost use the phone more for email than the computer. I also use WhatsApp groups and it helps you stay in touch" (USO_ACA_CG_2014-2015).
- "I am deputy director of the Department, so yes, there are a series of management issues that have to be performed and I do them with the mobile too" (USO_ACA_CG_2021-2022).
- "There are times when you have management issues, or things with projects and you need to provide an answer, other times with students... And then, for communication, we have a WhatsApp group for the entire work group. So, when tasks arise within the research group, we solve them via the WhatsApp group" (USO_ACA_CG_2021-2022).
- Similarly, although less frequently, teachers also refer to experiences related to the teaching use of the tool:
- "I apply other methodologies and, practically speaking, I don't give lectures. So, what I do is encourage the use of the smartphone because it is the tool they have most at hand to find things. You raise any issue with them and the first thing I tell them is: 'come on, let's see what you find'. I want you to look for videos about such and such. So, there they are all looking and seeing. Well, it is one way of doing it" (USO_ACA_DOC_2014-2015).
- "I use an application called Socrative, in which you ask them the questions on the computer, and they answer from the smartphone, tablet or whatever they have. That has worked quite well, and I am very happy. (...) They did not want to answer questions I used to ask orally" (USO_ACA_DOC_2014-2015).
- "I use Kahoot!, Edpuzzle, Wikis and others, especially after COVID. I no longer aim to use it so much to motivate or encourage them, which I think ultimately depends on the teacher, regardless of the tool, but rather because they are already so familiar with it, it is much easier for them. Just imagine telling them "you have to write by hand", "excuse me?" (USO_ACA_DOC_2021-2022).
- "I realized something. A few years ago, it did motivate them, it seemed innovative, for example, using Kahoot! but now they say 'just like in high school'. So, for example, I like to break that association between high school and university. It is no longer new to them; it does not seem to motivate them much" (USO_ACA_DOC_2021-2022).

As seen in the comments, it is noteworthy how they attached great value to the inclusion of the smartphone as a pedagogical tool in their teaching in the 2014-2015 academic year, while they no longer perceive it as such a novel practice or motivating for students in the 2021-2022 academic year, despite having had to repeatedly use Mobile Learning as a result of the COVID-19 pandemic.

Finally, in relation to the "Use" category and despite the differentiation between the use of the tool in the personal and academic-professional spheres, teachers in recent years have been expressing their concern about the lack of limits between what is personal and professional given the omnipresence of technology, a circumstance that was not expressed in the first focus groups:

- "The truth is that I only use the smartphone for my personal use. I separate the personal from the work and I have a tablet for the agendas and for all class matters" (USO INT 2014-2015).
- "I'm on holiday by the pool looking at my email... It's like, if you don't look at it, when you get back to work later, and have 500 emails, you can't handle everything. I prefer to look every day and delete them. I don't have any type of limitation, let's get on with it" (USO_INT_2021-2022).
- "I look at my mobile at midday because I get 200 emails and when I look at my mobile at night, and... I think there is no longer a separation between the personal and the professional in the case of teachers. It has disappeared" (USO INT 2021-2022).

3.3. Benefits

The main advantages and potentialities that teachers perceive in relation to the use of the smartphone are collected in the subcategories "Personal benefits" and "Academic-professional benefits".

The personal benefits highlighted by the teachers in both the time periods fundamentally refer to speed and immediacy, free access to information, versatility, or agility in communication:

- "Thanks to the smartphone we can do several things at the same time. In other words, I am talking to a person and at the same time he or she is sending me information on WhatsApp and tells me they will look at it tonight... And they have not told me that information face-to-face" (BEN_PER_2014-2015).
- "The best thing for me is its immediacy, having access to any information or data and being able to control anything" (BEN PER 2021-2022).
- On the other hand, the academic benefits most valued by teachers are convenience, versatility, and communication options with students, as well as the possibilities for student evaluation and motivation:
- "Because it is a vehicle for communication, access to information, facilitator of learning... It is a tool that, if used well, has lots of possibilities, which are still not fully known and exploited. And everything is in a single device. I mean that before you had to do one thing, and then another, another... but having everything compact in the same instrument really is an advantage or a benefit" (BEN ACA 2014-2015).
- "There is an intrinsic motivation, the student is very interested in using the mobile" (BEN_ACA_2014-2015).
- "Something good is that immediacy has saved me many times, in the sense of answering an important email, validating a project... Because, in fact, I no longer have a laptop, I use the computer in the laboratory office and the smartphone. And, if I go to a congress, I use the smartphone" (BEN_ACA_2021-2022).
- "I think the students are motivated, they like it. For example, what we were talking about before Kahoot! or that type of application, they like them a lot" (BEN_ACA_2021-2022).

3.4. Difficulties

The analysis units included in the "Difficulties" category collect the main limitations, risks, or threats that higher education teachers identify in relation to the use of the smartphone. Specifically, there is an analysis of the content in the subcategories "Personal difficulties" and "Academic-professional difficulties".

The personal difficulties mentioned by the teachers in both periods are related to the vulnerability of privacy, lack of attention or the risks always derived from access to communication and information, such as anxiety, dependence and lack of limits between the professional and the personal. There are also references to the controversy between technological hyper connection, the need for intimacy and the real loneliness that it provokes.

- "I think the smartphone is responsible for a problem of chronic lack of attention that may be an illness" (DIF PER 2014-2015).
- "But it is true that there are many people who now coordinate through WhatsApp much faster, much more immediately... But it makes me feel anxious. It is not good to be connected twenty-four hours a day with work issues. I restrict my spaces" (DIF_PER_2014-2015).
- "It is the loneliness of the big cities. But how can this be the case if you are surrounded by people and you do not go into the subway? Yet you feel completely alone. And where is there more communication? In towns with twenty inhabitants" (DIF_PER_2014-2015).
- "Yes, they sometimes put limitations on me at home. They tell me that there are times when you can't be on your mobile, that you shouldn't look at it, and I say 'but sometimes it's inevitable'. "Very often you see the message and say 'well, I will answer it' and other times it is something urgent that you have to answer the student. Well, in the end you get used to the fact that you are available twenty-four hours a day. I have received emails at twelve o'clock at night, at one in the morning on a Saturday, and in the end, you get used to being connected 24/7, it seems that we are on permanent call" (DIF_PER_2021-2022).

After analysis of the textual citations, one can see that, in the first focus groups, the teachers were aware of the risks, but tried to define the spaces and times of professional and personal use of the tool. However, when analyzing the latest responses, one can also see that, despite continuing to be aware of the risks, they have difficulty in defining the moments and purposes of connection.

On the other hand, regarding the academic-professional difficulties mentioned in the first meetings with the teachers, they referred to how the smartphone could favor thoughtlessness and lack of criteria in the selection and consumption of content, leading to the isolation and disconnection of students.

For their part, the teachers who participated in the 2021-2022 focus groups consider that the teaching use of the tool is highly pernicious as it favors "multitasking", and time wasting. In both periods (2014-2015 and 2021-2022) they perceive that it promotes distraction and that some technical limitations, such as the small screen, hinder its usefulness.

- "One difficulty I notice is that they monopolize the student's attention, which isolates them and, many times, you are talking to a wall because no one or very few people have heard you or are paying attention in class. I have noticed that a lot. And then you realize this when they ask you things I have repeated thirty times. Many are taking notes because they are in the habit of taking notes with it. Sure, this is small, it catches your attention and isolates you and you don't listen to the teacher. And that is a problem for me. And if they are looking at social networks, I don't even want to tell you" (DIF_ACA_2014-2015).
- "An advantage has been mentioned, but I can see it as a drawback: access to information is too easy. It takes a very judicious use of technology to really take advantage of it without the inconvenience of the enormous waste of time and energy that it can entail. In fact, do our students know more than they did twenty years ago? I am not sure at all" (DIF_ACA_2014-2015).
- "I believe that this immediacy gives us the option of making mistakes much faster, in other words, of not being reflexive in an absolutely categorical way" (DIF_ACA_2014-2015).
- "I don't see it as useful. Not Kahoot!, not Mentimeter, not any of these things. It seems a waste
 of time to me, it is like playing in class and I don't see that they learn anything doing that. Their
 motivation needs to come from home and participation is their duty, then I don't have to motivate
 them, I don't have to be doing weird things, I don't have to be wasting time on such nonsense"
 (DIF_ACA_2021-2022).

3.5. Training

Information from the category "Training" is analyzed according to the subcategories "Training experience" and "Training needs".



Firstly, Figure 3 and Figure 4 show that teachers refer to a highly intuitive, self-taught learning process, although, on some occasions, they mention more traditional training processes such as manuals or officially regulated courses.



Secondly, regarding the training needs, the demands related to the knowledge and handling of specific applications were verified in the 2014-2015 group, pointing out the importance of the format of the course or seminar to be taught. In other words, they consider the execution of an eminently practical and extensive training in which the teacher supervises and accompanies the learners throughout the entire process as

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being fundamental. However, as regards the 2021-2022 academic year, they no longer require as much training due to both the possibilities they have for self-training through the Internet and the more critical view of the educational application of the smartphone.

4. Discussion and conclusions

The aim of the present study was to study in greater depth the pedagogical evolution of smartphones over the last seven years, from the point of view of university teachers. Firstly, regarding the conceptual associations that teachers make about the tool, despite collecting highly positive evaluations, like Lozano and Sánchez (2018), and Valtonen et al. (2021), there has been an increase in the more negative associations in recent years, regardless of manifesting a more effective management of it. Therefore, considerations related to anxiety, bondage or dependence emerge to the detriment of ideas such as functionality or usefulness to which they alluded during the first period. Therefore, it seems that there is a certain tendency to problematize or, at least, to perceive from a more critical perspective, the real possibilities of the smartphone. The personal use that higher education teachers made of the smartphone, in both time periods, is generally associated with communication and information search. In relation to its academicprofessional use, there is a predominance of use for communication and management purposes. Although the evaluations of Mobile Learning teaching practices were initially highly favorable (Camacho, 2011; Santiago et al., 2015), teachers currently no longer perceive them as something new and motivating for students, unless it is pertinent and justified (Valtonen et al., 2021). In other words, the inclusion of ICTs, in contrast to what some previous research reported (Aguiar et al., 2019; Gupta et al., 2021; Lozano & Sánchez, 2018; Valtonen et al., 2021), has not led to a qualitative leap in teaching methodologies (Area-Moreira et al., 2018; Area-Moreira et al., 2021; Mergany et al., 2021).

In addition, the difficulties seen in the use of the smartphone are related to the fragility of privacy, attention and technological hyper connection, leading to situations of anxiety and dependence in users. Specifically, and in line with Mesquita-Romero et al., (2022), teachers mention how the manifest technological consumption of their students is far from being critical-reflexive, even promoting time wasting and «multitasking» when faced with such a large number of stimuli (Han, 2021). However, teachers perceive multiple benefits of the tool both at a personal and academic-professional level related to speed, versatility, immediacy, communicative agility, possibilities to motivate and assess learning (Arain et al., 2019; Ramírez-Montoya & García -Peñalvo, 2017; Yáñez-Luna & Arias-Oliva, 2018). Finally, regarding training, a decline in the more traditional face-to-face training processes in favor of online self-training is corroborated. Although in the first period the teachers expressed some training needs, especially related to the technical use of applications, these barriers seem to have been overcome now, in a self-taught way, and in addition, with a more residual interest derived from the critical perception shown about the real effectiveness of the use of the smartphone in the teaching-learning-assessment processes.

One of the main limitations of this research may lie in the fact that it only collected the opinions of teachers, which could be expanded to enrich the data collection in the future with the vision of other agents involved such as students, graduates, and employers. Furthermore, it would be of much interest to include the participation of an international sample for a global overview of the phenomenon. In the same vein, it would be necessary to focus future research on the proper management of the device both in the professional and personal environment, preventing disruptive, invasive, and omnipresent use, in favor of responsible, constructive, and critical use. Similarly, it seems pertinent to continue examining the reasons why Mobile Learning has not had the expected qualitative impact on higher education. Understanding what the appropriate technological means and applications are for each context, using these technologies to work as a team to collaboratively create and build resources, knowledge, and content, may be part of the solution. This is especially true in the face of saturation, lack of limits, or the imprecise application of technology.

Authors' Contribution

Idea, I.S.T., N.G.F.; Literature review (state of the art), I.S.T., N.G.F., L.D.H.; Methodology, I.S.T., N.G.F., L.D.H.; Data analysis, I.S.T., N.G.F., L.D.H; M.A.M.; Results, I.S.T., N.G.F., L.D.H.; Discussion and conclusions, I.S.T., N.G.F., L.D.H; M.A.M.; Writing (original draft), I.S.T., N.G.F., L.D.H.; Final revisions, I.S.T., N.G.F., L.D.H; M.A.M.; Project design and sponsorship, I.S.T., N.G.F.

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Interdisciplinarity of scientific production on hate speech and social media: A bibliometric analysis



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ABSTRACT

The impact of hate speech, both on a personal and social level, has increased due to social media. This has made it the focus of interest of numerous scientific journals, which increases the visibility of this global problem. The aim of this research is to analyse the basic descriptive metrics of the scientific production on hate speech and social media, as well as to explore the interdisciplinarity of these approaches. A bibliometric study has been carried out on the basis of the works indexed in the Scopus database related to the binomial 'hate speech' and 'social media' over a period of 20 years (2001 to 2020). The metrics used show that it is from 2017 onwards when this topic begins to arouse greater interest among researchers and that they constitute a sufficient indicator to consider the topic as one of interest to the scientific community. The joint research between both concepts raises its quality levels from a strictly metric point of view. 'Computer Science' and 'Social Sciences' are the two areas that clearly define the scientific production on this subject. The inversion of percentages in terms of the areas of origin of the works and citations in these two areas, is evidence of this interdisciplinarity. The indicators obtained show the relevance and transcendence of a social problem in the face of which proactive measures must be implemented.

RESUMEN

Las repercusiones que tiene el discurso del odio, tanto a nivel personal como social, se han intensificado con las redes sociales. Esto lo ha convertido en centro de interés de numerosas revistas científicas, lo que incrementa la visibilización de esta problemática global. El objetivo de esta investigación es analizar las métricas básicas descriptivas de la producción científica sobre el discurso del odio y redes sociales, así como explorar la interdisciplinariedad de estos enfoques. Se ha llevado a cabo un estudio bibliométrico a partir de trabajos indexados en la base de datos Scopus relacionados con el binomio «discurso de odio» y «redes sociales», en un período temporal de 20 años (2001 a 2020). Las métricas utilizadas demuestran que, a partir del año 2017, esta temática comienza a despertar mayor interés entre los investigadores, constituyéndose un indicador suficiente para considerar el tema como de interés por parte de la comunidad científica. La investigación conjunta entre ambos conceptos eleva sus niveles de calidad desde un punto de vista estrictamente métrico. Las áreas «Computer Science» y «Social Sciences» son las dos que definen claramente la producción científica sobre este tema. La inversión de porcentajes en cuanto a áreas de procedencia de los trabajos y citas en estas dos áreas evidencian esta interdisciplinariedad. Los indicadores obtenidos muestran la relevancia y trascendencia de un problema social ante el que se deben implementar medidas proactivas.

KEYWORDS | PALABRAS CLAVE

Hate speech, bibliometric analysis, social media, interdisciplinarity, scientific production, visibility. Discurso del odio, análisis bibliométrico, redes sociales, interdisciplinariedad, producción científica, visibilización.

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1. Introduction

Freedom of expression is the cornerstone of the system of rights and freedoms that identify democratic societies. This is applied in numerous different contexts, such as art, literature, religion, and politics, among others. However, as Ballesteros-Aguayo and Langa-Nuño (2018) point out, it is also a two-sided coin that, on the one hand, makes it possible to develop ideological, educational, or religious freedom and, on the other hand, is used with the intention of inflicting harm or undermining the dignity of the person. This is when hate speech arises, understood by the Council of Europe (1997) as those forms of expression that propagate, incite, promote, or justify rational hatred, xenophobia, anti-Semitism, and all other forms of hatred based on intolerance, including aggressive nationalism, ethnocentrism, discrimination, and hostility towards immigrant minorities.

According to Parekh (2006), hate speech has three defining elements: 1) an objectively offensive or degrading message; 2) targeting a specifically identified social group; and 3) risk of exclusion of that group. Along the same lines, Waldron (2012) expressed that hate speech manifests itself as: 1) accusing members of a specific collective of committing unlawful acts in a generalised manner; 2) comparing the collective group with another element that allows its dehumanisation; 3) denigration and offensive characterization of the collective; and 4) specific prohibition according to representative defining features of the collective.

For Gagliardone et al. (2015), the concept also includes expressions that directly encourage the commission of discriminatory acts or hate violence, and it has even been widely used in the media to refer to threats towards specific individuals in a more or less offensive way. Regarding these two concepts - freedom of expression and hate speech - Western societies hold different positions, especially in the United States (inclined towards not limiting freedom of expression) and European states which, although they express different conceptions regarding freedom of expression and its limits, according to Gascón (2019: 64), they consider that "hate speech is inadmissible in a democratic society that protects human rights and fights against discrimination".

This fact has led the European Union to establish legislative measures with the intention of regulating these types of messages, given the difficulty of distinguishing them from other manifestations. These include the European Convention for the Protection of Human Rights and Fundamental Freedoms (Ministry of Foreign Affairs, 1999), the Recommendation of the Committee of Ministers of the Council of Europe (1997) no. R 20 and General Recommendation no. 15 on Lines of Action to combat hate speech (Ministry of Foreign Affairs and Cooperation, 2016). Likewise, a series of parameters has been defined, included in the so-called Strasbourg Test, which allow the delimitation of hate speech (subject matter of the message, sender of the message, intention of the sender, target group of the speech, geographical area of dissemination of the message and the channel used to disseminate the message).

Hatred is a drive or emotion that has accompanied humanity throughout time. Its danger lies, according to Garton (2017), in that it can be constructed, encouraged, inculcated, propagated and, ultimately, applied. In our opinion, in today's post-modern society, there is a context prone to the dissemination of this type of emotion and, therefore, of its corresponding discourse. An environment mediated by technology and digitalisation has thus emerged in which there are millions of prosumers of emotions and feelings willing to visualise, create and share them through social media.

In this regard, in 2016 the European Union signed a Code of Conduct to combat online hate speech with the technology companies responsible for social media such as Facebook, Microsoft, Twitter and YouTube, extending in 2018 to Instagram, Google+, Snapchat and Dailymotion. The aim of this Code is for these intermediaries and online communication platforms to act immediately in cases of online hate speech and make a series of public commitments to: 1) establish clear and effective procedures that would prohibit such speech; 2) generate a procedure to remove such speech in less than 24 hours; 3) educate and raise awareness among users; 4) provide information on reporting procedures when communicating with authorities; 5) increase collaboration among themselves, with other intermediaries to achieve the best practices, as well as with civil society; and 6) develop and promote alternative speech. Ultimately, this Code seeks to prevent the spread of hate speech (European Commission, 2020).

Despite the signing of this Convention, a number of issues need to be highlighted. Firstly, social media is not subject to the professional ethics that have regulated traditional social networks. Secondly, these

networks are intermediaries in digital communication, so they can decide what is or is not published under their own publication policies. Thirdly, they play a dual role, since, as Ben and Matamoros (2016) state, on the one hand, they officially prohibit explicit manifestations of hate and, on the other hand, they offer their infrastructure for the proliferation of associations and collectives that can incite hatred.

The European Union's concern about the presence of hate speech on social media and the establishment of mechanisms to regulate it has led to the emergence of various European projects. Among others, the "Preventing, redressing, inhibiting hate speech in new media" (BRaVE, 2019), documents such as the Raxen reports (Info Raxen, n.d.) that warn about the growth of hate speech on the Internet and social media as well as research on Facebook as a network that favours discrimination among its users (Gillespie, 2010) and the proliferation of negative feelings in the comments of this social network (Jaramillo et al., 2015) or Twitter and the instantaneous expression of emotions and moods (Burnap & Williams, 2015), as well as the treatment of immigration on this network (Merino-Arribas & López-Meri, 2018). Likewise, there has been a growing interest in this topic in the academic sphere. Wright et al. (2021: 22) state that "it is a central and highly relevant scientific and social issue", which has even generated its own concept, 'cyberhate'.

For Chakraborti et al. (2014), cyberhate is any digital act of violence, hostility and intimidation towards people motivated by their identity or difference. In this sense, Wachs and Wright (2019) specify that this expression of hatred against 'the others' is produced through offensive texts, speeches, videos, or images. In our opinion, the relevance of Wright et al. (2021) for this theme could be motivated by several factors. Firstly, due to the interest shown by the scientific community in social media, since, immediately after their emergence, studies on the matter are published. As can be seen in Table 1, not even two years pass between the appearance of a certain social network and a publication corresponding to it.

Table 1. Social Media and First Publications								
Social	Origin	Millions	First Publications					
Media		of users (2021)	JCR	Scopus				
Facebook	2004	2,740	Lashinsky (2005)	Lashinsky (2005); Gross et al. (2005)				
YouTube	2005	2,291	Woolley (2006a; 2006b)	Australian Computer Society (2005)				
Twitter	2006	353	McFedries (2007)	McFedries (2007), Greene (2007),				
				Green (2007)				
Whate App	2000	2 000	Kim (2011)	Abanmy et al. (2012); Nikou et al.				
VinatsApp	2009	2,000	Kiiii (2011)	(2012a); Nikou et al. (2012b)				
Instagram	2010	1,221	Kvalnes (2010);	Barnes et al. (2010)				
			Barnes et al. (2010)					
TikTok	2016	689	Liu et al. (2018)	Shafer (2016)				

Secondly, the number of network users. Data provided by Galeano (2021) show that more than half of the world's population uses social media (53.6%), or 4.2 billion people, with a year-to-year increase of 13.2% over the previous year, probably as a result of the pandemic. Table 1 shows the number of users of the most widely used social media. Therefore, an added increase in the average time spent using social media (2 hours and 25 minutes) must be added. Social media therefore brings together millions of prosumer users in real time who can respond spontaneously, instantaneously, and impulsively, under cover of anonymity, to messages, images and/or videos impregnated with hate.

Thirdly, the characteristics of social media itself, which not only constitute a new dissemination channel (Losada-Díaz et al., 2021), but also create new scenarios and forms of development, including 'Flaming' (strong, 'inflammatory' opinions using offensive language) and 'Trolling' (Khosravinik & Esposito, 2018). Trolling includes a list of actions such as in-game insults, tasteless and dangerous jokes, threats, rape, and murder in which absurd and inflammatory comments are used, the aim of which is to provoke an equally aggressive reaction and enjoy the conflict that is generated (Hardaker, 2013). Added to this is the proliferation of 'haters', who are people who engage in obsessive verbal attacks and aggression.

Finally, the repercussions that hate speech can have, including direct emotional or psychological damage to the person and/or group, as well as indirect consequences such as the perpetuation of discriminatory stereotypes, dehumanisation of groups, marginalisation, reduction of empathy, silencing effect on victims and, according to Marabel (2021), even the proliferation of hate crimes, risk to public order, and the modelling of totalitarian societies. Hate speech, then, has become the focus of interest of many institutions, and scientific journals are no strangers to this. As Martínez-Nicolás and Saperas

(2011) state, these are configured as the main channel for the dissemination of scientific production. These journals act as trend-setting agents through the monographs they propose, the articles they select for publication, and the reviews they include in their publications, among other aspects. If scientific journals are also well positioned in quality rankings (Journal Citation Reports, Scimago Journal Rank), their influence is much greater. Therefore, the leadership they have among the scientific community would make it possible to increase the visibility of this global problem and contribute to the social responsibility to which they are also called.

In this context, different authors (Carneiro-Barrera et al., 2019; Cabrera, 2020) advocate the exploration of the publications that have been made on a particular topic over a given time. In this way, it is possible to find out who has made contributions to the topic, what collaborative structures have been configured, or in what context it has been produced. It is therefore necessary to resort to bibliometric studies, considered as a branch of scientometrics (Marín-Aranguren & Trejos-Mateu, 2019). These studies are highly regarded for their contributions to the quantification of written communication processes (Mingers & Leydesdorff, 2015) through the application of statistical and mathematical methods (Rehn & Kronman, 2008), which make it possible to describe the internal and external properties of a body of scientific knowledge (Estabrooks et al., 2004).

In the same way, the major providers of scientific information databases (Clarivate Analytics and Scopus) include among their analysis tools (InCite and Scival, respectively) bibliometric indicators endorsed by the scientific community as useful metrics to describe, among other issues, the characteristics of scientific production. In this scenario, and as a concept that has been well studied over the last few years, we find the interdisciplinarity of science, which allows us to carry out analyses of different objects such as large scientific fields (Chen et al., 2014; Khosrowjerdi & Bayat, 2013; Porter & Rafols, 2009), academic collaboration (Repiso-Caballero et al., 2016), journals (Leydesdorff & Rafols, 2011), comparison of perspectives (Avila-Robinson et al., 2021), and purposes (Rinia et al., 2002), which aim to find solutions to complex social problems, such as hate speech. The response to this phenomenon cannot be approached from a single scientific field, nor from an exclusive methodological proposal; it requires a multifaceted study that provides specific evidence of this social reality.

Thus, Tontodimamma et al. (2021) analysed the topics of interest on hate speech between 1992 and 2018, highlighting the influence exerted by social media, and Mishra (2021) focused her descriptive study on the type of publications, research areas, countries, affiliation, and keywords on hate speech between 1962 and 2021, but without linking it to social media. Therefore, this paper complements and updates previous studies, shows the basic descriptive metrics of the scientific production on hate speech and social media, and explores the interdisciplinarity of the approaches, based on the study of the classification of production by thematic areas, similar to the methodology by scientific categories (Montero-Díaz et al., 2018) and keyword analysis (Leydesdorff & Nerghes, 2017; Vargas-Quesada et al., 2017), both of the output and of the citing papers.

2. Material and methods

Although the study presented here does not correspond to a typical systematic review, as it is scientometric research, characterised by the analysis of scientific literature, it is advisable to ensure a rigorous methodological process that facilitates understanding by readers who are not familiar with this type of work. For this reason, the methodology proposed by PRISMA (2020) has been adapted for this article (Figure 1).

The two sources traditionally used for bibliometric studies are Web of Science (WoS, from Clarivate Analytics) and Scopus (Elsevier). Although both databases can cover the information needs for the present study, Scopus has been chosen because of the greater coverage at the level of journals analysed and the total citation volume (Singh et al., 2021; Martín-Martín et al., 2021). A simple search was carried out on the term 'hate speech' to retrieve the total number of documents analysed. Regarding the document typology, all the types coded in the database were considered, taking into account the possible disciplines involved in the study of the subject of hate speech, and the different publications as well as citation patterns of the researchers according to their study areas.

At a formal level, the very clear definition of the concept 'hate speech' has made the retrieval of documents entirely satisfactory. In the same way, the clear identification of each of the platforms or social media and the concepts directly related to 'social media' (social network, social media) has allowed us to establish the search equations shown in Figure 1 (search strategy).



The selection of platforms or social networks considered for the study is based on the user data provided by Galeano (2021), and the final choice has depended on the existence or not of any work specifically indexed in the database in the period of analysis considered. The data exported from Scopus were citation information, bibliographic information, abstract, keywords, and other information. Finally, for the categorisation of the retrieved papers, it was necessary to download the list of journals included in the Scopus database, which was also integrated into the ad-hoc system designed.

3. Results

The execution of query B1, the most inclusive query, located all papers that included the term 'hate speech' in any of the established search fields. A total of 1,713 papers were retrieved, regardless of whether the terms related to 'social media' appeared. Query B2, specific to the observation under study,

Figure 2 shows the evolution of production over time. The first publication in which the concepts 'hate speech' and some of those related to 'social media' appear together is in 2010, specifically with the term 'social media'. It was not until 2011 that this association appeared with the 'Facebook' platform. As can be seen in Figure 2, the research where the concepts 'hate speech' and 'social media' are integrated occurs in 2019, although it is in 2017 when the trend changes and research on the topic studied arouses greater interest among researchers.



With regard to the documentary typology of the information analysed (set B2), 50.23% of the works belong to the Conference paper type, 39.28% to the Article type and in lower percentages Book Chapter with 3.43%, Conference review 3.13% and the rest, Conference review, Review, Book and Note in percentages of 3.13%, 2.5%, 0.78%, and 0.47% respectively.

Table 2 shows the metrics relating to the 2010-2020 output, a range in which there are papers already published in the B2 dataset and a comparison of each of the indicators can be made. Column B1-B2 includes the metrics of the papers not included in B2 that are in B1, i.e., the papers where the term 'hate speech' appears but none of the terms established to recover the papers related to 'social media' appear. As shown, the relative metrics, both quantitative (volume of papers) and qualitative (related to citation) of the B2 dataset, have higher values with respect to both the B1 dataset and the difference. In this sense, the contribution of the joint research on hate speech and social media shows an increase in its quality levels from a strictly metric point of view.

On the other hand, the values for the percentages of cited papers, international collaboration and the FWCI normalised impact are worth highlighting. 67.1% of the research papers related to hate speech and social media are cited by third party researchers at least once. This is corroborated by the international collaboration indicator of the same dataset, B2. The FWCI, as an indicator that relates citation to the volume of papers considering the publication and citation behaviour of the different areas, is a parameter that describes the status of research in relation to the world. The reference value for this indicator is 1, for

the area of Computer Science it is 1.05 and for the area of Social Science it is 1.23. If we compare these reference values with those obtained in this study, we can say that the scientific production related to hate speech and social media together, is cited 173% more than the world average, a value well above the 74% relating to the works that include the term 'hate speech' without any relation to the search terms related to social media. As for the percentage of papers published in the first quartile journals, although it is true that there is a more moderate increase in the B2 dataset, if the indicator for the first decile is considered, it can be affirmed that these papers still constitute excellent science. The same aspect is reinforced by the value, 15%, of the indicator for papers in the top 10% (first decile) of the world's most cited papers, compared to 8.9% for the B1 dataset.

Table 2. Bibliometric indicators					
Indicator	B1	B2	B1-B2		
N° of works	1585	638	948		
N° of citations	11,514	5,949	5,565		
Percentage of works cited	66.1	67.1	65.3		
Ratio of citations per work	7.3	9.3	5.9		
Percentage of works in Q1 by SJR	40.4	40.7	40.2		
Percentage in the first decile according to SJR	16.9	19	15.8		
Percentage of cited papers in the top global citation decile	8.9	15	4.7		
FWCI (Field-weighted Citation Impact)	2.14	2.73	1.74		
Percentage of works carried out in international collaboration	13.3	21.4	7.8		
Percentage of works carried out in national collaboration	12.6	16.9	9.7		
N° of areas	24	22	22		
Nº of categories	142	120	111		

By means of various operations with the database defined 'ad hoc', with the information from the B2 set, the categorisation of the papers was carried out based on the cross-referenced information with the list of Scopus journals.



The result was a 65% match, which is too low considering the total volume of papers retrieved. This aspect must also be analysed from the point of view of the majority of the documentary typology

(conference paper), which produces a certain lack of solidity due to the very nature of the information in databases of this type. This fact motivates the use of the area classification system for the analysis of interdisciplinary approaches to hate speech research.

Figure 3 shows the percentages of the scientific production analysed ascribed to the Scopus subject areas of both the B2 papers, 'source' papers in this case, and the citing papers as a whole. Graphically, it can be seen how the first two classification areas, Computer Science and Social Sciences, clearly define the scientific production analysed, although there are papers in practically all areas. It should also be noted that in these two areas, the percentages of the area of work and citation are inverted, demonstrating the need for interdisciplinarity in the approach to hate speech.

If the previous classification offered a macro approach (scientific areas) to the possible approaches used when studying the concept of hate speech and social media, an analysis from the point of view of methodologies such as keyword co-occurrence analysis (Leydesdorff & Nerghes, 2017; Wang et al., 2012) shows at a micro level (keywords) the existing relationships between the works.

Figure 4 shows a graph made from the keywords of the B1 works. It has been generated under the default parameters of the software used, VOSViewer, taking into account a minimum occurrence of terms of 5. Two well-defined zones, A and B, with 6 and 1 clusters each, are clearly visible. Zone B, which includes the red clusters, represents approaches to research on hate speech and social media from a social science point of view. Zone A represents works with computer science approaches, including, in this case, aspects of computational methodologies, machine learning, text mining, offensive language detection, algorithmic, etc. The positioning of the central node being hate speech, supports the network due to the search methodology used. However, it is important to consider the relationships, although weak, of certain peripheral nodes that establish connections between the two approaches to the research carried out.



4. Discussion and conclusions

The results offered show the exponential increase in scientific interest in the binomial of hate speech and social media, concurring with the interest and social relevance that this phenomenon has recently acquired in society. From a strictly metric point of view, the initial findings show the best scenario defined by the indicators for hate speech research when linked to social media (B2 dataset) in recent years. The large increase in research output related to hate speech and social media is a sufficient indicator to consider the topic of interest for the scientific community. This fact is also motivated by the unstoppable development of information and communication technologies. The scientometric indicators show a certain imbalance between the datasets analysed. This imbalance is clearly caused by the increased values in the indicators related to global research on hate speech and social media as linked concepts. Thematic contextualisation makes it possible to see in the same way the interest that the research community has in this, even in works that constitute the science of excellence, i.e. the highly cited (Bornmann, 2014).

In the current system of science, collaborations between researchers are essential because, on the one hand, it has been proven that scientific collaboration favours visibility in terms of citation (Guerrero-Bote et al., 2013) and, on the other hand, because of the necessary interdisciplinarity of science, especially in a subject of such importance as hate speech. Regardless of theoretical considerations and the studies that the literature provides to measure the interdisciplinarity of science (Ávila-Robinson et al., 2021), it is a fact that, as has been shown in this research, there is an approach to the subject of analysis from practically all the thematic areas established by Scopus. The classification of journals according to broad areas of knowledge allows the analysis of scientific production in order to carry out analyses of large domains, as has been done here. The division into lower units of these areas (categories) also provides one of the pillars traditionally used for the analysis of these scientific domains (Bornmann et al., 2011).

For the purposes of this study and given its intention to approximate the interdisciplinary representation of hate speech research, it is not considered necessary to include the graph metrics analysis. However, it would be useful to further explore the relationship between interdisciplinarity and increased scientific impact. On the other hand, the clear definition of 7 well-defined clusters and the grouping into two wellconfigured zones visually shows the two main approaches to hate speech research. Although the works in the area of Computer Science are higher than those in Social Sciences, the inversion of percentages in terms of the areas of origin of the works and citations in these two predominant areas shows the need to resort to other areas of knowledge in order to understand a social problem of the magnitude of hate speech.

In this sense, a critical analysis such as the one conducted by Viseu (2015) could be necessary for a reconfiguration of the concept of the research team in the field of social sciences through the integration of experts in computer science, jurists, and psychologists, among others. Hate speech in cyberspace represents the tip of the iceberg of a broader structural problem, its normalisation being a breeding ground for incidents of inter-group conflict, polarisation of social groups, dehumanisation of certain groups and processes of violent radicalisation of individuals and groups. From an applied point of view, the indicators obtained could be considered a proxy for the relevance and transcendence of a social problem in the face of which proactive measures must be implemented. For all these reasons, it is necessary to continue to make progress in the adoption of comprehensive and preventive measures in the face of a challenge in which technology, communication, and education converge, as in few others. As possible new lines of research to complement this study, it would be interesting to carry out a content analysis of hate speech in the sources analysed, as well as the possibility of carrying out a comparison between the WOS/Scopus databases.

Authors' Contribution

Idea, A.R.G.; Literature review (state of the art), A.R.G.; Methodology, A.R.G., A.G.M., M.P.G.A.; Data analysis, A.G.M.; Results, A.G.M.; Discussion and conclusions, A.R.G., A.G.M., M.P.G.A., M.M.P.; Drafting (original draft), A.R.G., A.G.M., M.P.G.A.; Final revisions, A.R.G., A.G.M., M.P.G.A., M.M.P.; Project design and sponsorship, A.R.G., A.G.M., M.P.G.A., M.M.P.

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