

Perceived Credibility of Tweets by Opinion Leaders During the COVID-19 Pandemic in Spain

REINALD BESALÚ
CARLES PONT-SORRIBES
ALEIX MARTÍ¹

Universitat Pompeu Fabra de Barcelona, Spain

The informational practices of citizens, transformed by the digital sphere, pose new challenges such as misinformation and disinformation, and they also require a rethinking of the role of opinion leaders. We explored how, on Twitter, the credibility of COVID-19 news was influenced by the source of the news. We conducted a survey of a representative sample of the Spanish population ($N = 2,041$) who were asked to rate politician, expert, celebrity, media, and anonymous citizen tweets for credibility. The results show that the perceived credibility of tweets on COVID-19 by politicians and experts was negative and positive, respectively, when compared with tweets by the media, and also that celebrities and anonymous citizens had no impact on perceptions of credibility. We also found that news credibility was affected by respondent gender, age, occupational status, and education level. We conclude that, despite disintermediation processes, the media continue to underpin news credibility in the digital public sphere.

Keywords: Twitter, credibility, opinion leader, media, fake news, disinformation, misinformation

In the new communicative context characterized by immediacy and uncertainty (Rebolledo, Luengo, & Bebic, 2018), the emergence of COVID-19 has served to highlight and accentuate the existence of an infodemic (Radu, 2020): that is, the rapid and widespread circulation, through different media and digital platforms, of information that is directly false or whose veracity has not been fully verified. In relation

Reinald Besalú: reinald.besalu@upf.edu

Carles Pont-Sorribes: carles.pont@upf.edu

Aleix Martí: aleix.marti@upf.edu

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to COVID-19, the lack of scientists and institutions denying hoaxes outright has not helped in terms of stemming the spread of fake news (Pérez-Dasilva, Meso-Ayerdi, & Mendiguren-Galdospín, 2020), which no less frequently affects people who more intensively monitor the news (Mora-Rodríguez & Rodrigo-López, 2021).

In times of pandemic, clear and verified information appears as an essential issue. During the COVID-19 crisis, the Spanish government set itself up as a source of constant information through either press conferences or digital platforms (Castillo-Esparcia, Fernández-Souto, & Puentes-Rivera, 2020). In addition to the use of a war frame (López-García, 2020), governmental and political communication sought an emotional connection with citizens (Citlali Martínez Estrella, 2020). The Spanish government's communicative leadership in the COVID-19 crisis was not an isolated case; several governments around the world were forced to carry out an active communication role on the pandemic and opted for more personalistic and presidential communications (Manfredi Sánchez, Amado Suárez, & Waisbord, 2021). In this context, the question is to what extent communications about coronavirus in the digital environment are perceived to be credible.

According to the *Media Use in the European Union* report (Eurobarometer, 2021), trust has risen in the traditional media, but this is not the case for social media; only 19% of Europeans and 14% of Spaniards trust these sources. The *Reuters Institute Digital News Report* (2021) similarly confirms a widening trust gap between news in general and news from social media; however, in Spain, this gap is significantly narrower because of a lower level of trust in news in general. However, social networks have the technical advantage of enabling a more effective response to crises; crisis messages are no longer the exclusive domain of the media and institutions, but are also actively propagated by private individuals (Houston et al., 2015; Liu, Fraustino, & Jin, 2016; Pont-Sorribes, Suau-Gomila, & Percastre-Mendizábal, 2020). Regarding Spain and the current pandemic, Pérez-Escoda, Jiménez-Narros, Perlado-Lamo-de-Espinosa, and Pedrero-Esteban (2020) confirm that social media have emerged as a parallel source of information on the COVID-19 crisis, enabling citizens to become prosumers in a new communications paradigm.

Twitter's penetration and social impact are lower than for other social media, such as Facebook (Interactive Advertising Bureau Spain, 2019) or Instagram, but it is an exceptional way to follow journalists, influencers, and experts in different knowledge areas, especially in crisis situations. The Twitter microblogging service, used in emergency situations, enhances interactions and transmits information more efficiently.

Watson, Finn, and Wadhwa (2017) assert that much of the big data produced in social media have a positive impact, not only in the management of emergencies, but also in their prevention, given the greater availability of information (Pont-Sorribes et al., 2020). In addition, because of the COVID-19 pandemic, significant research has been conducted regarding Twitter, including disability issues (Thelwall & Levitt, 2020), journalistic practice (Zhang & Zhu, 2021), and fake news (Pérez-Dasilva et al., 2020).

Our research focused on evaluating the credibility of news regarding COVID-19 posted by different profile types on Twitter. Twitter is the fifth most widely visited social network in Spain, with 7.5 million active users; in Spain, 53% of Internet users aged 16–64 years used Twitter in the previous month,

according to Hootsuite. Twitter is especially relevant for a study of news credibility, given its role in the fight against COVID-19 misinformation and disinformation: It has implemented measures to eliminate false information about vaccines and has launched the Birdwatch forum as a means to tag tweets that spread conspiracy theories and make other unsubstantiated claims.

News Credibility

The credibility of news stories, a focus of study by the scientific community for decades, has traditionally been analyzed from three perspectives: credibility of the source, credibility of the medium, and credibility of the content. However, contributions in the literature do not always coincide regarding the relative importance of these factors in the attribution of credibility (Blach-Ørsten & Burkal, 2014; Bucy, 2003; Chung, Nam, & Stefanone, 2012; Kioussis, 2001).

The current informational and media context adds new dimensions to the study of news credibility. One new dimension is the numerous formats in which news is presented online. Flanagin and Metzger (2007) have proposed the concept of "website genre" to refer to the different online environments in which information can be posted, demonstrating that this genre has an impact on perceptions of credibility (p. 320). A second new dimension is how social media platforms gain increasing prominence and become new gates to access information. In these platforms, news from conventional media is mixed in with information disseminated by other types of profiles. This news is not delivered on the basis of informational criteria, but according to preferences and algorithmic deductions based on those preferences. Beyond the implications in terms of possible echo chambers and filter bubbles (Pariser, 2011; Sunstein, 2017)—whereby people are exposed to news that is consistent with a particular ideology—conventional media have to compete with other sources not only to attract the attention of users but also to inspire trust and earn credibility (Bennett & Livingston, 2018). The idea that credibility is crucial not only for traditional media but also for the democratic health of contemporary societies is reinforced by growing concerns regarding the infodemic and a new public digital sphere in which it is increasingly difficult to assess information credibility and prevent the spread of fake news (Giglietto, Iannelli, Valeriani, & Rossi, 2019). Bernal-Triviño and Clares-Gavilán (2019) show how Spaniards, for instance, clearly associate the concept of news credibility, on which they confer great importance, with the spread of fake news.

Going beyond the difficulty in assessing credibility, the very concept of credibility itself is difficult to distinguish from related concepts (e.g., trust). Credibility, furthermore, is a subjective perception and may therefore be shaped by sociodemographic variables such as gender, age, and education level, emphasizing the need to rely on reception studies to determine what credibility means (Fogg et al., 2001). In this sense, authors such as Soh, Reid, and King (2007) found that "gender and age exhibited no direct or indirect associations with trust in specific advertising media" (p. 465), whereas respondents with low levels of education assigned higher trust than those who were highly educated. However, other studies found that age was indeed correlated with credibility, both positively (Besalú & Pont-Sorribes, 2021; Choi & Kim, 2017) and negatively (Johnson & Kaye, 2014; Roses & Gómez-Calderón, 2015). Johnson, Kaye, Bichard, and Wong (2007) also found that men assigned more credibility to blogs than did women, and Flanagin and Metzger (2003) confirmed that the sex of the respondent affects message credibility.

Researchers have built credibility indexes for respondents to assess source, medium, and message credibility. Each of these three approaches requires using different dimensions for credibility measurement because they refer to significantly different aspects. For example, Bucy, D'Angelo, and Bauer (2014) built an index with five dimensions (believability, fairness, trustworthiness, credibility, and reliability) to measure media credibility, while Go, You, Jung, and Shim (2016) used a slightly different set of qualities (fairness, accuracy, balance, comprehensiveness, and reliability) to measure online news credibility. Studies focused on source credibility, on the other hand, tend to rely on trustworthiness and expertise as the two main dimensions of credibility (Bucy, 2003; Chung et al., 2012; Metzger & Flanagin, 2013).

A specific measurement scale has not traditionally been used to evaluate message credibility. Sundar (1999) indicated that most measures used in source credibility research can be applied to messages, and Arpan (2009) used measures of news source and story credibility to assess perceptions of news credibility. Recently, however, Appelman and Sundar (2015) constructed and validated a new message credibility scale consisting of the three main dimensions of perceived accuracy, authenticity, and believability. This scale has been widely used by other studies of message credibility, such as in the analysis by Mena, Barbe, and Chan-Olmsted (2020) of the impact of trusted endorsements on message credibility in Instagram and the analysis by Link, Henke, and Möhring (2021) of how data visualization affects message credibility.

Because the way credibility is measured has an impact on results (Flanagin & Metzger, 2000), it is crucial to use a validated scale to avoid bias in credibility ratings. However, it is also very important to adapt and validate credibility measurement scales to different national contexts, given cultural and linguistic differences. Even so, some authors warn that the dimensions used to measure credibility are often as ambiguous as the concept of credibility itself, making the measurement of credibility intrinsically problematic (Blach-Orsten & Burkal, 2014; Sundar, 1999).

In acquiring information and deciding its credibility, opinion leadership undoubtedly plays a key role. Katz and Lazarsfeld (1955) first referred to the concept of "opinion leader" as a key figure in the theory of the two-step flow of communication: A message is first received by the opinion leaders, who then filter, interpret, and disseminate that message (p. 33). Opinion leaders, in their role as representative of a group, have certain qualities: They are considered experts who have authentic knowledge of their domain, they are trusted as a source, they are charismatic, and they are effective in communicating messages and ideas (Katz & Lazarsfeld, 1955).

The theory of the two-step flow of communication possibly needs to be reexamined in light of the specific features of the public digital sphere (Case, Johnson, Andrews, Allard, & Kelly, 2004; Sá Martino, 2018; Schäfer & Taddicken, 2015). Bennett and Mannheim (2006) proposed the term "one-step flow of communication" (p. 216) to describe a communicative context in which messages are targeted directly to individuals (p. 216). The importance of opinion leaders in interpreting and filtering information is undermined as a consequence of the greater segmentation of messages; indeed, opinion leaders themselves are more likely to reinforce rather than reframe messages (Bennett & Mannheim, 2006). However, van der Merwe and van Heerden (2009) attest to a reinforced role for opinion leaders, arguing that the information overload associated with the online environment makes these organizing figures of social reality more necessary than ever. Furthermore, social media provide platforms from which opinion leaders can express

themselves and better spread their messages (Said Hung & Arcila Calderon, 2011). Thus, while the influence of opinion leaders may be attenuated in the immediate social environment, it is reinforced in the digital environment because they can take advantage of the growing importance of disintermediated communications through social media to filter and reinterpret information. Definitions have, out of necessity, been recast: Opinion leaders are currently described (Wangenheim & Bayon, 2004) as individuals who, relying on the power of electronic word-of-mouth, wield influence over others because of the authority they have acquired, their status, their knowledge, or their relationships (Arrabal Sánchez & Aguilera Moyano, 2016; Cordero & Lahuerta, 2018).

It may be useful, therefore, to examine to what extent the different types of opinion leaders in social media have an impact on the perceived credibility of the information they transmit. In this research, we focus on Twitter, which is a primary informational reference not only for journalists (Delmastro & Splendore, 2021; McGregor & Molyneux, 2020; Varona-Aramburu & Sánchez-Muñoz, 2016) but also for citizens (Wijesekara & Ganegoda, 2020). This social network has become a platform for the dissemination of messages from conventional media, and political and social actors as well, who take advantage of the accessibility and visibility it can offer.

Given that Twitter is a social network highly focused on political information with a possible bearing on public debate, its influence on perceptions of news credibility is relevant (Ross & Rivers, 2018). Trust in the credibility of the information to which people are exposed in social media is conditioned by many factors, including the strength of the bond with the person who shares the information (Samuel-Azran & Hayat, 2019), that person's communicative style (Alvídrez & Franco-Rodríguez, 2016; Mohd Shariff, Zhang, & Sanderson, 2017), and, for Twitter, the "verified" status (Edgerly & Vraga, 2019). In this research, we specifically address how news credibility in Spain is perceived depending on the opinion leader—whether politician, expert, or celebrity—tweeting about the COVID-19 pandemic affecting the world since early 2020. We therefore posed the following research questions:

- RQ1: Does being a politician, expert, or celebrity opinion leader affect the perceived credibility of COVID-19 news that the person posts on Twitter?*
- RQ2: Do politician, expert, or celebrity opinion leaders posting on Twitter generate perceptions of the credibility of COVID-19 news that differ significantly from perceptions of credibility of the media?*
- RQ3: Do politician, expert, or celebrity opinion leaders posting on Twitter generate perceptions of the credibility of COVID-19 news that differ significantly from perceptions of credibility of anonymous citizens?*
- RQ4: Do perceptions of the credibility of COVID-19 news posted on Twitter by politician, expert, or celebrity opinion leaders differ according to the sociodemographic characteristics of the readers?*

Material and Methods

To address the four research questions, we implemented a survey in which respondents evaluated the credibility of tweets referring to a fictitious news story about a coronavirus outbreak in Malaga (southern Spain). The respondents were divided into five experimental groups, each presented with tweets posted by one type of opinion leader: politician (POL), expert (EXP), celebrity (CEL), media (MED), or anonymous citizen (ANON).

Our choice of opinion leaders was guided by previous research findings. A study evaluating opinion leader message credibility in the pandemic context (Abu-Akel, Spitz, & West, 2021) pointed to experts, celebrities, and politicians as key opinion leaders. Furthermore, during periods of crisis, the trust of the general public in experts and politicians as opinion leaders tends to increase (Boin, Hart, Stern, & Sundelius, 2005). This "rallying around the flag" in support of governments has been widely studied in relation to public opinion (Norrande & Wilcox, 1993, p. 761). It has also been demonstrated that experts are effective in reducing the spread of misinformation in social networks (Vraga & Bode, 2017). As for celebrities, there is evidence that their endorsement of messages increases message reachability (Goodwin, Joseff, & Woolley, 2020; Jackson, 2018). Finally, we included the media and anonymous citizens: the media for their key role in the dissemination of information (Dubois, Minaeian, Paquet-Labelle, & Beaudry, 2020), and anonymous citizens because of their proactivity in the Internet and social networks, crucial in stimulating social movements (Castells, 2012).

Our experimental design meant that differences in perceived credibility of the news could be attributed exclusively to the sender type. The design also took into account possible credibility biases derived not so much from the sender type as from the specific individual who posted the tweet; in an attempt to address this possible bias, the five experimental groups were each exposed to four tweets from individuals representing the same Twitter profile, but differing in age, gender, ideology, or geographical location. The four tweets were totally interchangeable, that is, they referred to the same news in the same way. Credibility was evaluated for the four tweets together, not in isolation, to ensure that evaluations were not influenced by respondents' positive or negative feelings regarding any particular tweeter. The five templates, each with its four tweets, are included in Appendix.

Following on from salient international studies on news credibility (Bucy et al., 2014; Choi & Kim, 2017; Flanagin & Metzger, 2000; Meyer, 1988; Rodríguez-Fernández, Martínez-Fernández, & Juanatey-Boga, 2020), credibility was evaluated in terms of five criteria, each scored on a Likert 1–5 scale, with the mean credibility score calculated as the sum of individual scores divided by 5.

As previously stated, message credibility is usually measured by asking respondents to assess dimensions such as accuracy, authenticity, and believability (Appelman & Sundar, 2015). However, to ensure a set of message credibility dimensions suitable for Spanish-speaking respondents, we complemented Appelman and Sundar's (2015) proposal with other qualities previously found to be related to message credibility. This was because both believability and credibility are translated into Spanish as *credibilidad*, while authentic (*auténtico*) is more used for sources and rarely used to refer to news stories.

To better capture meanings of the message credibility concepts in Spanish, believability was replaced by *credibilidad* and *verosimilitud* because we think both qualities reflect what believability means. The meaning of authenticity was reflected as *objetividad* and *imparcialidad*. While assessing the credibility of news stories, Sundar (1999) found these two criteria—objectivity and impartiality/absence of bias—to be important. Finally, accuracy was maintained as a dimension because it has a more direct translation into Spanish (rigor).

This reformulation of the scale for measuring message credibility may have certainly had an impact on our results. Despite this limitation, it was not plausible to directly translate Appelman and Sundar's scale into Spanish; this would have resulted in questions to assess message credibility that would have made little sense for Spanish speakers.

A sample of 2,041 individuals living in Spain, representative of the population in terms of gender, age, and geographical distribution, was selected by the YouGov Spain polling company. The 2,041 individuals were allocated to one of the five experimental groups, maintaining the representativeness of the full sample ($n = 407$ POL; $n = 414$ EXP; $n = 405$ CEL; $n = 406$ MED; and $n = 409$ ANON), and the electronic survey was administered in the week of July 23–30, 2020, using computer-assisted Web interviewing.

Opinion leader, media, and citizen profiles were selected according to four criteria: They had a Twitter profile (biographies were reproduced unchanged in the survey materials); they were Spanish and broadly representative in terms of personal and social characteristics, experience, and activities; and, for opinion leaders and the media (not for anonymous citizens), they had a minimum of 5,000 followers on Twitter. The individuals reflecting each profile were as follows:

1. Politicians. Leaders of the four parties with the highest representation in the Congress of Deputies and therefore representing the four main ideological trends in Spain: Pablo Iglesias (Podemos, leftwing), Pablo Casado (PP, center-right), Pedro Sánchez (PSOE, center-left), and Santiago Abascal (Vox, far right).
2. Experts. Scientists and academics of both sexes, of different origins and from different fields (epidemiology, health, cardiology, economics), whose opinions on COVID-19 were considered important: Antoni Trilla (head of preventive medicine and epidemiology at Hospital Clínic de Barcelona), Raquel Yotti (director of the Carlos III Health Institute), Miguel Hernán (professor of biostatistics and epidemiology at Harvard T.H. Chan School of Public Health), and Miguel Otero (principal investigator at the Elcano Royal Institute and professor at the IE School of Global and Public Affairs).
3. Celebrities. Household names of both sexes, of different ages and different occupations, specifically chosen to ensure diversity and reduce bias (deriving from sympathies or antipathies), with no specialized knowledge but with a strong media presence: Alejandro Sanz (singer), Rosalía (singer), Fernando Alonso (Formula One driver), and Ferran Adrià (chef).

4. Media. Four main Spanish newspapers of different ideologies and available in different formats: *elDiario.es* (leftwing, digital), *EL ESPAÑOL* (rightwing, digital), *El País* (leftwing, print and online), and *El Mundo* (rightwing, print and online).

5. Anonymous citizens. Four unknown citizens with no link to ideologies or professions that might suggest some kind of authority in the health field.

Results

Tweet Credibility by Source

The five experimental groups rated the credibility of the COVID-19 news story very differently depending on the source of the tweet. Of the opinion leaders, tweets by experts were scored (out of a maximum of 5) as the most credible ($M = 3.195$, $SD = 0.908$), followed by celebrities ($M = 2.982$, $SD = 0.967$), and, finally, politicians ($M = 2.737$, $SD = 0.897$). Media tweets were rated almost as highly as expert tweets ($M = 3.150$, $SD = 0.949$), while anonymous citizen tweets received a similar score to celebrity tweets ($M = 2.963$, $SD = 0.993$).

The analysis of variance (ANOVA) test (Table 1) indicated that the credibility differences among the five groups were statistically significant, thereby confirming that the credibility attributed by people to news posted on Twitter was affected by the type of sender of the information ($F = 14.891$, $p < .001$).

Table 1. ANOVA. Perceived Credibility (Dependent Variable) and Twitter Profile Types (Factor).

	Sum of Squares	df (degrees of freedom)	Squared Mean	<i>F</i>	<i>p</i>
Between groups	53.102	4	13.276	14.891	0.000
Within groups	1815.098	2036	0.892		
Total	1868.2	2040			

Note. $N = 2,041$.

Significance: $p < .05$.

Simple linear regression (Table 2) used to measure the relationship between perceived credibility and each profile indicated that, for celebrities and anonymous citizens, there was no significant change in the perceived credibility of tweets; in both cases, the fact of a high standard deviation around the mean would suggest that the lack of statistical significance was due to different evaluations tending to neutralize each other. In contrast, there was a significant effect on the perceived credibility of politician tweets ($\beta = -0.140$, $p < .001$), expert tweets ($\beta = 0.100$, $p < .001$), and media tweets ($\beta = 0.073$, $p < .001$).

Table 2. Simple Linear Regression for Perceived Credibility and Different Twitter Profiles.

Twitter Profiles	Statistical Values				
	B	SD	β	t	Significance
Politicians	-0.335	0.053	-0.14	-6.377	.000
Experts	0.238	0.052	0.1	4.547	.000
Celebrities	-0.029	0.053	-0.012	-0.55	0.582
Media	0.175	0.053	0.073	3.307	.001
Anonymous citizens	-0.052	0.053	-0.022	-0.982	0.326

Note. $N = 2,041$.

Significance: $p < .05$.

Credibility by Sociodemographics

To explore which sociodemographic variables had a statistically significant relationship with perceived credibility, we applied multiple linear regression to the entire sample ($N = 2,041$), with perceived credibility as the dependent variable, and six sociodemographic variables—age, gender, education, occupation, self-reported ideology, and geographical location—as independent variables.

The multiple linear regression (Table 3) was statistically significant ($F = 11.093$), $p < .001$), with gender ($\beta = 0.117$, $p < .001$) and age ($\beta = 0.101$, $p < .001$) proving to be the most statistically significant factors and, to a lesser degree, occupation ($\beta = 0.056$, $p < .05$) and education ($\beta = -0.050$, $p < .05$). We suggest that occupational status is directly related to the age variable and indirectly related to the education variable in terms of results for the individuals in our survey. As for the self-reported ideology variable, respondents were asked to score themselves on a continuum from 1 to 10, where 1 = left-wing ideologies and 10 reflected right-wing ideologies. The mean of self-reported ideology was 4.56 ($N = 2,007$, $SD = 2.31$). Rather surprisingly, this variable did not produce significant results about the perceived credibility of the tweets, and likewise with the geographical location variable.

Table 3. Multiple Linear Regression for Perceived Credibility and Different Sociodemographic Variables.

Sociodemographic Variables	Statistical Values				
	B	SD	β	t	Significance
Gender	0.223	0.043	0.117	5.176	.000
Education	-0.021	0.009	-0.050	-2.216	.027
Ideology (self-reported)	0.007	0.009	0.018	0.780	.436
Occupation	0.050	0.021	0.056	2.389	.017
Geographical location	-0.020	0.014	-0.033	-1.457	.145
Age	0.007	0.002	0.101	4.315	.000

Note. $N = 2,041$.

Significance: $p < .05$.

Gender

Results were clearly different for the sample segmented by gender ($n = 1,015$ men and $n = 1,026$ women; Figure 1). Overall tweet credibility was awarded lower scores—a fail (i.e., less than 3 of 5), in fact—by men ($M = 2.899$, $SD = 0.916$) than by women ($M = 3.110$, $SD = 0.984$). ANOVA confirmed that gender was a determining factor in evaluating news credibility ($F = 25.077$, $p < .001$), as did simple linear regression ($\beta = 0.110$, $p < .001$). Women scored credibility higher for all Twitter profiles except anonymous citizens ($M = 2.62$, $SD = 1.038$). Men awarded a fail to the credibility of politicians ($M = 2.63$, $SD = 0.826$) and celebrities ($M = 2.84$, $SD = 0.943$), while women did so for anonymous citizens ($M = 2.62$, $SD = 1.038$) and politicians ($M = 2.84$, $SD = 0.954$).

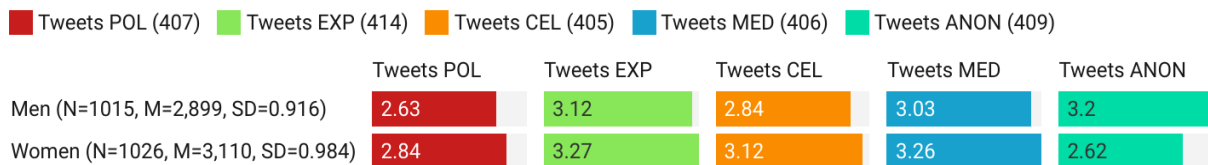


Figure 1. Perceived credibility by gender and Twitter profile type.

Note. The numbers in parentheses refer to the n . The numbers in the color blocks are the M (maximum 5).

Age

The sample, once divided into the five age brackets (Figures 2 and 3) established by the National Institute of Statistics (2015), was composed as follows: centennials, born 1994–2010 ($n = 223$); millennials, born 1981–1993 ($n = 460$); generation X, born 1969–1980 ($n = 531$); baby boomers, born 1949–1968 ($n = 779$); and the silent generation, born 1930–1948 ($n = 48$). The results show that the older generations awarded the highest credibility scores ($M = 3.40$, $SD = 0.989$; and $M = 3.15$, $SD = 1.58$), for the silent generation and baby boomers, respectively, confirming a positive association between age and perceived credibility, whereas millennials ($M = 2.86$, $SD = 0.883$) and generation X ($M = 2.87$, $SD = 0.910$) awarded the lowest scores. Surprisingly, the centennials scored credibility higher ($M = 3.01$, $SD = 0.702$) than the millennials and generation X despite being younger—possibly because they were still in the process of acquiring media literacy. ANOVA confirmed a significant statistical relationship between age and perceived credibility ($F = 1.789$, $p < .001$), as did simple linear regression ($\beta = 0.111$, $p < .001$). Almost all the tweets from different Twitter profiles were scored with a fail by both millennials and generation X, except for the media (millennials) and the experts (generation X). Looking at the relationship between age and credibility by Twitter profile types, in most cases, indicated that the positive association was maintained. Noteworthy, however, was the perceived credibility of politician tweets, which received its highest scores from the two youngest cohorts, although still below 3: centennials ($M = 2.84$, $SD = 0.696$) and millennials ($M = 2.84$, $SD = 0.886$). Noteworthy also was the very high credibility score awarded by the silent generation to anonymous citizen tweets ($M = 4.16$, $SD = 1.34$). Interestingly, no age group scored the tweets of all five profiles above 3, while no profile was awarded a credibility score above 3 by all five age groups.

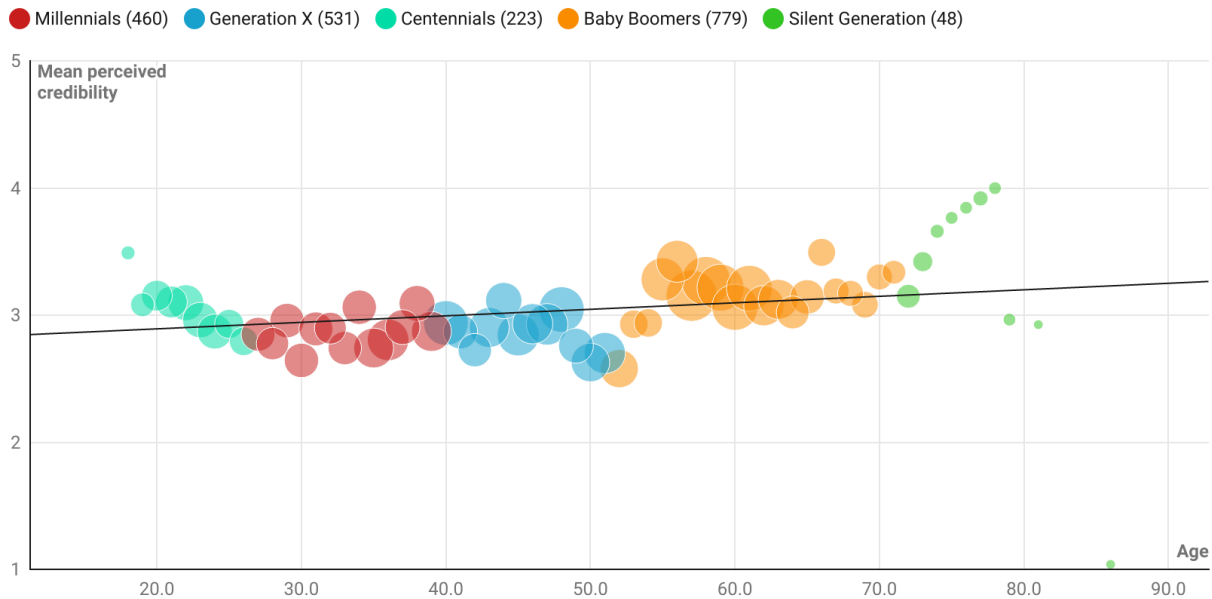


Figure 2. Perceived credibility by age group.

	Tweets POL (407)	Tweets EXP (414)	Tweets CEL (405)	Tweets MED (406)	Tweets ANON (409)
Centennials (N=223, M=3,008, SD=0.702)	2.84	3.01	3.08	2.93	3.2
Millennials (N=460, M=2,862, SD=0.883)	2.84	2.99	2.84	3.04	2.62
Generation X (N=531, M=2,875, SD=0,91)	2.61	3.09	2.85	2.98	2.84
Baby Boomers (N=779, M=3,153, SD=1,058)	2.73	3.42	3.12	3.35	3.12
Silent Generation (N=48, M=3,403, SD=0.989)	2.73	3.53	3.23	3.6	4.16

Figure 3. Perceived credibility by age and Twitter profile type.

Note. The numbers in parentheses refer to the *n*. The numbers in the color blocks are the *M* (maximum 5).

Occupation

The perceived credibility of tweets by different profiles varied according to occupational status (Figure 4). Retirees ($M = 3.17, SD = 1.057$) and unemployed people ($M = 3.11, SD = 0.954$) awarded higher credibility scores than employed people ($M = 2.95, SD = 0.947$) and students ($M = 2.99, SD = 0.730$). ANOVA confirmed the statistical significance of those differences ($F = 5.774, p < .001$), as did simple linear regression ($\beta = 0.079, p < .001$). Retirees awarded their highest credibility scores (above 3 of 5) to anonymous citizen tweets ($M = 3.30, SD = 1.210$), expert tweets ($M = 3.48, SD = 0.974$), and media tweets ($M = 3.41, SD = 0.959$); unemployed people to media tweets ($M = 3.31, SD = 0.984$), expert tweets ($M = 3.21, SD = 0.845$), and celebrity tweets ($M = 3.13, SD = 0.875$); employed people to expert

tweets ($M = 3.16$, $SD = 0.913$) and media tweets ($M = 3.06$, $SD = 0.960$); and, finally, students to anonymous citizen tweets ($M = 3.17$, $SD = 0.820$) and expert tweets ($M = 3.05$, $SD = 0.974$).

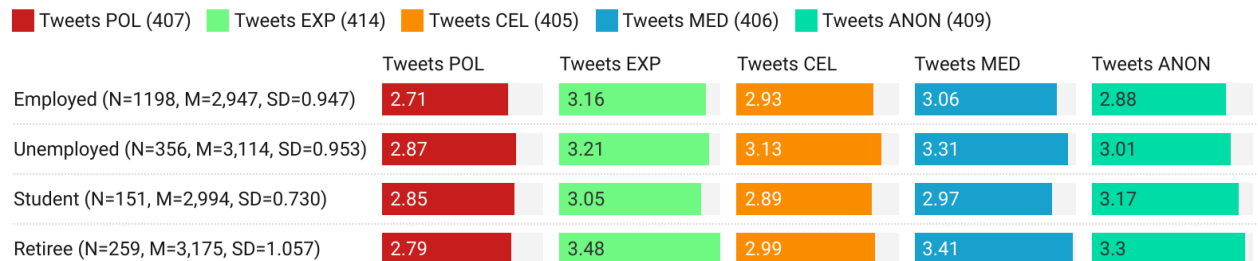


Figure 4. Perceived credibility by occupation and Twitter profile type.

Note. The numbers in brackets (above) refer to the n . The numbers in the color blocks are the M (maximum 5).

Education

The education level of the respondents (Figure 5) was significant in relation to perceived credibility, but in a negative sense: Credibility was lower among individuals with a higher education level. ANOVA confirmed this negative relationship to be statistically significant ($F = 10.349$, $p < .001$). The results for credibility according to education level showed a downward trend that was maintained in all cases, except for upper secondary and diploma students ($M = 3.0967$, $SD = 0.877$ and $M = 3.0352$, $SD = 0.954$, respectively). Simple linear regression confirmed these results ($\beta = -0.073$, $p < .05$). The clearest association was for politician tweets, whose credibility score was highest for the lowest education level ($M = 3.11$), but progressively fell as education level increased to the doctorate level ($M = 2.17$). Expert and the media tweets received scores above 3 from almost all education categories, with the exception of individuals whose university studies were incomplete ($M = 2.91$ for expert tweets) and lower secondary and doctoral students ($M = 2.9$ and $M = 2.96$ for media tweets, respectively).

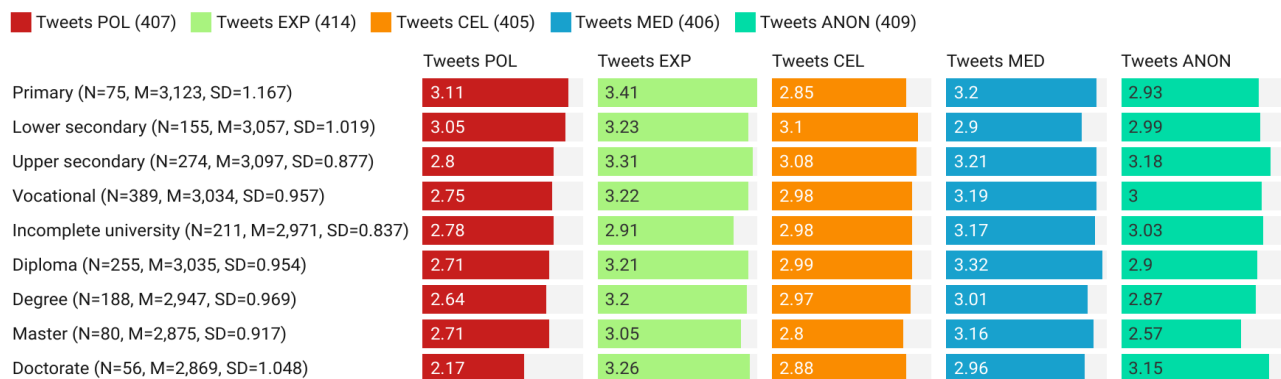


Figure 5. Perceived credibility by education level and Twitter profile type.

Note. The numbers in parentheses refer to the n . The numbers in the color blocks are the M (maximum 5).

Discussion and Conclusions

For Spanish users of Twitter, the perceived credibility of tweeted COVID-19 news (RQ1) is conditioned by the source. Expert tweets and media tweets have the highest levels of credibility, with expert tweets perceived to be more credible in terms of having the necessary authority to report on COVID-19. This is a notable conclusion in our current context of a certain questioning of science by sectors of society (the so-called deniers and negationists). The political class would appear to inspire little faith in citizens; as for celebrities, no significant effect could be determined, which may indicate that, where science is concerned, they do not positively or negatively influence perceptions of news. That media tweets are perceived to be highly credible casts doubt on the notion of disintermediation, which, in political communications with citizens, is viewed as an opportunity to wield influence and bypass the media filter. According to our findings, this strategy in relation to COVID-19 news does not seem to be effective. Through their social media profiles, the mainstream media continue to play a central role in the public digital sphere, a fact that can be considered positive in the current climate of the proliferation of fake news. Several studies show, in fact, that Twitter, as a platform widely used by both the media and political parties, is an important information tool for journalists (Delmastro & Splendore, 2021; McGregor & Molyneux, 2020; Varona-Aramburu & Sánchez-Muñoz, 2016). Meanwhile, there still is no consensus that Twitter aids or ends journalistic mediation.

Regarding whether opinion leaders generate perceptions of credibility that differ significantly from perceptions of credibility generated by the media (RQ2), our findings suggest that expert tweets, along with media tweets, have the greatest credibility, whereas politician tweets have the lowest credibility. This would confirm that different types of opinion leaders generate different perceptions of credibility, with politicians, experts, and celebrities who tweet about COVID-19 generating significantly different perceptions of credibility from those generated by the media.

We were unable to confirm whether opinion leaders generate perceptions of credibility that differ significantly from perceptions of credibility of anonymous citizens (RQ3) because we could not demonstrate that being anonymous affected the credibility of COVID-19 news that anonymous citizens posted on Twitter. In this sense, however, it should be viewed as problematic that citizens fail to be wary of information that comes from unknown profiles.

Finally, we found that perceptions of the credibility of COVID-19 news posted on Twitter by politician, expert, or celebrity opinion leaders differ according to the sociodemographic characteristics of the readers (RQ4). Specifically, people with a lower education level perceive the tweets of opinion leaders, whether politicians, experts, or celebrities, to be more credible than do people with a higher education level. Women broadly grant more credibility to tweets than men; they also rate credibility more highly for all types of opinion leaders except anonymous citizens. Men rate tweets from politicians and celebrities with a fail, whereas women do so for citizens and politicians. Similar to what previous research has found (Flanagin & Metzger, 2003; Johnson et al., 2007), our results indicate that gender is important in credibility studies. Consequently, it would be interesting to study whether variables such as the level of studies or the socioeconomic level present significant differences between men and women, and to assess how this could affect credibility. In future research, this will be the subject of priority study by the authors. Age also has a bearing on the perceived credibility of Twitter posts. Older people—the silent generation and baby boomers—

award the highest credibility scores to all opinion leader tweets about COVID-19, whereas generation X and millennials award those the lowest credibility scores. The centennials, despite being the youngest cohort, award greater credibility to tweets than millennials and generation X. In relation to the age-credibility relationship, a limitation of this research is that older people make less use of Twitter; according to a study carried out by Twitter and Kantar Media (Masanse, 2017), 62% of Twitter users are aged 18–45 years. It is also possible that knowledge of the political environment may have some influence on young people's responses. That is, they may give politicians more credibility because of ignorance or a more polarized position. The topic of the tweets also may have had an influence, given that the survey was administered in the context of COVID-19, the largest health crisis that these young people have experienced. Regarding occupation and credibility, retired and unemployed people award the highest credibility scores, and employed people and students award the lowest credibility scores. Occupational status is strongly correlated with other sociodemographic variables. Education, age, and occupation show very strong correlations between them; students, for instance, are more distrustful than older people of the tweets of celebrities, experts, and the media. Students, broadly speaking, would appear to be more skeptical of the so-called establishment, contrasting with older retirees, who award much greater credibility to both media tweets and expert tweets. However, an unexpected finding, that younger people attribute greater credibility to tweets by politicians than do older people, will guide future research.

Regarding limitations of this study, Twitter is not the most used social media platform in Spain, according to Interactive Advertising Bureau Spain (2019). Therefore, future research will include other platforms such as Facebook, Instagram, and/or TikTok. Another issue to be addressed in future research is that Twitter is not as focused as other social networks on visual elements, which are especially important for generation Z and millennials.

Our research findings regarding Twitter differ from those of a previous study conducted by the authors on digital press source credibility, with the same opinion leader types as sources (Besalú, Pont-Sorribes, & Martí, 2020). In that study, the greatest credibility was awarded to news without a source (equivalent, in our study, to media tweets, also generating one of the highest credibility scores). Expert and political sources did not significantly affect credibility, and celebrity and anonymous sources had a negative impact. Twitter, therefore, would seem to operate according to different credibility mechanisms than the digital press. Experts generate positive credibility perceptions when they post on Twitter, but not when they feature as sources in the digital press, while the reverse is the case for politicians. Celebrities and anonymous citizens generate low perceptions of credibility in the press, but have no significant impact on the credibility of Twitter posts.

There is a clearly positive effect on the credibility of a message when it is transmitted by an expert. This finding is in line with that of Abu-Akel and colleagues (2021), who reported Dr. Anthony Fauci, chief medical advisor to the U.S. president, to be the person with the greatest credibility in the COVID-19 crisis. Research also indicates that positive expert perceptions and commentaries enhance the credibility of an article (Pjesivac, Geidner, & Cameron, 2018).

One of the main conclusions of this study is undoubtedly the negative effect that politicians have on the credibility of messages in Spain. A possible explanation is polarized politics. According to the

conclusions of a study by Fernández-Fernández and Arceo Vacas (2019) on the credibility of Spanish politicians in elections held in 2015 and 2016, more moderate parties receive better and more homogeneous ratings than more polarizing parties. A study by Gidron, Adams, and Horne (2019) confirmed that Spanish politics are polarizing, with Spain leading the ranking of politically polarized countries.

In conclusion, it can be inferred that the mainstream media play a key role in shaping public opinion, given the credibility of media tweets in the eyes of the public. This corroborates the work of authors such as van der Merwe and van Heerden (2009), who argue that citizens need people who can shape and order social reality for them, and further suggests a need to review the theory of a two-step flow of information. The role of the media, in line with our findings, is to act as a communication channel that helps the public operate in a public sphere marked by information overload.

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Appendix: Templates and Tweets Used for the Study

Templates Used for the Study



Figure A1. Celebrities.
Source: own elaboration.



Figure A2. Politicians.
 Source: own elaboration.



Figure A3. Experts.
Source: own elaboration.



Figure A4. Anonymous citizens.
Source: own elaboration.

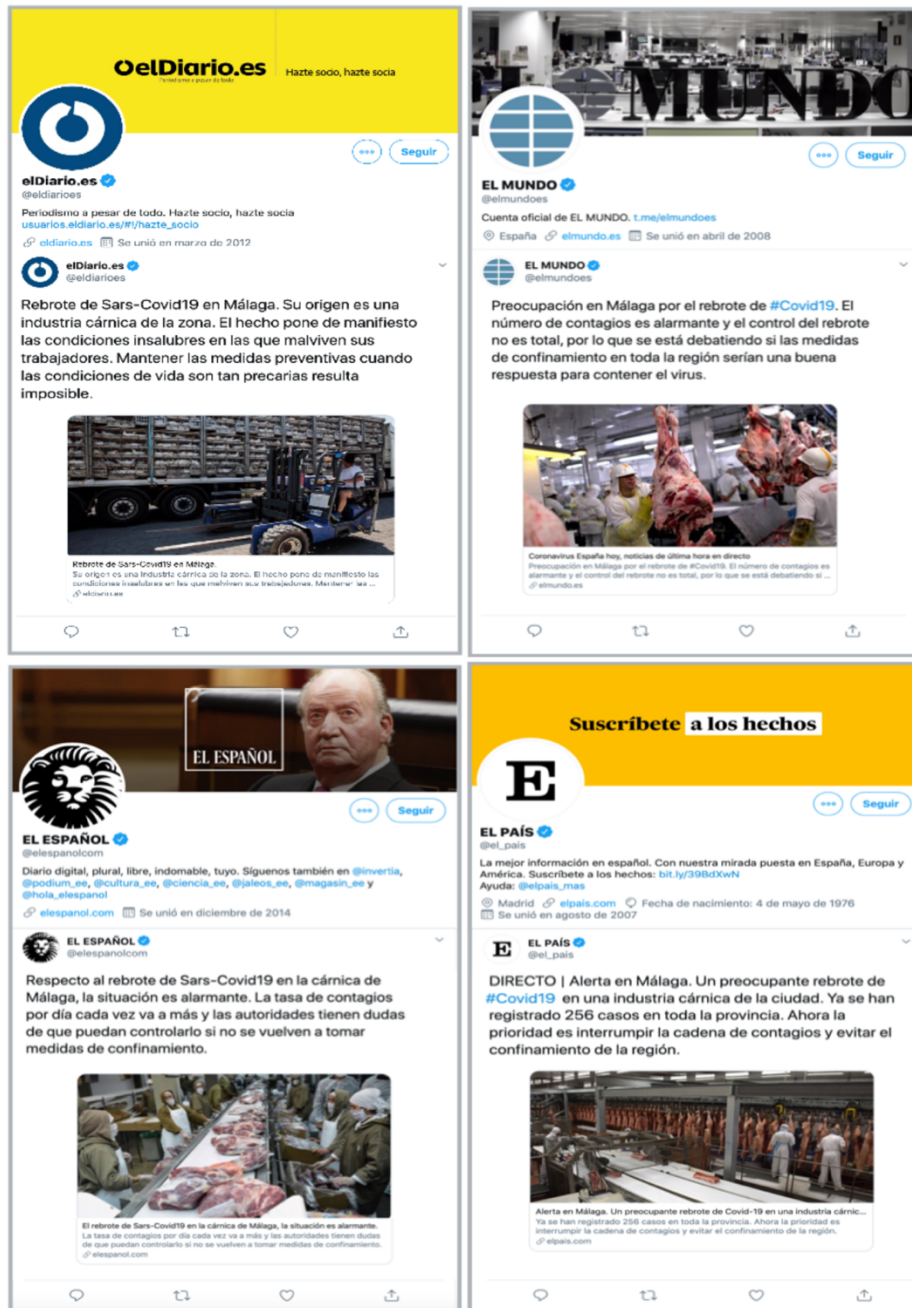


Figure A5. Media.
Source: own elaboration.

Text Included in Tweets (Translated to English)

Tweet 1: Concern in Malaga about the outbreak of COVID-19. The number of infections is alarming and control of the outbreak is not total, so it is being debated whether the confinement measures in the region would be a good response to contain the virus.

Tweet 2: Sars-COVID19 outbreak in Malaga. Its origin is a meat plant in the area. The event notes the unsanitary conditions in which employees do their jobs. Maintaining preventive measures when working conditions are so precarious is impossible.

Tweet 3: Alert in Malaga. A worrying outbreak of #COVID-19 in a meat plant in the city. Two hundred fifty-six cases have already been registered throughout the province. Now the priority is to interrupt the chain of infections and avoid the confinement of the region.

Tweet 4: Regarding the outbreak of Sars-COVID19 in the Malaga meat plant, the situation is alarming. The daily rate of infections is increasing and the authorities have doubts that they can control it if confinement measures are not reimposed.