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One year of European premiers leadership and empathy in times of global pandemic: a Twitter sentiment analysis

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Abstract: After over a year of the COVID-19 pandemic, we observe very different health and economic outcomes across countries. Has this also been the case for the communication of their leaders? Has the communication of the political leaders of most affected countries shown higher levels of sentiment? This study uses Twitter to test whether a sample of European leaders exhibited empathy in their unmediated communications, as advocated by neo-charismatic leadership theories. We find that leaders do show emotions in their communications. However, there are no significant differences between them, leading us to reject the hypothesis that leaders of the most affected countries displayed more empathy than those of the least affected.

Subjects: Politics & the Media; Interpersonal Processes & Communication; Political Communication; Risk Communication

Keywords: Political leadership; empathy; European premiers; political Twitter analysis; emotions

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PUBLIC INTEREST STATEMENT

During the COVID-19 pandemic, we observe very different health and economic outcomes across European countries, and some leaders managed this crisis better. But beyond their management, did some leaders show greater empathy with the citizenry in their communications? According to neo-charismatic leadership theories and previous crisis management findings, it would be expected that the communication of the most affected countries’ political leaders showed higher sentiment levels. Using Twitter to test this hypothesis, we found that there are no significant differences between Premiers: leaders of countries with worse outcomes in terms of deaths and economy manifest a similar level of sentiment and emotions in their tweets to the rest of the leaders. This lack of differential empathy shown by Premiers results is unsettling since that empathy and ethical behavior are a crucial focus for leaders. So, we invite leaders, whether political or organizational, to reflect on the empathy displayed in their communications.
1. Introduction

Public debate in society and the media has highlighted the relevance of political leaders in managing the COVID-19 pandemic and communicating policies (e.g., Tett, 2020; Wittenberg-Cox, 2020). A strand of the academic literature concurred. The importance of clear, honest, and empathetic communication during the pandemic has been highlighted in Kerrissey and Edmonson (2020) and Walkins and Walker (2021), while Ratzan et al. (2020) emphasized the value of adapting communication to the different stages of the pandemic.

The role of empathy in leadership effectiveness has received increasing attention during the past years (Ciulla, 2010; Holt & Marques, 2012; Kellet et al., 2006), as has its role as a fundamental competence of social awareness (Goleman et al., 2002). Ciulla (2010), for instance, highlights “that leaders should exert empathy and sensitivity, along with moral solidarity, commitment, concern, and physical presence, especially during or after crises.” Holt and Marques (2012) review the literature that supports and contests empathy as a leadership quality. As a result, they advocate for empathy as an essential aspect of 21st-century leadership that can no longer be ignored.

We follow Polychroniou (2009, p. 345) and define empathy as “one’s ability to understand the feelings transmitted through verbal and nonverbal messages, to provide emotional support to people when needed, and to understand the links between others’ emotions and behavior.” In this sense, empathy is a valuable quality for a leader and an essential ethical trait. Clohesy (2013, p. 1) claims that empathy “is a necessary condition for justice, democracy, and ethics, a necessary condition for us to live well in the world.” He advocates for empathy as a catalyst, which allows us to imagine new social relations, and, as a result, can help restore our faith in politics. Rifkin (2009) argues that the well of empathy that characterizes human life will allow us to meet all of the challenges facing us, including the threat of climate change.

The COVID-19 pandemic was an unprecedented global health crisis affecting every country. It brought with it a significant degree of uncertainty and social and economic hardship. In this context, the strategic choices of political leaders have had significant and lasting consequences (Antonakis, 2021). The academic literature on leadership posits that the ability to understand others’ emotions enables a leader to empathize and results in effectiveness (Ashkanasy et al., 2000).

After a year of pandemic, countries’ health and economic outcomes differed dramatically. These differences motivate our research question: has there been a corresponding difference in the degree of empathy displayed by the countries’ premiers?

In this paper, we study the presence of an empathetic leadership style in the communications of European Premiers during the pandemic. This leadership style has been advocated by both the neo-charismatic theories in academia and the popular media (see, e.g., Boin et al., 2016; Kerrissey & Edmonson, 2020; McLean & Ewart, 2020) as the most appropriate communication style in a crisis. We test the presence of empathy by analyzing the tone (i.e., sentiments and emotions) in the use of social media by political leaders during the pandemic, particularly Twitter.

Traditional political communication is usually filtered by cabinets, media outlets, and party bureaucracy. These institutions, especially the media, perform a gatekeeping function by selecting and framing the transmission of messages (Soroka, 2012). However, the increased use of Twitter for political exchange has dramatically increased opportunities for leaders to communicate with followers without the intervention and filtering of third parties (Parmelee & Bichard, 2012). Thus, Twitter is a suitable environment to test whether leaders show emotion in their communications with followers, as advocated by neo-charismatic theories (Avolio & Gardner, 2005; Bass & Avolio, 1990).
While there is a mounting body of research about communication by political leaders during election periods (Jungherr, 2016), research about leaders’ communication during significant crisis events was scarce before the COVID-19 outbreak.

Using sentiment analysis techniques on the corpus of tweets from the personal accounts of 17 European Premiers during the COVID-19 pandemic, we test whether the intensity and composition of unmediated communication of the countries with a higher mortality rate corresponded to a more empathetic communication style.

We do not obtain significant differences in communication sentiment intensity among countries, except for a trend to tweet more often in countries with worse health outcomes. Given the vast differences in health and economic outcomes between countries, our findings are puzzling.

There are several possible explanations for the observed homogeneity in communication styles. It could be interpreted as evidence of the use of a conservative strategy by leaders of the most affected countries, disregarding the prescriptions of neo-charismatic theories and missing the opportunity to engage in appealing empathic communication with their followers.

It could also be interpreted as demonstrating superior empathy by leaders of better-performing countries. If this were the case, the higher level of emotion displayed by leaders of worst-performing countries following the prescriptions of neo-charismatic theories would be countered by a higher level of empathy on the part of leaders of better-performing countries.

Finally, our findings may be due to leaders using a channel other than Twitter for their empathic communication. Further research is required to disentangle these alternative explanations of our results.

The rest of the paper is organized as follows. Section 2 reviews the literature at the crossroads of Twitter use by political leaders, empathetic communication, and leadership characteristics and derives the hypothesis we will test empirically. In Section 3, we describe the sample studied and the methodology employed. Section 4 reports the results of our analysis and discusses their implications. Section 5 concludes. Supporting material is available in the Appendix.

2. Leadership, Twitter, and hypothesis formulation

We frame the construction of our research hypothesis first by reviewing the leadership styles the academic literature has identified as more suited to dealing with a crisis, such as the COVID-19 pandemic. We focus on the transformational style, which allows leaders to inspire followers to look beyond narrow self-interest considerations and work together for the common good (James & Wooten, 2005). Second, by assessing the implications of a transformational empathetic style in communication. We then explain the use of Twitter in political communication and how sentiment analysis can assess empathy in communication.

2.1. Leadership

Leadership is both a rich phenomenon and a vast concept that has attracted the attention of many scholars (some good literature reviews and metanalysis are Day et al., 2014; Dinh et al., 2014; Eva et al., 2019). Dinh et al. (2014) find that neo-charismatic theories receive the “most attention from scholars in the new millennium, with transformational leadership and charismatic leadership being the dominant forms.”

Transformational leadership was introduced by Burns (1978), who distinguished two different types of leadership: transactional and transformational. Transactional leadership is based on negotiation, rewards, and punishments. Transformational leadership depends on a vision of the future by the leader that can inspire and motivate followers. Transformational leadership is generally recognized as a shared process: leaders influence followers to get them on board, and
followers give the leader feedback through their responsiveness. Transformational leaders are likely to engage in two-way communication with their followers (something social media has made easier to achieve) and show empathy.

The transformational leadership approach differs from leadership theories based on charisma (Day & Antonakis, 2012), despite both theories sharing some common ground. As La Bella et al. (2018) note, “the charismatic leader emerges as somebody who is trusted and respected with the additional attribution of some exceptional qualities, which cause the followers to show an unquestioned acceptance.” A charismatic leader shares an inspirational vision, a sense of mission, and an effective communication style.

Within the emerging leadership theories, a growing literature strand focuses on the ethical and moral values-based content of a leader’s behavior (Dinh et al., 2014). Four leadership theories (authentic, ethical, spiritual, and servant leadership), concerned with positive and humanistic behavior and focusing on altruism on the part of leaders, complement the well-established transformational leadership theory.

According to Dinh et al. (2014), the most prominent of these theories is the authentic leadership theory. The authentic leadership construct has been extensively explored by Gardner et al. (2011). Their conceptualization of authenticity includes multiple components: “(1) self-awareness (i.e., knowledge and trust in one’s thoughts, feeling, motives, and values), (2) unbiased processing (i.e., objectivity about and acceptance of one’s positive and negative attributes), (3) behavior (i.e., acting based on one’s true preferences, values, and needs rather than merely acting to please others, secure rewards, or avoid punishments), and (4) relational orientation (i.e., achieving and valuing truthfulness and openness in one’s close relationships).”

The literature connects authentic leadership with transformational leadership. Transformational leadership influenced the conception of authentic leadership, although both have developed into different constructs. Transformational leadership can incorporate authentic or other leadership forms; however, authentic leadership may or may not be transformational (Avolio & Gardner, 2005).

As for ethical leadership, we follow the approach by Brown et al. (2005, p. 120) and define it as “the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement, and decision-making.” The theory highlights the importance of honesty and integrity embodied within the leader who becomes a critical role model. Transformational and ethical leadership overlap in their focus on personal characteristics, such as empathy. As Brown and Treviño (2006) highlight, “ethical and transformational leaders care about others, act consistently with their moral principles (i.e., integrity), consider the ethical consequences of their decisions, and are ethical role models for others.”

The core of servant leadership is the notion of “service before self” and involves listening as a means of affirmation, establishing trust, and helping others achieve their full potential. Humphreys (2005) concludes, comparing transformational and servant approaches to leadership through a historical investigation, that transformational leadership is likely more effective in turbulent times. McLean and Ewart (2020) show clearly that political actors should adopt the transformational leadership style in catastrophic times.

Referring to complex task management, Kellet et al. (2006) suggest “that by furthering a leader’s understanding of followers’ needs and feelings, empathy may assist task-related cognitive processes. Their results imply that empathy may be instrumental in building bonds with followers, providing support for self-worth, showing individual consideration, effective communication, problem-solving, decision-making, and, ultimately, performance. In this context, leading a country during the COVID-19 pandemic can be categorized as a complex task, benefiting from empathy.”
In summary, in the spirit of Dinh et al. (2014), we understand that leadership is a challenging occurrence, developed over time, that involves considerable mediating and moderating factors embodied in different theories. The extant academic literature has identified many commonalities among theories. As part of this common ground, there is a current trend in research focusing on leaders and their qualities (e.g., authentic, ethical) in which empathy plays a shared key role. As Choi (2006) explains, “empathy may underlie relationship-oriented leadership behaviors such as consideration, characterized by mutual trust, respect for and support for another person’s ideas, and appreciation for their feelings (Judge et al., 2004). A high degree of consideration thus implies a solid sensitivity to followers’ needs.”

2.2. Emotions in leadership
The role played by emotions is a subject that has become increasingly popular in leadership research. A significant number of scholars have argued that emotional intelligence is a core variable that affects leaders’ performance. Emotional awareness and emotional regulation are essential factors affecting the quality of the interactions between leaders and other individuals and become crucial characteristics of an effective leader (Wong & Law, 2002). Hooijberg et al. (1997) contend that “good leaders need to have a good understanding of their own emotions and those of others and are able to regulate their own emotions when interacting with others.” Empathy has also been identified as the central aspect of emotional intelligence (e.g., Bass, 1998; Goleman, 2001; Mayer et al., 1999).

In this study, we understand Emotional Intelligence as Mayer and Salovey (1997) define it: “a set of interrelated skills concerning the ability to perceive accurately, appraise, and express emotion; the ability to access and generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth.” Bono and Ilies (2006) examine the effects of leaders’ positive emotional expressions on their followers’ emotional and attitudinal responses to gain insight into how charismatic leaders—whether consciously or unconsciously—use emotion to influence followers.

According to McDermott (2020), emotions serve many relevant functions in leadership. For our present study, we highlight two. First, emotions can be used to mobilize attention. People use positive and negative emotions to plead for help, happiness, love, and empathy to improve life for everyone. Emotions can reinforce the cooperation that leaders need to invoke in a crisis. Second, emotions are the primary foundation for direct and immediate social communication. McDermott (2020) points out that for political purposes and social communication, emotions such as fear and anger (aroused by an outside threat) help overcome internal divisions and promote cooperation within a community against a common threat.1

2.3. Political leaders’ communication through Twitter
McLean and Ewart (2020) note that disasters have had a political dimension throughout history, and an immense expectation is placed on political leaders to do something and be seen doing it. In order to be trusted, politicians need to communicate clearly and be present for their communities (Boin et al., 2016). During an acute crisis and after it, they need to deliver messages of empathy, support, and reassurance, while also focusing on communications about rebuilding and the recovery effort. The authors cited above also emphasize the importance of politicians being the face of a disaster to frame the narrative as being about disaster and recovery. The communication effort and the level of empathy displayed should be stronger in a crisis than during non-crisis periods: “politicians should be heard and seen during disasters (p. 143).”

Boin et al. (2016) postulate that leaders must manage the meaning-making process, first by formulating a persuasive message and then by delivering it. “Public communication during a crisis is a highly competitive business: each and every detail of words, pictures, gestures, and performance matters (p. 80).”
McLean and Ewart (2020) explain that with the advent of social media, such communication activity is demanded almost instantaneously. Given its exponential growth, social media has been increasingly used in a political context (Tumasjan et al., 2011). Twitter, a microblogging and social networking service that focuses on instantaneous public messaging, is an especially appealing method of communication because of its ease of use, low cost, and high accessibility. It has 1.3 billion accounts, of which 330 million are monthly active users, and 500 million tweets are posted daily.2

Twitter has already been the focus of extensive academic research (Karami et al., 2020; Martínez-Rojas et al., 2018, inter alia). Since 2008, 577 articles on political communication have been indexed in the Scopus database using Twitter.3

Political leaders have used Twitter to communicate with the public, especially with their followers (Parmelee & Bichard, 2012). In the political arena, Twitter has become a well-known communication channel. Barack Obama is a notorious example of successfully employing social media in the presidential campaigns of 2008 and 2012.

Twitter enables direct contact between the public and political representatives outside the control of the party hierarchy (Golbeck et al., 2010). As political leaders use Twitter, they use a channel not filtered by local or national media; thus, they are able to convey their own agendas without being censored (Aharoni, 2012).

Golbeck et al. (2010) show that, during regular times, congresspeople primarily use Twitter to divulge information (particularly links to their blog posts and news articles about themselves) and report on their daily activities. These tweets tend not to provide new insights into government or the legislative process or improve transparency; instead, they are vehicles to spread information and self-promotion (Aharoni, 2012; Parmelee & Bichard, 2012).

Kousser (2019) finds that tweets by politicians focus on informational content when their party controls the government, avoiding ideological positions. Significantly, communication advisors could have been, and probably were, involved. However, for Kousser, this is still a noteworthy indication of a commitment to clear communication.

The communications of Prime Ministers on Twitter have already been studied in several papers (Ie, 2020). Aharoni (2012) studies the Twitter communication of three international leaders: Benjamin Netanyahu, David Cameron, and Barack Obama. Enli and Skogerbo (2013) study Norwegian politicians during campaigns and find that politicians have, and are expected to have, a personal presence on social media, thus corroborating that social media has become a new tool for personal politics. Ie (2020) reports that mainstream, non-populist leaders adopt Twitter to construct their leadership style.

While there is a mounting body of research about communication by political leaders during election periods (see, Jungherr, 2016 for a systematic literature review), research about leaders’ communication during significant crises was scarce before the COVID-19 outbreak.

Twitter crisis communication is the subject of some papers like Drylie-Carey et al. (2020). They study the tweets’ communication of six global leaders (Boris Johnson, Emmanuel Macron, Pedro Sanchez, Giuseppe Conte, Tedros Adhanom, and Ursula Von der Leyen) during the first 40 days of the COVID-19 crisis. This study notes that public communication is critical in slowing the spread of the virus and therefore reducing the death rate, as was the case in previous health crises when social media and mobile technologies played a decisive role in the diffusion of public health strategies (Liu & Kim, 2011; Tirkkonen & Luoma-aho, 2011). The World Health Organization also indicates that social communication is decisive in convincing populations to avoid risks (Parks & Lloyd, 2004).
Drylie-Carey et al. (2020) point to the authentic authority of the leaders as a means to drive the population through a crisis and find that most of the leaders examined were not transparent. They argue that more transparent communication in times of crisis, leading to an image of sincerity, makes it easier to lead through the necessary actions. The paper also finds that the leaders' profiles were used as an institutional medium for information without personalizing the content to engage citizens.

McInnes and Hornmoen (2018) studied how Norwegian and U.K. health authorities used social media, especially Twitter, during the 2014–15 Ebola outbreak. Their conclusions are similar: the examined leaders did not fully exploit Twitter’s dialogical potential, preferring a vertically integrated approach with little monitoring of the broader Twitter conversations. Thus, using Twitter for informational purposes and avoiding attributes related to transformational, ethical, or authentic leadership, such as sincere and empathetic communication.

Boin et al. (2016) warn about using Twitter in crisis communication since it may complicate the narratives. Because of the space limitations, tweets and text messages could seem insensitive or be used for propaganda and disinformation. However, the authors recognize that social media provides valuable information and feedback, echoing Olsson (2014) in that social media should encourage preparedness, facilitate citizenship awareness and societal vigilance, and coordinate the mobilization of resources.

Sentiment analysis of Twitter data has become a fruitful area of research (e.g., Kumar & Garg, 2019; Lima et al., 2015; López-Chau et al., 2020; Sailunaz & Alhajj, 2019). Natural language processing techniques (NLP), taking advantage of the massive amount of social media information available, have become key to capturing sentiments and semantics in a more replicable and robust manner. People express their opinions, appraisals, and attitudes –generally called sentiment–through Twitter messages (Liu, 2011; Pang & Lee, 2008).

Dong-Xuan et al. (2013) studied whether the sentiment of political tweets influenced followers’ behavior (through retweeting) during election times. Their findings corroborate the importance of emotionality and appraisals for politicians. Sentiments may have a viral effect. In agreement with the tenants of a transformational leadership communication style, the authors encourage leaders “to use more language that articulates emotionality to propagate their political issues better.” They also recommend Twitter as a social media to more proactively enter into dialogs and discussions with citizens.

Stieglitz and Dong-Xuan (2012), when analyzing the characteristics of the retweeted messages, found that the number of words indicating positive or negative emotions in connection with political parties or politicians in a message influenced the retweet count of said message positively.

Reinforcing Twitter relevance, Dhar and Bose (2020) find, for the period between January 2019 and June 2020, that emotions expressed in organizational tweets were significant predictors of firms’ stock prices.

Drias and Drias (2020) conducted a sentiment analysis on the entire Twitter dataset from 23 February 2020, to 3 March 2020. The results show that due to lockdowns and social distancing measures, people changed their behaviors (such as washing hands often) and experienced different feelings and emotions from those they had previously known.

Very relevant to our topic is the article by De Bussy and Paterson (2012) that studies Twitter posts during a crisis: the Australian Queensland floods. Through the study of Twitter content, the authors analyze the leadership styles displayed during the crises by two Australian female political leaders: Anna Bligh and Julia Gillard.
They find that “Bligh's empathy, ability to display emotion and echo people's moods, and proud sense of self-identity seemed to resonate. Bligh was seen as a reliable source of information and advice on the crisis.” Journalists described her as the embodiment of a whole state's resilience. On the other hand, Gillard's tweets painted her as cold and robotic, more concerned with image than substance. Rather than a transformational and empathic leader, her tweets framed Gillard as a transactional leader without inspiration or charisma. This study reinforces the effectiveness of a transformational leadership style in times of crisis. Kerrissey and Edmonson (2020) and Walkins and Walker (2021) also recommend this leadership style.

Gruber et al. (2015) article on crisis management through the analysis of Twitter communication during an unprecedented sequence of events at the University of Virginia in 2012 illustrates how critical it is to be present, listen, and engage with stakeholders.

Haman (2020), studying 143 state leaders' Twitter accounts, reports that the COVID-19 outbreak significantly impacted discourse. Findings support that social networks play a role in keeping citizens informed during emergencies. Bernardo et al. (2013) argue that activity in social networks can allow authorities to reduce citizens’ anxiety, inform, detect peaks at an early stage, and minimize virus propagation.

Rufai and Bunce (2020), in an early study of Twitter use by G7 world leaders, acknowledge that Twitter represents a powerful tool to communicate public health information with citizens rapidly but recommend caution and prefer tweets containing official information sources.

This literature review on Twitter communication during a crisis confirms the importance of empathic communication, as prescribed by the transformational, ethical, and authentic leadership styles. Since Twitter ultimately allows leaders to communicate clearly with followers, we decided to use the personal Twitter accounts of political leaders to analyze the sentiment displayed in their communication. We can also conclude from this review that tweets carry information about how Prime Ministers lead and how this can affect a country’s life in a crisis (Ie, 2020).

2.4. Hypothesis formulation
Based on this review of the extant literature, we would expect:

(i) European Premiers to have displayed attributes at the intersection of an authentic, ethical, and transformational leadership style during the COVID-19 outbreak since this is the leadership style recommended for crises,

(ii) European Premiers to have adopted an empathic communication strategy during the crisis, as the recommended leadership style recognizes followers’ emotional needs and emphasizes the emotional, inspirational, and symbolic aspects of leadership influence, and as a consequence

(iii) The unmediated communication that European Premiers established with their followers through their personal Twitter accounts would have shown an empathic style.

We will, therefore, investigate whether European adopted the recommended leadership style during a crisis and followed the prescriptions of the academic literature regarding communication by testing the following hypothesis:

The strength of emotions displayed in unmediated communication through personal Twitter accounts by political leaders during the COVID-19 pandemic was influenced by the depth of the crisis. Thus, leaders of countries most heavily impacted—in terms of mortality rate and drop in GDP—exhibited stronger emotions than leaders of less affected countries.
3. Sample construction

Table 1 describes the sample we used to test the hypothesis of interest. We focused on European countries to obtain a sample comparable in socio-economic terms. The sample construction process started with all 27 countries of the European Union, plus the United Kingdom and the EFTA countries (Iceland, Liechtenstein, Norway, and Switzerland). Because our study focuses on unmediated communication through personal Twitter accounts, we dropped from the sample countries whose Premier did not have a personal Twitter account and only communicated using the official Twitter feed of the office held: Denmark, Germany, Hungary, Italy, Liechtenstein, and Sweden. Next, Czechia, Slovakia, and Slovenia were dropped because they lacked a complete time series, as their leaders only started tweeting after 1 June 2020. We also dropped all countries with less than 40 tweets in the sample period: the Netherlands and Romania. There were two reasons for this. The first is that with such a small volume of data, even a single tweet can significantly affect the average value, distorting the analysis. The second is that leaders publishing so few tweets are clearly not using Twitter as a communication tool.

Finally, we dropped from the sample the countries that had experienced a change in government during the period under study: Belgium, Estonia, Lithuania, and Switzerland. Thus, our final sample consisted of a total of 17 countries.

Table 1 lists the names of the leaders analyzed and their Twitter accounts. Except for Cyprus, which has a full presidential system of government, all countries in our sample are semi-presidential (France, for example) or parliamentary democracies and have both a Head of State and a Head of Government. For our analysis, we chose the leaders that held the role with the most executive power, regardless of nomenclature.

In order to select the politician’s personal account, we use Twiplomacy. The website Twiplomacy facilitates the collection of Twitter accounts of world politicians. This choice is due to private Twitter accounts often being used to communicate more personally with followers and campaigning. In contrast, official accounts are used for formal communications and are expected to have a neutral tone.

The Twitter API was used to collect all tweets during the sample period: 1 February 2020, to 28 February 2021. We only analyzed textual data and therefore dropped all visual archives, videos, photographs, and graphics. We also dropped all retweets. Our initial sample consisted of 8,992 tweets. We translated all non-English tweets to that language using Google Translate (as in Rufai & Bunce, 2020).

We then cleaned the resulting database removing capitalization, mentions, html links, emoticons, special characters, numbers, punctuation marks, tabs, and stop words. We also dropped duplicates. Table 2 describes the resulting sample with a total of 8,838 tweets.

We measured the sentiment associated with Twitter communication along the eight basic emotions identified by the psychoevolutionary theory (Plutchik, 1980): anger, anticipation, disgust, fear, joy, sadness, surprise, and trust.

In order to characterize the sentiment of each tweet, we used the NRC lexicon (Mohammad & Turney, 2013). The lexicon was crowdsourced using Amazon’s Mechanical Turk and assigns at least one of ten potential sentiments (each of the eight basic emotions plus a positive or negative general attitude) to a list of around 14,200 words.

Plutchik (1987, p. 43) describes empathy “as sharing positive and negative emotions that promote a bond between individuals.” We thus calculated a given tweet’s polarity (negative or positive) by subtracting the number of negative words from the number of positive words present in each tweet. The resulting figure was then averaged over the number of tweets in a day
| Country | Premier nomenclature | Name                   | Twitter account       | Gender | Followers |
|---------|----------------------|------------------------|-----------------------|--------|-----------|
| Austria | Chancellor           | Sebastian Kurz         | sebastiankurz         | Male   | 472.4 K   |
| Bulgaria| Prime minister       | Boiko Borisov          | boykoborissov         | Male   | 99.3 K    |
| Croatia | Prime minister       | Andrej Plenković       | andrejplenkovic       | Male   | 46.7 K    |
| Cyprus  | President            | Nicos Anastasiades     | anastasiadescy       | Male   | 103.5 K   |
| France  | President             | Emmanuel Macron        | emmanuelmacron       | Male   | 6.7 M     |
| Greece  | Prime minister       | Kyriakos Mitsotakis    | kmitsoptaks          | Male   | 305 K     |
| Ireland | Taoiseach/Prime Minister | Micheál Martin         | michealmartinnd    | Male   | 129.9 K   |
| Latvia  | Prime minister       | Arturs Krišjānis Kariņš | krisjaniskarins     | Male   | 23.9 K    |
| Luxembourg | Prime minister     | Xavier Bettel          | xavier_bettel       | Male   | 91.7 K    |
| Malta   | Prime minister       | Robert Abela           | robertabelamtt      | Male   | 7.024 K   |
| Poland  | Prime minister       | Andrzej Duda           | andrejdudd          | Male   | 1.2 M     |
| Portugal| Prime minister       | António Costa          | antoniocostapmn     | Male   | 201.4 K   |
| Spain   | President            | Pedro Sanchez          | sanchezcastejon     | Male   | 1.5 M     |
| U.K.    | Prime minister       | Boris Johnson          | borisjohnson        | Male   | 3.3 M     |
| Finland | Prime minister       | Sanna Marin            | marinsanna           | Female | 217.4 K   |
| Iceland | Prime minister       | Katrin Jakobsdöttir   | katrinjak            | Female | 35 K      |
| Norway  | Prime minister       | Erna Solberg           | erne_solberg        | Female | 338.9 K   |

**Countries dropped from the sample**

- Denmark (*)
- Germany (*)
- Hungary (*)
- Italy (*)
- Sweden (*)
- Lichtenstein (*)
- Czechia (**)
| Country   | Premier nomenclature | Name         | Twitter account | Gender | Followers |
|-----------|----------------------|--------------|-----------------|--------|-----------|
| Netherlands (**)| Prime minister | Mark Rutte | markrutte | Male   | 140.3 K   |
| Romania (**)| Prime minister  | Florin Cîțu | florincitu | Male   | 2.539 K   |
| Slovakia (**)| Prime minister | Igor Matovič | i_matovic | Male   | 3.948 K   |
| Slovenia (**)| Prime minister | Janez Janša | jjansasds | Male   | 82.8 K    |

Notes: Belgium, Estonia, Lithuania, and Switzerland were not analyzed because their Premier changed during the pandemic. (*) Only official Twitter account available (**) Insufficient Twitter data or incomplete time series.
containing any positive or negative term to obtain the daily polarity. Figures reported for each country (i.e., average, maximum, minimum) were calculated using daily polarities.

A similar procedure was followed to calculate the level of each of the eight basic emotions present in a leader’s tweets. In this case, the number of words labeled as containing each basic emotion was divided by the total number of words with any emotional score in a given tweet. Thus, for each tweet showing any emotion, the score for all eight emotions added up to one. Daily emotion was calculated as the average emotion level in tweets with any emotional content on a given day, and country-level figures were calculated using daily data, as before.

Finally, we studied the epidemic’s effect on each country using health and economic variables. We calculated the mortality rate (cumulative deaths per 100,000 population) using population data as of 31 December 2020, from the European Centre for Disease Prevention and Control (ECDC) and data on the daily number of cumulative deaths from the Johns Hopkins Coronavirus Resource Center (JHCR) for the period starting 22 January 2020 (when JHCR first reported these numbers) and ending 28 February 2021. The fall in GDP between 2020 and 2019 was sourced from the IMF.7

4. Results discussion

4.1. Differences in outcomes

Table 3 reports selected health and economic outcomes of the pandemic for all countries in our sample. It highlights the significant differences in performance that motivate our research. It shows that countries underperforming in health outcomes also suffered the most severe drops in GDP. In fact, the Pearson correlation coefficient between the cumulative mortality rate up to 28 February 2021, and the percentage change in GDP from 2019 to 2020 is −0.582 and very statistically significant, with a p-value of 0.01415.

These differences in outcomes led us to group countries according to performance. We thus implemented a complete-linkage hierarchical agglomerative cluster analysis of the entire time series

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### Table 2. Tweet sample description

| Country      | Name of Leader          | First tweet | Last tweet | No. of tweets |
|--------------|-------------------------|-------------|------------|---------------|
| Austria      | Sebastian Kurz          | 2020-02-02  | 2021-02-28 | 940           |
| Bulgaria     | Boiko Borisov           | 2020-02-15  | 2021-02-15 | 78            |
| Croatia      | Andrej Plenkovic        | 2020-02-01  | 2021-02-28 | 878           |
| Cyprus       | Nicos Anastasiades      | 2020-02-01  | 2021-02-24 | 377           |
| Finland      | Sanna Marin             | 2020-02-04  | 2021-02-26 | 304           |
| France       | Emmanuel Macron         | 2020-02-01  | 2021-02-28 | 1058          |
| Greece       | Kyriakos Mitsotakis     | 2020-02-08  | 2021-02-11 | 57            |
| Iceland      | Katrin Jakobsdottir     | 2020-02-09  | 2021-02-23 | 52            |
| Ireland      | Micheal Martin          | 2020-02-01  | 2021-02-28 | 398           |
| Latvia       | Arturs Krišjānis Karņš  | 2020-02-03  | 2021-02-26 | 387           |
| Luxembourg   | Xavier Bettel           | 2020-02-03  | 2021-02-28 | 212           |
| Malta        | Robert Abela            | 2020-02-12  | 2021-02-24 | 245           |
| Norway       | Erna Solberg            | 2020-02-03  | 2021-02-28 | 297           |
| Poland       | Andrzej Duda            | 2020-02-04  | 2021-02-27 | 381           |
| Portugal     | António Costa           | 2020-02-01  | 2021-02-28 | 1157          |
| Spain        | Pedro Sanchez           | 2020-02-01  | 2021-02-28 | 1202          |
| United Kingdom | Boris Johnson          | 2020-02-01  | 2021-02-28 | 815           |
of mortality rates from 1 February 2020, to 28 February 2021. The procedure groups countries using the evolution of mortality rates. Countries in the same cluster are more similar to each other than to those in other clusters. We used the Euclidean distance to measure dissimilarity and implement the analysis using the "TSClust" (Montero & Vilar, 2014) and "factoextra" (Kassambara & Mundt, 2017) packages. We identified three distinct clusters shown in Table 4 and Figure 1.

Cluster 1 is composed of those countries with the lowest mortality rate. Furthermore, the evolution of health outcomes in Figure 1 (below) shows no large waves as other countries do.

Table 3. Economic and health outcomes of the COVID-19 crisis by country, in ascending order of mortality rate

| Country  | Mortality rate | Change in GDP (%) |
|----------|----------------|-------------------|
| Iceland  | 8.12           | -3.00             |
| Norway   | 11.67          | -7.20             |
| Finland  | 13.45          | -2.80             |
| Cyprus   | 26.37          | -4.00             |
| Greece   | 60.65          | -6.40             |
| Malta    | 63.82          | -9.50             |
| Latvia   | 84.27          | -7.90             |
| Ireland  | 88.07          | -5.00             |
| Austria  | 96.64          | -6.70             |
| Luxembourg| 103.76         | -5.80             |
| Poland   | 115.26         | -3.60             |
| France   | 129.20         | -9.80             |
| Croatia  | 135.57         | -9.00             |
| Bulgaria | 145.58         | -4.00             |
| Spain    | 147.31         | -12.80            |
| Portugal | 158.78         | -10.00            |
| United Kingdom | 184.68 | -9.80 |

Notes: Mortality rate is calculated as the cumulative number of deaths as of 28 February 2021, per 100,000 population. Change in GDP between 2019 and 2020 (as reported by the International Monetary Fund in June 2021). Note that the IMF has revised this data and the correlation coefficient with the data as of August 2022 is -0.35.

Table 4. Characterization of country clusters derived from mortality rate data

| Cluster | Number of countries | Average cluster |
|---------|---------------------|-----------------|
| 1       | 7                   | 3               | 38.34 | -5.83 |
|         | Iceland, Finland, Norway, Latvia, Malta, Greece      |
| 2       | 7                   | 0               | 120.52 | -6.30 |
|         | Ireland, Luxembourg, Austria, Poland, Portugal, Bulgaria, Croatia |
| 3       | 3                   | 0               | 153.73 | -10.80 |
|         | France, Spain, United Kingdom                         |

Notes: Mortality rate is calculated as the cumulative number of deaths as of 28 February 2021, per 100,000 population. Change in GDP between 2019 and 2020 (as reported by the International Monetary Fund in June 2021).
This cluster also shows much better health and economic outcomes than other clusters. It is worth noting that the three countries in our sample led by women are within this cluster.

The countries in cluster 2 exhibited relatively low mortality rates until October 2020, when health outcomes started to deteriorate rapidly. Countries in clusters 2 and 3 faced a steeper deterioration than those in cluster 1.

Cluster 3 countries showed the worst performance of all. They experienced a sharp increase in mortality rate in the last quarter of 2020, at the same time as countries in clusters 1 and 2. However, they also suffered an earlier period of rapidly deteriorating health outcomes in the early second quarter of 2020.

Once verified that different countries had been affected substantially differently by the exogenous shock that the COVID-19 pandemic represented, we tested our hypothesis.

4.2. Twitter usage
Following the literature review in Section 2.3, one of the first effects to verify is the increased use of Twitter as a strategy to communicate and reassure.
Figure 2 shows that there is indeed a significant and positive relationship between the cumulative mortality rate (measured as deaths per 100,000 population up to 28 February 2021) a country experienced and the cumulative number of tweets (up to 28 February 2021) posted by its leader. The Pearson correlation coefficient between both variables is 0.633, highly statistically significant, with a p-value of 0.0064.

We thus confirm that the evolution of the number of deaths urges political leaders to communicate via social media, following the recommendations of the literature (e.g., Drylie-Corey et al., 2020; Haman, 2020; Parks & Lloyd, 2004). Also, results obtained in BI INDIA PARTNER (2020), in their report about effective Twitter communication during a crisis, support the idea that the number of tweets issued indicates a strategy that reassures the public.

To give the reader a sense of what messages look like, we show the Top 10 words used by each Premier in the Appendix. Our results confirm the findings of Tajfel (2010): in-group cohesion increases during a crisis, as evidenced by the preponderance of words related to each country and nationality. This phenomenon also generates out-of-group discrimination.

### 4.3. Average Twitter sentiment

In order to test whether a neo-charismatic leadership style (that emphasizes the emotional, inspirational, and symbolic aspects of leadership) was being exhibited by European Premiers, we analyzed the level of polarity in Twitter communication. Our hypothesis implies that leaders of countries with higher mortality rates would reflect the situation in their authentic, truthful communication via Twitter and show a more negative tone (lower polarity) than leaders whose countries fared comparatively better.

However, Table 5 shows no significant association between a country's mortality rate and the mean polarity of its leader's tweets.

As an additional step, we performed the same measurement with the countries grouped in the clusters previously identified. We again found no significant difference between mean tweet polarity and average mortality rate at the cluster level (see, Table 6).

Table 7 shows another breakdown with the same non-result. This time we calculated the difference in mean polarity between the top 9 countries and bottom eight countries according to their mortality rates. Again, we found almost no differences in mean polarity (differences in polarity were on the order of 4%, while differences in mortality rate were on the order of 140% order and in GDP on the order of 40%).

### 4.4. Sentiment volatility

We now investigate the volatility of the sentiments expressed in a leader’s tweets. It is conceivable that two empathetic leaders faced with a crisis of differing severity may, nevertheless, spouse a similar average tone in their communication. However, in that case, messages by the leader facing a more severe crisis should exhibit higher volatility in polarity.

To test whether this was, in fact, the case amongst European leaders, we calculated the range (sample maximum minus minimum) and volatility (standard deviation) of the daily polarity of tweets posted by each leader throughout the sample period. The results are reported in the third and fourth columns of Tables 5–7.

There is no significant relationship at any level of aggregation between the volatility of polarity in tweets by a country's leader and its mortality rate. The Pearson correlation coefficient between these two variables is −0.298, but statistically insignificant, with a p-value of 0.245. In this line, Table 6 shows a hint of an inverse relationship between volatility of polarity and mortality for
| Country   | Min. | Max. | Range | Mean | Standard Deviation | Mortality Rate | Change in GDP |
|-----------|------|------|-------|------|------------------|----------------|---------------|
| Iceland  | −3   | 6    | 9     | 2.06 | 2.19             | 8.12           | −3.00%        |
| Norway   | −3   | 7    | 10    | 1.21 | 1.72             | 11.67          | −7.20%        |
| Finland  | −5   | 5    | 10    | 1.10 | 1.88             | 13.45          | −2.80%        |
| Cyprus   | −3   | 9    | 12    | 1.85 | 2.05             | 26.37          | −4.00%        |
| Greece   | −4   | 7    | 11    | 1.87 | 2.05             | 60.65          | −6.40%        |
| Malta    | −4   | 7    | 11    | 1.77 | 1.75             | 63.82          | −9.50%        |
| Latvia   | −3   | 9    | 12    | 2.07 | 2.04             | 84.27          | −7.90%        |
| Ireland  | −4   | 9    | 13    | 1.91 | 1.88             | 88.07          | −5.00%        |
| Austria  | −3   | 6    | 9     | 1.23 | 1.41             | 96.64          | −6.70%        |
| Luxembourg | −3  | 7    | 10    | 1.76 | 1.92             | 103.76         | −5.80%        |
| Poland   | −4   | 9    | 13    | 2.02 | 1.85             | 115.26         | −3.60%        |
| France   | −4   | 7    | 11    | 1.27 | 1.55             | 129.2          | −9.80%        |
| Croatia  | −4   | 6    | 10    | 1.73 | 1.69             | 135.57         | −9.00%        |
| Bulgaria | −5   | 8    | 13    | 1.90 | 2.51             | 145.58         | −4.00%        |
| Spain    | −3   | 7    | 10    | 1.96 | 1.72             | 147.31         | −12.80%       |
| Portugal | −4   | 6.6  | 10.6  | 2.01 | 1.65             | 158.78         | −10.00%       |
| United Kingdom | −6 | 7    | 13    | 1.27 | 1.56             | 184.68         | −9.80%        |

Notes: Tweet polarity was measured as positive minus negative words, then averaged for all tweets with positive or negative terms in a day. Minimum, maximum, range, average, and standard deviation were calculated based on daily tweet polarity between 1 February 2020, and 28 February 2021. The mortality rate was calculated as the cumulative number of deaths as of 28 February 2021, per 100,000 population. Change in GDP between 2019 and 2020.
| Country cluster                                      | Min. | Max. | Range | Mean | Standard Deviation | Average Mortality | Change in GDP |
|------------------------------------------------------|------|------|-------|------|--------------------|-------------------|---------------|
| Cluster 1: Cyprus, Finland, Iceland, Norway, Latvia, Malta, Greece | −3.57 | 7.14 | 10.71 | 1.70 | 1.96              | 38.34             | −5.8%         |
| Cluster 2: Ireland, Luxembourg, Austria, Poland, Portugal, Bulgaria, Croatia | −3.86 | 7.37 | 11.23 | 1.80 | 1.85              | 120.52            | −6.3%         |
| Cluster 3: France, Spain, United Kingdom             | −4.33 | 7.00 | 11.33 | 1.50 | 1.61              | 153.73            | −10.8%        |

Notes: Tweet polarity was measured as positive minus negative words, then averaged for all tweets containing positive or negative terms in a day. Minimum, maximum, range, average, and standard deviation were calculated based on daily tweet polarity between 1 February 2020, and 28 February 2021. The mortality rate was calculated as the cumulative number of deaths as of 28 February 2021, per 100,000 population. Change in GDP between 2019 and 2020.
Table 7. Tweet polarity for the top 9 and bottom eight countries in ascending order of mortality rate

| Countries                                      | Min. | Max. | Range | Mean | Standard Deviation | Average Mortality | Change in GDP |
|------------------------------------------------|------|------|-------|------|--------------------|-------------------|---------------|
| Top 9: Iceland, Norway, Finland, Cyprus, Greece, Malta, Latvia, Ireland, Austria | −3.56 | 7.22 | 10.78 | 1.68 | 1.89               | 50.34             | −5.8%         |
| Bottom 8: Luxembourg, Poland, France, Croatia, Bulgaria, Spain, Portugal, United Kingdom | −4.13 | 7.20 | 11.33 | 1.74 | 1.81               | 140.02            | −8.1%         |
| Difference (Top-Bottom)                       | 0.57 | 0.02 | −0.55 | −0.07 | 0.08               | −89.68            | 2.27%         |

Notes: Tweet polarity was measured as positive minus negative words, then averaged for all tweets containing positive or negative words in a day. Minimum, maximum, range, average, and standard deviation were calculated based on daily tweet polarity between 1 February 2020, and 28 February 2021. The mortality rate was calculated as the cumulative number of deaths as of 28 February 2021, per 100,000 population. Change in GDP between 2019 and 2020.
countries clustered by the evolution of their mortality rates, with cluster 2, the one with the better mortality rate, being the one with the highest volatility.

4.5. Emotions

Once established that there are no significant differences in the polarity of Twitter communication between countries with high and low mortality rates, we conduct a deeper investigation of the eight basic emotions. Of particular interest to our analysis are the negative emotions: fear, sadness, anger, and, to a lesser extent, disgust.

When faced with an unprecedented crisis that has brought so much loss of life, such as the COVID-19 pandemic, an empathic leader’s communication is expected to resonate with the public and exhibit sadness, anger, or fear.

Tables 8, 9 and 10 report data for the eight basic emotions aggregated per country, cluster, and for the top and bottom half of the sample.

In these tables, we observe significant levels of emotion, especially fear and, to a lesser extent, anger, which are valuable in the context of a pandemic. We also observe high levels of trust, anticipation, and joy but no significant differences at any level of aggregation.

The above evidence leads us to conclude that there is no significant association between tweet polarity or the level of emotion shown in tweets and mortality rate. We, thus, reject our hypothesis. According to the evidence gathered and analyzed in this paper, leaders of the most affected countries have not displayed stronger emotions in their communications.

4.6. Discussion

The results described point to European political leaders being aware of the importance of communicating directly with citizens during the COVID-19 crisis. The observed higher volume of tweets for countries with worse health and economic conditions might result from an attempt to reassure the population as the pandemic evolved. Something fully aligned with the recommendations of several public policy and communication papers.

However, the lack of a discernible difference in the emotions displayed in the communications by leaders of countries with differing economic and health outcomes can have three different interpretations.

The first interpretation is that leaders did engage in empathic communication but used a channel other than Twitter. We consider this result improbable since, as already discussed, Twitter is one of the best sources for crisis communication, especially unmediated empathic communication.

The second interpretation is that leaders of countries with better performance engaged in (relatively more) empathic communication, while those with worse performance did not. This interpretation of our findings suggests women displayed stronger sentiments and a higher level of transformational leadership style since the women in our sample rule three of the countries in the best cluster (the cluster with the lowest mortality rate and lowest drop in GDP). Indeed, the three countries with the best performance. These findings are aligned with studies (e.g., Eagly, 2007; Eagly et al., 2003), which point out that female leaders display a transformational leadership style more often than their male colleagues. According to Windsor et al. (2020), the narrative “assigns women leaders traits such as good listening skills, the tendency to seek input and counsel for major decisions, the ability to provide a big-picture overview of a situation, and proficiency in risk management.”
Table 8. Average emotions in leader’s tweets by country, in order of increasing mortality rate

| Country   | Trust | Fear | Surp. | Sad. | Disg. | Anger | Ant. | Joy | Mortality | Change in GDP |
|-----------|-------|------|-------|------|-------|-------|------|-----|-----------|---------------|
| Iceland  | 0.30  | 0.10 | 0.06  | 0.06 | 0.01  | 0.04  | 0.20 | 0.23| 8.1       | −3.00%        |
| Norway    | 0.29  | 0.16 | 0.05  | 0.07 | 0.04  | 0.08  | 0.16 | 0.16| 11.7      | −7.20%        |
| Finland   | 0.35  | 0.13 | 0.05  | 0.08 | 0.04  | 0.05  | 0.20 | 0.10| 13.5      | −2.80%        |
| Cyprus    | 0.37  | 0.11 | 0.04  | 0.08 | 0.05  | 0.08  | 0.15 | 0.12| 26.4      | −4.00%        |
| Greece    | 0.34  | 0.15 | 0.02  | 0.06 | 0.02  | 0.06  | 0.19 | 0.17| 60.7      | −6.40%        |
| Malta     | 0.34  | 0.09 | 0.03  | 0.10 | 0.01  | 0.05  | 0.22 | 0.16| 63.8      | −9.50%        |
| Latvia    | 0.36  | 0.14 | 0.05  | 0.07 | 0.02  | 0.05  | 0.22 | 0.11| 84.3      | −7.90%        |
| Ireland   | 0.31  | 0.11 | 0.05  | 0.06 | 0.04  | 0.06  | 0.23 | 0.15| 88.1      | −5.00%        |
| Austria   | 0.32  | 0.17 | 0.04  | 0.07 | 0.02  | 0.08  | 0.18 | 0.12| 96.6      | −6.70%        |
| Luxembourg| 0.40  | 0.10 | 0.05  | 0.04 | 0.03  | 0.07  | 0.17 | 0.14| 103.8     | −5.80%        |
| Poland    | 0.36  | 0.09 | 0.04  | 0.07 | 0.03  | 0.05  | 0.18 | 0.18| 115.3     | −3.60%        |
| France    | 0.35  | 0.12 | 0.04  | 0.07 | 0.04  | 0.08  | 0.18 | 0.12| 129.2     | −9.80%        |
| Croatia   | 0.41  | 0.11 | 0.04  | 0.06 | 0.02  | 0.08  | 0.18 | 0.10| 135.6     | −9.00%        |
| Bulgaria  | 0.38  | 0.12 | 0.04  | 0.08 | 0.03  | 0.07  | 0.14 | 0.15| 145.6     | −4.00%        |
| Spain     | 0.31  | 0.15 | 0.05  | 0.08 | 0.02  | 0.07  | 0.18 | 0.13| 147.3     | −12.80%       |
| Portugal  | 0.37  | 0.12 | 0.04  | 0.09 | 0.02  | 0.05  | 0.20 | 0.11| 158.8     | −10.00%       |
| United Kingdom | 0.32 | 0.14 | 0.05  | 0.08 | 0.03  | 0.07  | 0.18 | 0.13| 184.7     | −9.80%        |
Table 9. Average tweet emotion per cluster

| Country cluster | Trust | Fear | Surp. | Sad. | Disg. | Anger | Ant. | Joy | Mort. | Change in GDP |
|-----------------|-------|------|-------|------|-------|-------|------|-----|-------|---------------|
| Cluster 1: Cyprus, Finland, Iceland, Norway, Latvia, Malta, Greece | 0.34  | 0.12 | 0.04  | 0.07 | 0.03  | 0.06  | 0.19 | 0.15 | 38.36 | −5.8%         |
| Cluster 2: Ireland, Luxembourg, Austria, Poland, Portugal, Bulgaria, Croatia | 0.36  | 0.12 | 0.04  | 0.06 | 0.03  | 0.06  | 0.18 | 0.14 | 120.54 | −6.3%         |
| Cluster 3: France, Spain, United Kingdom | 0.33  | 0.14 | 0.05  | 0.08 | 0.03  | 0.07  | 0.18 | 0.13 | 153.73 | −10.8%        |
Table 10. Average tweet emotion for the top 9 and bottom eight countries in ascending order of mortality rate

| Countries                     | Trust | Fear | Surp. | Sad. | Disg. | Anger | Ant. | Joy | Mort. | Change in GDP |
|-------------------------------|-------|------|-------|------|-------|-------|------|-----|-------|---------------|
| Top 9: Iceland, Norway, Finland, Cyprus, Greece, Malta, Latvia, Ireland, Austria | 0.33  | 0.13 | 0.04  | 0.07 | 0.03  | 0.06  | 0.19 | 0.14| 50.36 | −5.8%         |
| Bottom 8: Luxembourg, Poland, France, Croatia, Bulgaria, Spain, Portugal, United Kingdom | 0.36  | 0.12 | 0.05  | 0.07 | 0.03  | 0.07  | 0.18 | 0.13| 140.04| −8.1%         |
| Difference (Top-Bottom)       | −0.03 | 0.01 | 0.00  | 0.00 | 0.00  | −0.01 | 0.02 | 0.01| −89.68| 2.27%         |
During the pandemic, the media has remarked that women responded faster and communicated with empathy pandemic-related policies more effectively than their male colleagues (Chamorro-Premuzic & Wittenberg-Cox, 2020; Garikipati & Kambhampati, 2020; Henley & Roy, 2020; Tett, 2020; Wittenberg-Cox, 2020). Coscieme et al. (2020), for example, found that female leaders achieved better health outcomes during the pandemic than their male colleagues. Some other authors have ascribed the differences to results to structural, political, and cultural factors (Bosancianu et al., 2020; Piscopo, 2020; Windsor et al., 2020). When interpreting the results of these papers, it is essential to note that the period they analyzed was restricted to the first months of the pandemic. In contrast, our study analyzes thirteen months since the pandemic’s start. The extended timeframe is relevant because, as observed in the cluster analysis (Figure 1), the differences among countries widen as time goes by.

Finally, our findings may be explained if all leaders under study followed a conservative communication strategy. If this were the case, leaders, especially those of the most affected countries, must have disregarded the prescriptions of neo-charismatic theories and did not engage in empathic communication with their followers. The contents of their communications were not geared toward engaging citizens, opting to use Twitter mainly as a news service. This “conservative” approach could be justified due to the potentially catastrophic consequences of applying unproven, novel strategies in a crisis such as the COVID-19 pandemic that could cause irreparable damage to a leader’s profile if they backfire.

Since social media has a significant impact and the potential to become a tool with high arousal power, leaders may have to move to a conservative, mainstream approach to communicating, focusing only on facts and information to prevent social protest. Hence, a change in communication style could also explain our findings. It would not be the first time a shift in communication style to a more conservative approach has been documented. De Bussy and Paterson (2012) note, “Kevin Rudd, former Australian Prime Minister, and Barack Obama, former U.S. president, both displayed transformational leadership qualities during their election campaigns, resulting in high personal popularity. However, both were unable to maintain their transformational style in office (Coorey, 2009; Mathis, 2011).”

Fuller et al. (2018) examine how Malcolm Turnbull’s (Australian Prime Minister from 2015 to 2018) use of Twitter changed over time, showing that “his changing political circumstances (from opposition to government) were associated with a decline in genuine engagement with his followers.”

5. Conclusions
Times of crisis provide an opportunity to test leadership theories. Although leaders can often anticipate many potential crisis scenarios, real challenges arise in unforeseen circumstances. After one year, the health and economic outcomes of the COVID-19 outbreak differed dramatically between European countries, even though the countries analyzed shared a similar socio-economic and institutional background.

Given the increased interest in neo-charismatic leadership theories and the rising importance given to empathy in a political and ethical context, we hypothesized that leaders of countries with worse outcomes (in health and economic terms) would manifest stronger emotions and more intense sentiment in their tweets.

Twitter was selected as the channel to examine communication by Premiers since it allowed us to focus on observable, external behavior. Sentiments displayed in tweets serve as a proxy of communication empathy and, ultimately, leadership style. We do not observe significant differences between sentiments expressed in tweets from different Premiers, leading us to reject our research hypothesis. However, we found that Premiers communicated more often as the mortality rate increased as a strategy to reassure the public, which is in line with recommendations by the
literature. We also found significant swings in daily emotional communication,\(^8\) proving that emotions were transferred to Twitter feeds.

The use of Twitter, however, generates a few limitations in our study. First, the automatic translation we use can have errors that affect measures of sentiment, and the number of these errors can vary depending on the language pair. However, as Mohammad (2020) pointed out, several studies have shown that most emotion associations are reasonably consistent across many language pairs. Second, our results could suffer from self-selection bias if the reason some European Premiers choose not to have personal Twitter accounts correlates with the health and economic outcomes of the pandemic under study. Third, as mentioned above in the interpretation of results, our analysis may be biased if enough political leaders choose to conduct their empathic communications over other channels. This could happen in countries where Twitter penetration is low and is not compensated with indirect penetration, such as that generated when traditional media covers Twitter content.

The evolution of a leader’s idiosyncratic level of sentiment should be an area of future research. It could be measured by comparing crisis and non-crisis communication, such as pre- and post-pandemic messaging. Additionally, the use of Twitter allows us to observe reactions by citizens to leaders’ communications in the form of retweets, replies, quotes, and likes. We can therefore assess the engagement generated by leaders, an important idea implicit in transformational leadership styles. Finally, further research is required to develop more accurate measures of empathy in Twitter use that consider non-textual communication.

With this paper, we want to invite political or organizational leaders to reflect on the empathy displayed in their communications. Considering the high toll COVID-19 has taken on us, the lack of differential empathy shown by Premiers is unsettling, and we join Mostovicz et al. (2009) in claiming that “empathy and ethical behavior are a crucial focus for leaders, requiring continuous efforts.” As Clohesy (2013) claims, empathy could help us restore our faith in politics, empathy is “ethically significant because it allows us to reflect critically on the nature of our own lives and sense of identity.” Our challenge today “is to establish the social and political conditions in which empathy can flourish” (book preface).

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Notes
1. We leave aside the study of the use of emotions by political leaders in order to strategically manipulate citizens.
2. https://www.websitehostingrating.com/twitter-statistics/.
3. This compares to 331 using Facebook.
4. Three of them are also in the present paper study, Macron, Sanchez and Johnson.
5. https://twiplomacy.com/.
6. We are aware that automatic translations can have errors; and the number of errors can vary depending on the language pair. But, as pointed out by Mohammad (2020), several studies have shown that most emotion associations are fairly consistent across many language pairs.
7. https://www.imf.org/external/datamapper/NGDP_RPCH@WEO/EUQ/DEU/GBR/HUN/FRA/ITA/ROU/GRC/SWE/UKR/MLT/EST/LVA/ESP.
8. Please see the interactive graphs provided with the paper. Click on legend to select or eliminate lines.

Disclosure statement
Our work on studying emotion word usage should not be interpreted as detecting how people feel; rather, we draw inferences on the emotions that are conveyed by users via the language that they use. The language used may convey information about the emotional state of the speaker, listener, or someone mentioned in the comment. However, it is not sufficient for accurately determining any of their momentary emotional states. Inferring true momentary emotional state of an individual requires extra-linguistic context and world knowledge. Even then, one can be easily mistaken.

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Appendix

In the following tables, we show the ten most often used words in the tweets of each leader in our sample throughout the pandemic.
