Sentimental polarization on Twitter during the 2021 National Strike in Colombia

Polarización sentimental en Twitter durante el Paro Nacional de 2021 en Colombia

Polarização sentimental no Twitter durante a Greve Nacional de 2021 na Colômbia

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ABSTRACT | In 2021, Colombia experienced one of the most significant periods of social protests –initially motivated as a response to the reforms proposed by this country's government in tax, health, or pension matters– in its recent republican history. A highly conflictive scenario, in which social networks played a leading role reporting what happened each day of protests and as a scenario to vindicate social demands. In this context, this work aims to understand how the sentimental polarization observed on Twitter favored the digital mobilization strategy. To this end, we collected 1,215,646 messages published in Spanish on Twitter from 05/01/2021 to 07/03/2022, and linked to the leading hashtags used during the period studied (#paronacionalcolombia, #nosestanmatandocolombia, #SOSColombia, #Colombiaalertaroja, and #ColombiaSOSDDHH). The results show us an apparent coordination between users located in different countries, who digitally mobilize the debate around these protests through the viralization of thematic axes focused mainly on making visible the protests' development, the violence of the Colombian security forces, and the violation of human rights. These issues addressed in micro-narratives published on Twitter contain a different sentimental charge, depending on the country of origin of these messages. This can favour the polarization and conflict of public opinion around what happened in that country..

KEYWORDS: polarization; social networks; national strike; citizen mobilization; Colombia; Twitter.

RESUMEN | *En 2021, Colombia vivió uno de los períodos de protestas sociales –motivadas inicialmente como respuesta a las reformas planteadas por el gobierno de este país, en materia tributaria, de salud o de pensión– más significativos de su historia republicana reciente. Un escenario de alta conflictividad, en el que las redes sociales tuvieron un rol protagónico, al dar cuenta de lo que acontecía en cada jornada de protestas y como escenario para reivindicar las demandas sociales. En este contexto, este trabajo busca comprender cómo la polarización sentimental observada en Twitter favoreció la estrategia de movilización digital. Para abordar este objetivo, se analizó un total de 1.215.646 mensajes publicados en español, recolectados en Twitter entre el 01/05/2021 y el 03/07/2022, y asociados con los principales hashtags empleados durante el período estudiado (#paronacionalcolombia, #nosestanmatandocolombia, #SOSColombia, #Colombiaalertaroja y #ColombiaSOSDDHH). Los resultados muestran una aparente coordinación entre usuarios localizados en diferentes países, quienes movilizan digitalmente el debate alrededor de estas protestas, mediante la viralización de ejes temáticos centrados, principalmente, en visibilizar el desarrollo de las protestas, la violencia de los cuerpos de seguridad del Estado colombiano, y la violación de los derechos humanos. Estos temas abordados en micro narrativas publicadas en Twitter contienen una carga sentimental diferente, de acuerdo con el país de origen de estos mensajes, que pudieron favorecer la polarización y conflictividad de la opinión pública alrededor de lo acontecido en dicho país.*

PALABRAS CLAVE: *polarización; redes sociales; paro nacional; movilización ciudadana; Colombia; Twitter.*

RESUMO | Em 2021, a Colômbia viveu um dos períodos de protesto social mais significativos - inicialmente motivados como resposta às reformas propostas pelo governo daquele país, em matéria tributária, de saúde ou previdenciária - em sua história republicana recente. Um cenário de alto conflito, no qual as redes sociais foram protagonistas, relatando o que acontecia a cada dia de protestos e como palco para reivindicar as demandas sociais. Nesse contexto, este trabalho busca compreender como a polarização sentimental observada no Twitter favoreceu a estratégia de mobilização digital. Para atingir esse objetivo, foram analisadas um total de 1.215.646 mensagens publicadas em espanhol, coletadas no Twitter entre 01/05/2021 e 03/07/2022, e associadas às principais hashtags utilizadas no período estudado (#paronacionalcolombia, #nosestanmatandocolombia, #SOSColombia, #Colombiaalertaroja e #ColombiaSOSDDHH). Os resultados mostram uma aparente articulação entre usuários localizados em diferentes países, que mobilizam digitalmente o debate em torno desses protestos, por meio da viralização de eixos temáticos focados, principalmente, em tornar visível o desenvolvimento dos protestos, a violência das forças de segurança do Estado colombiano e a violação dos direitos humanos. Esses temas abordados nas micronarrativas publicadas no Twitter contêm uma carga sentimental diferente, dependendo do país de origem dessas mensagens, que puderam favorecer a polarização e o conflito da opinião pública em torno do ocorrido naquele país.

PALAVRAS-CHAVE: Polarização, redes sociais, Greve Nacional, mobilização cidadã, Colômbia, Twitter.

INTRODUCTION

Between April and December 2021, Colombia experienced a period marked by social mobilization and constant demonstrations, in what became known as the national strike, coordinated by the National Strike Committee (CNP, by its Spanish acronym). These mobilizations began in response to a series of reform proposals put forward by the government on tax, health, or pension issues, which served as a basis for channeling existing social discontent over the state of violence, the handling of the COVID-19 pandemic, the economic situation, and other demands made by different sectors in the country (Rincón, 2021; Valencia, 2021). These events were echoed globally, despite the fact that in Colombia, from 1975 to 2019, more than 26,000 social protests were registered (https://www. cinep.org.co/) as a result of social outburst and violence promoted by the State itself, but also by social and criminal actors (Valencia, 2021).

The events in Colombia in 2021 resulted in the longest lasting protest actions in the country (Díaz Guevara, 2021), which must be understood from the historical and cultural dimensions of Colombian society. Indeed, the national strike did not focus on a specific cause, but on a complex reaction of multiple factors that have favored social tension in the country for several decades (e.g., the armed conflict and social exclusion), and that converged "blowing historical continuity apart" (Lowy, 2003, p. 149). An event that, unlike previous ones, had a diaspora of citizens living abroad, who were able to actively participate in making the conflict visible and extending the protests outside Colombian borders thanks to digital communication strategies, such as the use of WhatsApp, Twitter, and Facebook (Gertrudis & Grill, 2021), an action related to the capacity for disruptive political participation of citizens not only in electoral processes, but in social mobilizations such as those experienced in that country (Jost et al., 2018).

THEORETICAL FRAMEWORK

Social networks have an increasing importance in the movement and in the dissemination of political information, while feeding social and global uncertainty due to the misinformative content that can be generated and spread from misleading news (Blanco Alfonso et al., 2019). This has favored a growing delocalized scenario of demonstrations, where local or national causes find echo in foreign cities and countries through the Internet (Jost et al., 2018). This helps to build ties that unite protesters and citizens around common interests and the motivating the protests (Mundt et al., 2018). The above has an increasing impact on the way in which different discourses are promoted and inserted in public opinion, through the use

of social networks as public spaces where the information that motivates social movements and scenarios of social conflict is disseminated (Carney, 2016).

The current communicative scenario entails new socialization mechanisms, which favor a greater centrality of social networks in contemporary social or political debates (Campos-Domínguez et al., 2021), as well as a growing interest in attracting the largest number of citizens (users) from digital populism and viralization promoted by the ideological polarization and positioning of the political debate (Luengo & Fernández-García, 2019). As authors such as Urman (2020) point out, the growing communicative use of social networks could favor the increase of social and political polarization by reinforcing partisan political attitudes through the messages posted there, especially if users do not belong to or participate in diverse political networks. According to Aruguete and Calvo (2018), this may contribute to the absence of strong ideological ties, due to the homophily or echo chamber effect that favors the formation of clusters of users with similar thoughts and conceptions, who share content selected to highlight or emphasize their stance towards a certain event or problem. The above can contribute to increase sentimental polarization and to a scenario or climate of confrontation and violence from social networks at a social level (Ponte, 2022).

Campos-Domínguez (2017), Lingiardi and colleagues (2019), or Waisbord (2020) have highlighted that the sentimental polarization observed in social networks results from the association of different types of phenomena, both political and communicational. In these, rhetoric favors a scenario often exploited by anti-democratic movements (ideologically extremist) based on the production, dissemination, and consumption of contents that seek to condition public opinion around arguments akin to them (Estrada Cuzcano et al., 2020).

This scenario not only favors that users will tend to be part, voluntarily or not, of the process of transmission of misinformative, unverified content, but also encourages the polarization of public opinion (Said-Hung et al., 2021). Consequently, it requires studying the positions expressed by users trying to exert influence through messages posted on social networks such as Twitter concerning certain issues or political actors (Bodrunova et al., 2018). During the strong 2021 social mobilization in Colombia, a myriad of social and institutional actors tried to give greater visibility to their ideological positions by conditioning the access to information through the Internet or to transmit all kinds of content –misinformative or not, to give greater visibility to their different causes– aimed at users, residents or not of this country, who felt close to the issues addressed by the protesters (Karisma Foundation, 2021; Meza, 2021). In the country, 97.5% of the population has a smart mobile device and the average daily usage time is

3 hours and 45 minutes. Twitter is used by 59.2% of the population over 16 years of age (Kemp, 2021). The scenario described would be promoted by extremist or populist ideological movements, as well as by public or private international organizations, oriented to position messages aimed at amplifying criticism towards those who oppose their causes or interests, along with a reduction in the ability of traditional actors, such as the media, to act as gatekeepers (Pérez-Curiel & Limón, 2019, Wylie, 2020). All this would help to alter the sentiment linked to social mobilizations such as the Colombian one (Neudert et al., 2019) from the participation and the use that citizens made of social networks such as Twitter. This has given more and more prominence to the main political organizations when disseminating messages associated with their interests, or attacking those who oppose them, to get voters through the management of followers' emotions, feelings, and affections (Gallego Galvis et al., 2021).

In the Colombian case, this has been seen in the viralization of misinformative content on social networks aimed at delegitimizing the Peace Process in the country, and attributing its failure to parties opposed to the State and to guerrilla groups (Sánchez-Mendoza et al., 2017; Barreto-Galeano et al., 2021). This strategy has been applied in a context of widespread citizen distrust towards traditional media, who see in social networks an alternative channel to transmit direct snapshots of the immediate environment (Villa et al., 2017). Likewise, as stated by Kucharski (2016), social networks such as Twitter, Facebook, or Instagram favor the viral dissemination of misinformative content, following an established propagation pattern, ranging from distribution to flooding, through the amplification of fake news on digital platforms (Zhao et al., 2020). This propagation many times is carried out by micro and nano influencers, i.e., users presenting a number below 100,000 and 10,000 followers on Twitter, respectively (Wissman, 2018), who generate influence thanks to the affinity and loyalty they create with their followers, from the treatment of political topics to those of pop-culture, addressed in a humorous, emotional way, or using vulgar vocabulary (Ong et al., 2019). In this scenario, being informed has become a complex task for citizens, especially as they may prefer contact with negative information as a protection mechanism (Aleixandre-Benavent et al., 2020), avoiding real and truthful information.

Misinformative content, difficult to refute in the short term and persistently disseminated (Pérez-Curiel & Velasco Molpeceres, 2020), would favor the conditioning of public opinion in social networks (in our case, Twitter) through hashtags or retweets (Leiser, 2016). Thus, it would create trends around certain topics or their follow-up, republishing information shared by others (Pano Alamán, 2020) and disseminating it, many times, with a strong sentimental charge in its contents.

Public opinion linked to contexts of high socio-political conflict, such as the one experienced in Colombia in 2021, could have occurred in a coordinated and organized manner, despite its apparent spontaneity, as noted by authors such as Kovic and colleagues (2018). Therefore, the possibility of manipulating information represents a threat in contexts such as the one experienced in this country, where the use of the Internet and the need for denunciation through social networks could enliven or manipulate the democratic commitment of citizens and generate (at least potentially) a more inclusive democracy (van Dijck, 2019).

In this context, this paper seeks to understand how the sentimental polarization observed on Twitter favored the digital mobilization strategy surrounding the protests that occurred in Colombia during the national strike of 2021, under the following hypothesis:

> *H1.* The dissemination of messages with a negative sentimental charge, aimed at promoting conflict around the case study, was the main driver of the digital mobilization that occurred on Twitter during the national strike of 2021 in Colombia.

METHODOLOGY

To achieve the work's general objective and the central hypothesis, we propose:

> *SO1.* Establish where the messages were published.

> *SO2.* Identify the main topics addressed in the messages, by country of publication.

> *SO3.* Identify the main roles assumed by the emitters of the messages.

> *SO4.* Assess the level of sentimental polarization in the messages.

> *SO5.* To measure the influence level that the dominant sentimental charge in the messages analyzed had on the viralization of the case studied.

The work is based on a descriptive research with a qualitative-quantitative approach, in which we analyzed a sample of 1,215. 646 messages published in Spanish, collected on Twitter between 01/05/2021 and 03/07/2202, linked to the main hashtags used during the collection period: *#paronacionalcolombia, #nosestanmatandocolombia, #SOSColombia, #Colombiaalertaroja* and *#ColombiaSOSDOSDHH*. The data collection period corresponds to the beginning of the demonstrations (April 28, 2021) until two months later. These messages were analyzed through machine learning techniques, which allowed, among other things, a topical analysis of the contents of the set of messages studied (qualitative dimension), as well as the descriptive study of the percentage distribution of the

geographical and temporal location, where and when they were published, for example (quantitative dimension of the work).

The collection was performed using Twitter API 1.1 and programming in R software under RStudio with the help of Kearney's RTweet library (2019). It was conducted in a geolocated manner for each of the more than 70 countries that Bradshaw and colleagues (2021) have identified as emitters of content aimed at polarization from social networks, either privately or institutionally, formally dedicated to develop social networks manipulation campaigns to impact their public's opinions. Geolocated search, through the introduction of coordinates of longitude, latitude, and radius of action, has been employed by various authors such as Holbrook and colleagues (2016). This work considers confidence levels used in similar studies, such as that of Van der Veen and colleagues (2015), so the global average confidence obtained, equivalent to 77.84% worldwide according to that author, is considered valid. This will help to identify the role of Twitter users in the digital mobilization both inside and outside Colombia, and whether they assumed a role of emitters or replicators of the contents published by the first group of users (geographically located or not in Colombia, at the time of publishing the messages analyzed).

The data collected was analyzed using various machine learning methodologies:

- Polar vector or positive-negative valence, as well as basic emotions, to determine the perception of opinion groups regarding specific facts (Fernández, 2018), as well as their meaning and intensity. To this end, we used the lexicon developed by the National Research Council of Canada (NRC), in its version 0.9.2 in Spanish (Mohammad & Turney, 2012), with more than 14,000 words. Using this technique, the natural language processing (NLP) algorithm detects words that provide a positive, negative, or emotional value with an intensity value that is increased or decreased by surrounding words (nouns, adverbs, adjectives or others) that vary the polarity level observed in each message analyzed. This allows obtaining a global sentimental perception of the messages (Swati et al., 2015), as well as a semantic orientation of the collective (Taboada et al., 2011). The study of sentimental polarization in this work takes the typology of basic emotions raised by Plutchik (1980), i.e., anger, anticipation, joy, trust, fear, surprise, sadness and disgust, developed in the theories of multiple intelligences (Sautera et al., 2010). This process was performed using the Syuzhet R library for PLN, although it presents a lower efficiency in Latin languages (about 70%) than in English (Mohammad, 2016).

- Analysis and quantification of the levels of emotion linked to hate in discourse for the PLN process, using the Hurtlex lexicon in its 2018 version in Spanish, with 5,007 words (Bassignana et al., 2018). We used programming using the R Syuzhet library to detect and quantify the form.

- Study of regression trees to find patterns to determine a model that can predict a variable's behavior (Lantz, 2019). To this end, we used the classification and regression tree (CART) algorithm (Breiman, 1984) (Breiman, 1984) utilizing the Rpart package in R (https://cran.r-project. org/web/packages/rpart/index.html), which tested the reliability of the prediction from the correlation values between actual and predicted values and the mean absolute error (MAE).

- Text mining study, using a dendrogram between the words with the greatest presence in the discourse. The aim was to show graphically not only the most frequently used words, but also their relationship. We conducted cluster analysis to determine the 10 main groups of words using the k-means algorithm (grouped in squares in the dendrogram). In the analysis, words that do not contribute meaning (stopwords) and symbols or punctuation marks were eliminated.

RESULTS

Regarding objective 1, the positioning or geo-referential location provided by Twitter (table 1) shows that four out of every 10 messages collected come from outside Colombia, so that the social mobilization exerted from abroad can be considered high. Most of the messages posted on Twitter came from countries: 1) with a high percentage of Colombian residents (Venezuela, United States, and Spain); 2) with a high percentage of residents, but who barely participated in these demonstrations (Ecuador); 3) with a percentage of participation pertaining to the number of Colombian residents present there (Costa Rica); 4) with a percentage of participation lower than the number of Colombian residents present there (Mexico, United Kingdom, or Germany), and 5) with no official records of residents or with a low percentage, but who participated in the debate studied (Brazil, Russia, Turkey, or Cuba).

The distribution of messages analyzed over time differs between countries as shown in figure 1, where the thick line represents the median, the box the first and third quartiles, the solid lines the median value (by 1.5 in both positive and negative directions), and the dots, the messages outside the statistics of the overall number of messages analyzed.

Country	Percentage of Colombians residing outside Colombia*	Percentage of messages identified by country
Colombia	N/A	63.7%
Venezuela	33.5%	13.8%
United States	28.1%	9.5%
Mexico	0.7%	3%
Spain	12.9%	2.7%
Argentina	0.3%	1.5%
Brazil	0.3%	1.4%
Russia	No data	0.9%
Turkey	No data	0.8%
Cuba	No data	0.7%
United Kingdom	0.9%	0.5%
Costa Rica	0.7%	0.5%
Ecuador	6.7%	0.4%
Germany	0.7%	0.3%
India	No data	0.2%
Other countries	N/A	0.1%

**Table 1. Messages analyzed according to geo-referenced location
and percentage of Colombian residents abroad**

Source: Own elaboration based on "Colombia - Emigrantes totales" (n.d.).
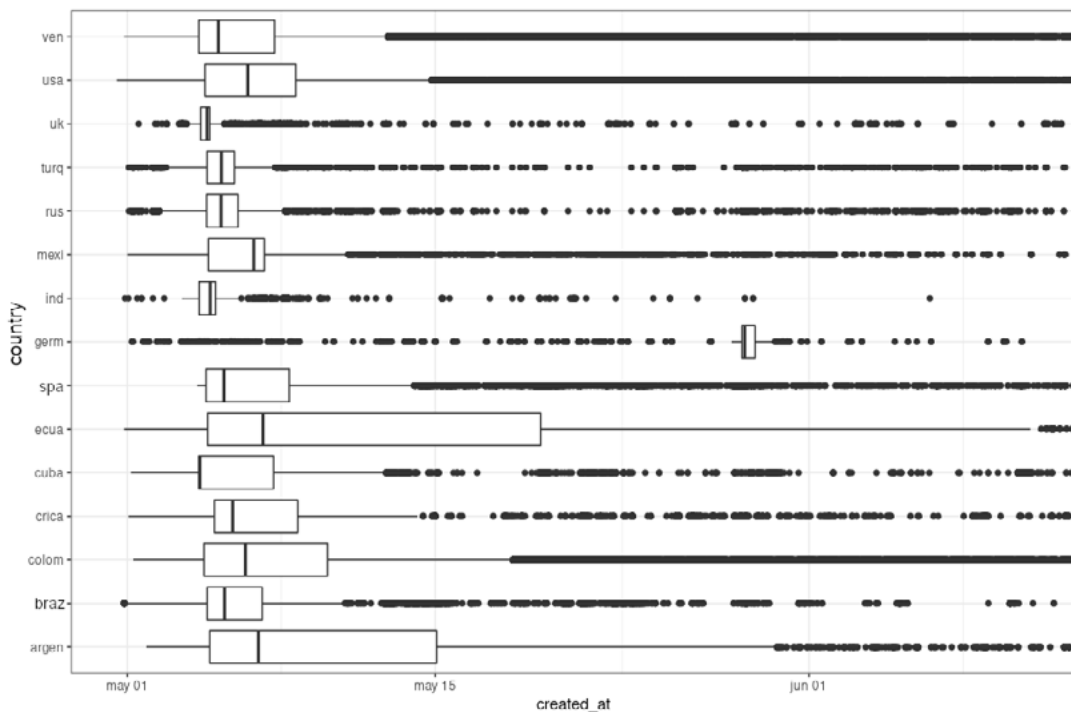

Figura 1. Distribution of messages over time by country

Source: Own elaboration.

In the case of Colombia, most of the messages are published after the first week of analysis, and last slightly less than a week; in the case of Latin American countries, this participation occurs days later, unlike others outside the continent. Only in the messages published in Germany is there a greater number of messages at the end of May.

Figure 2 shows the main themes addressed in the messages, in general and specifically by country of origin (specific objective 2). They focus on denouncing violence at the hands of the security forces of the Colombian State and Human Rights violations during the period studied, and try to make visible the demonstrations' daily course. The messages' themes –extracted from the relationships between the words that contribute meaning most used in the messages coming from each issuing country– allow us to see common and differentiating elements:

- Colombia: denounce violence at the hands of State security forces and call on the international community to pay attention to the protests.

- For those countries with a higher percentage of Colombian residents (Ecuador, Spain, the United States, and Venezuela), there are two types of communication approaches, depending on the geographic proximity to Colombia. In Ecuador and Venezuela there is greater visibility of the violence at the hands of State security forces and Human Rights violations, the reasons for the protests, and in promoting greater mobilization of the international community. In the case of Spain and the United States, the messages focus more on publicizing or denouncing violence at the hands of the State and on calling on other users and the international community (in general).

- In countries with a low presence of Colombian residents (Germany, Argentina, Brazil, Costa Rica, Cuba, India, and Russia), the trend observed in the previous section is maintained, although the cases of Cuba and India stand out: in the former, there are specific denunciations of arguments used by the Colombian State against criminal agents, generators of violence (for example, the guerrilla), and censorship of access to information about what was happening in the country. In India, they focus more on mobilizing users residing in neighboring countries to exert pressure against the Colombian government.

Figures 2, 3 and 4 led us to obtain information associated with specific objective 3, by distinguishing specific roles assumed by the different users who echoed the events:

- Users (emitters) from Colombia: focused on calling State actors, international community, and denouncing the violence of the Colombian State during the demonstrations.

- Replicator users (geographically located outside Colombia), who played an active role in publicizing the reasons for the protests, denouncing actions against the protesters, and trying to mobilize new users on Twitter and the international community in general, as well as citizens residing in neighboring countries.
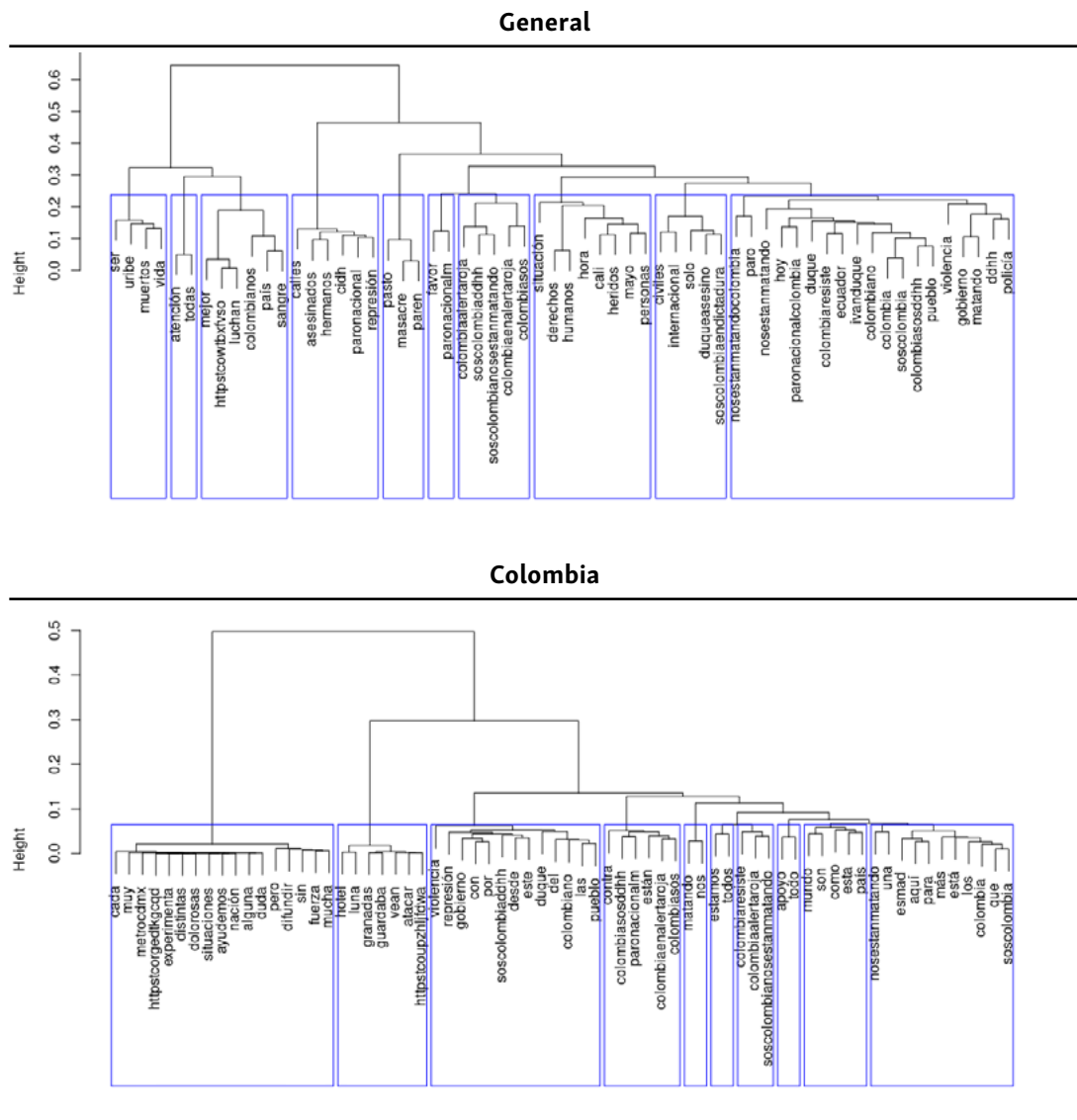

Figure 2. Dendrogram with the main thematic axes addressed in the messages analyzed (general and in Colombia)

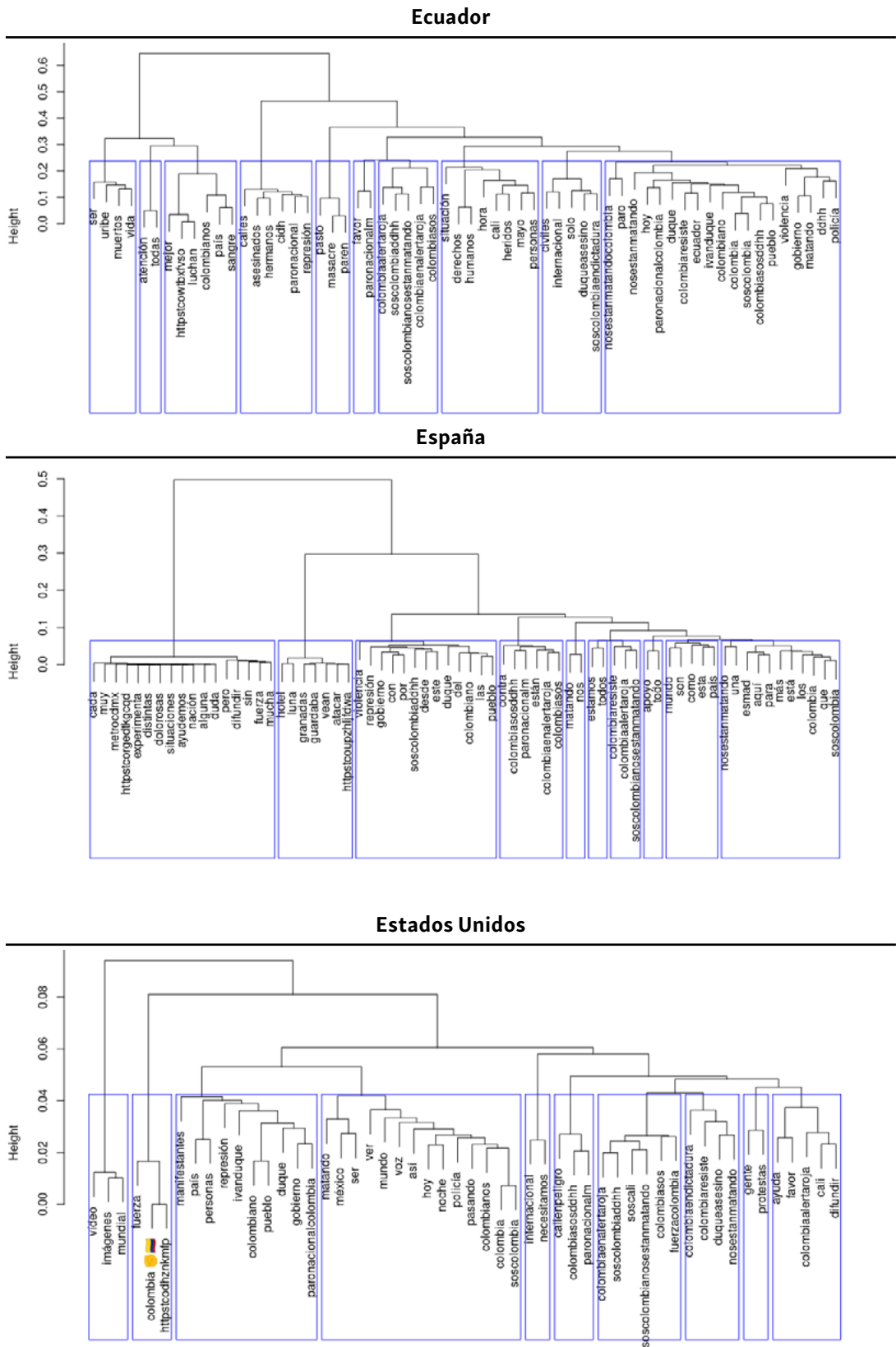*Source: Own elaboration based on data extracted by country from Twitter.*

Ecuador

España

Estados Unidos

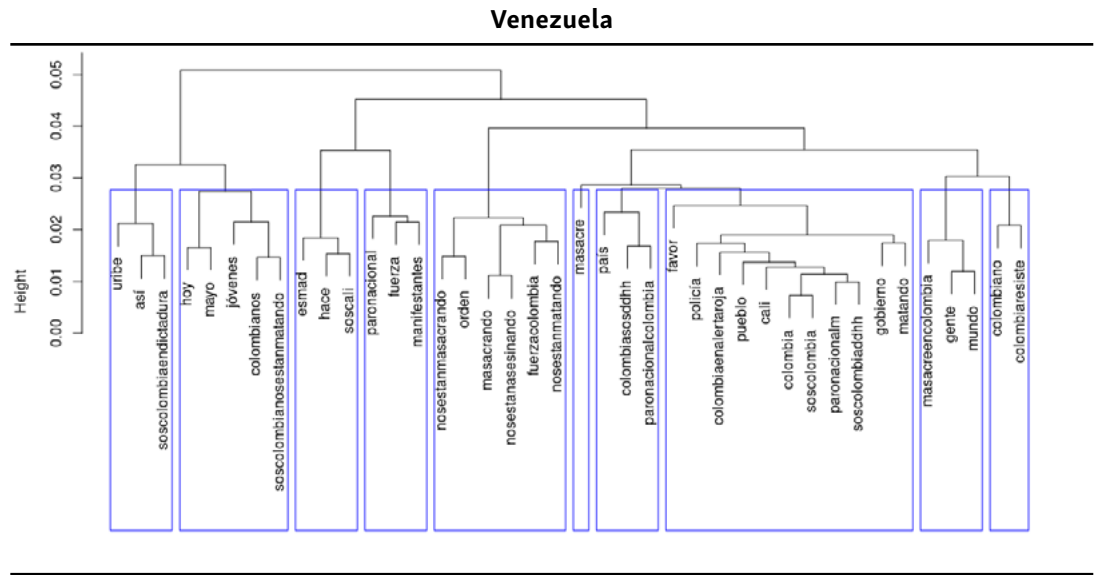*Figure 3 - Continues ▶*

Venezuela

Figure 3. Dendrogram with the main thematic axes addressed in the messages analyzed (Countries with a high percentage of Colombian residents)

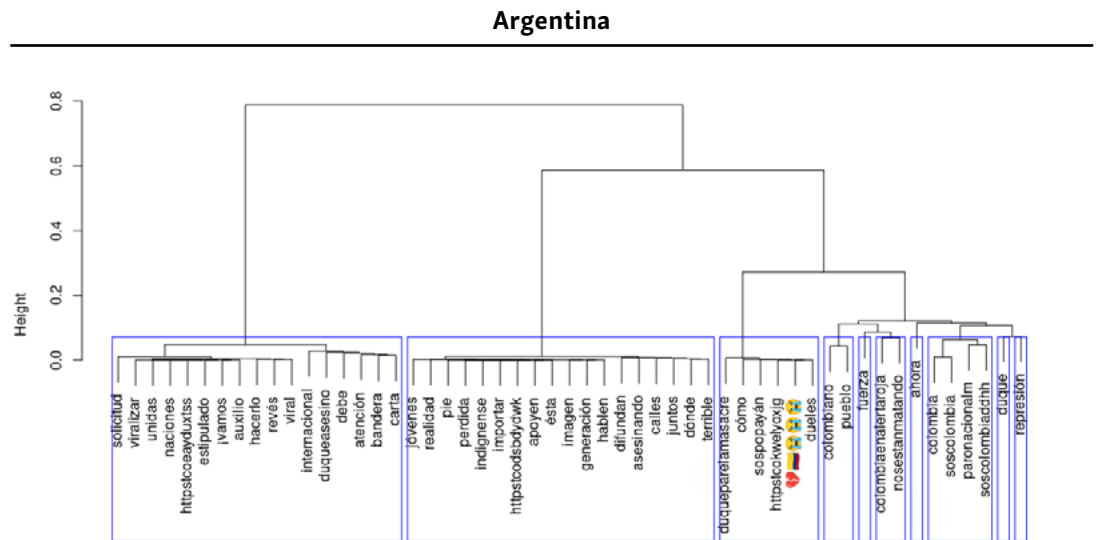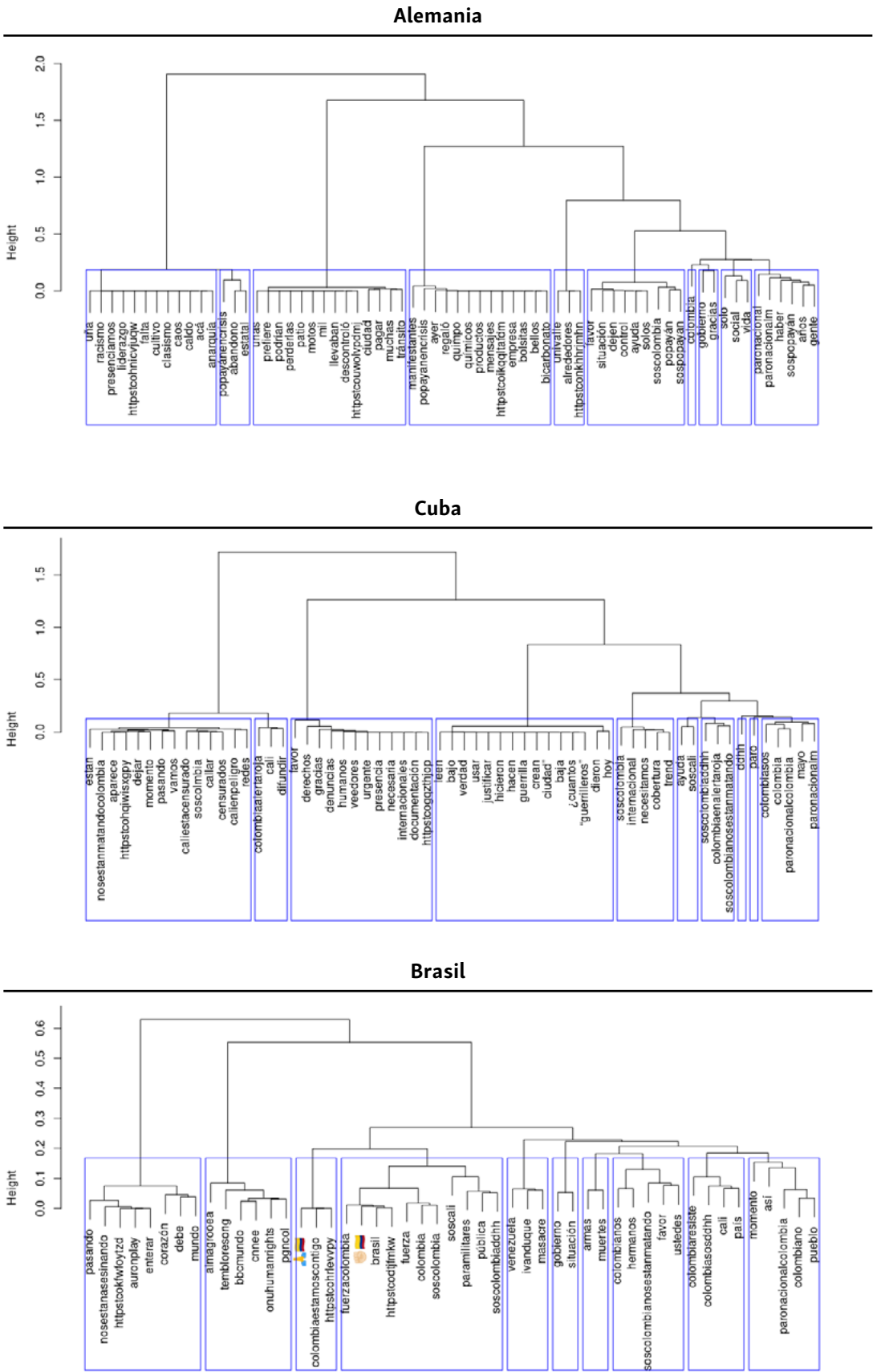*Source: Own elaboration based on data extracted by country from Twitter.*

Argentina

Alemania

Cuba

Brasil

Figura 4 - Continúa ▸

Ecuador

India

México

Figure 4. Dendrogram with the main thematic axes addressed in the messages analyzed (countries with low percentage of Colombian residents)
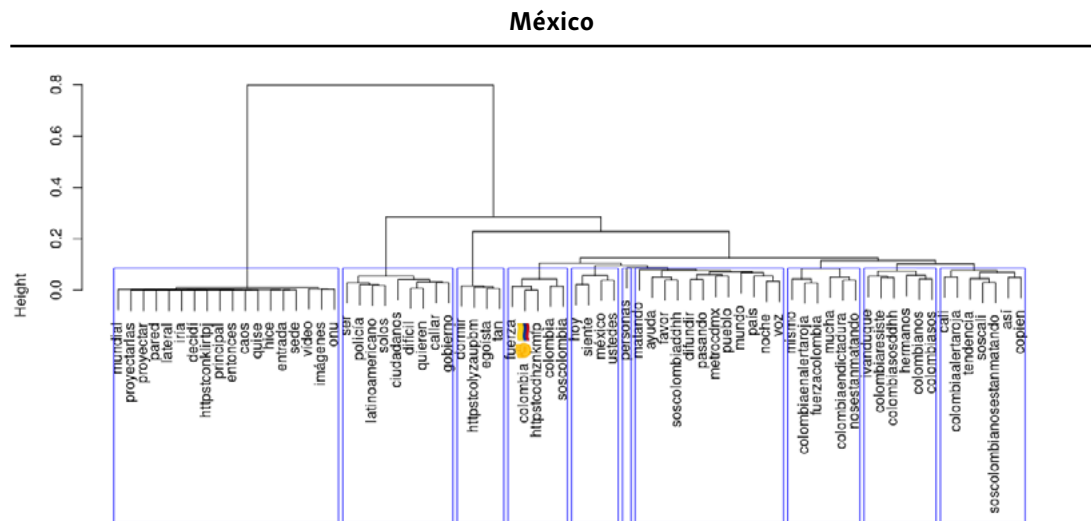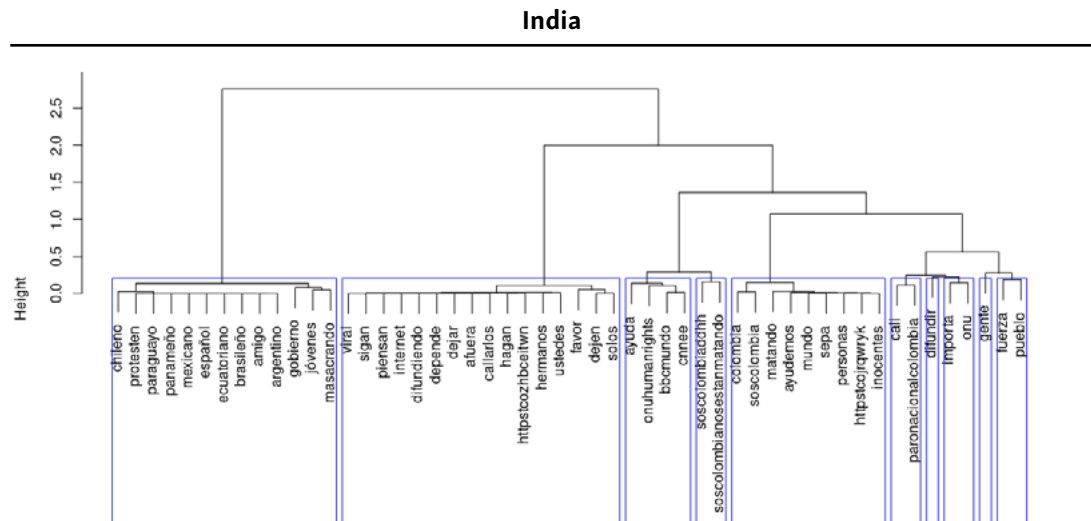
Source: Own elaboration based on data extracted by country from Twitter.
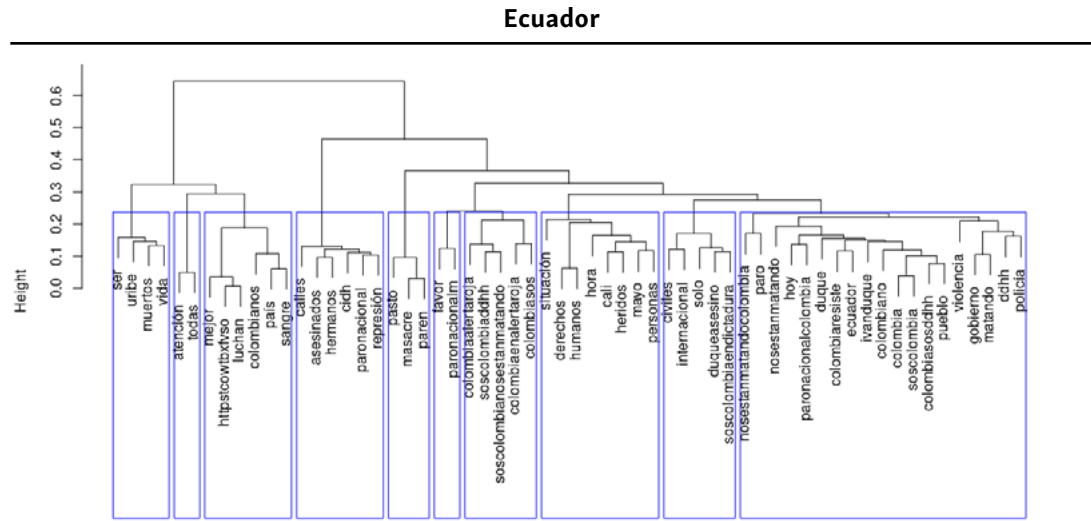
Dendrograms illustrate the main themes that arise in each country through the relationship between the words that appear most frequently in the messages. In Colombia, the focus is on denouncing the violence exercised by State security forces and disseminating the strike to the international community. In other countries, the messages have different approaches: 1) the violation of Human Rights by the Colombian State and support for the demonstrators (Cuba, Venezuela, Argentina, Brazil, Ecuador, India, or Mexico); 2) the warning about the repression and the danger of the scenario of social upheaval experienced (United States, Spain, or Germany), and 3) the international dissemination of violence against the protests to President Duque (Russia and Turkey).

Therefore, although in all countries reference is made to riots, in countries close to Colombia there is special support for the demonstrations, with focus on words such as "massacre" and "killings" (especially in Cuba and Venezuela), while in countries further away the conflict and the danger in the streets are the themes, without engaging too much, except for Russia and Turkey, whose messages seek to disseminate the information internationally and support the protests.

As for specific objective 4, the representation of average sentiment (figure 5) shows that the levels range from neutrality to slightly negative values. Both in Colombia and in most of the countries with a high percentage of Colombian residents (Ecuador, Spain, the United States, and Venezuela) the average sentiment is almost neutral. Only in Spain is there a slightly positive trend at the end of the period studied. In the rest of the countries considered, the trend mentioned in the previous paragraph is maintained in general terms, except in the case of Mexico, which, over time, veers towards a slightly positive sentiment, while Brazil, Cuba, and the United Kingdom move towards a more negative sentiment, as the protests develop.

The measurement of trust, fear, and hate (figure 6) in the messages analyzed in this paper shows how, in almost all the countries where these messages are posted, large and intense emotional variations are observed in a short period of time.

In the case of messages from Colombia, there is no clear dominance by any of the emotions studied. Their mean value is quite stable and even slightly positive.

In the case of countries with a higher percentage of Colombian residents, these emotions present different levels of intensity and predominance. In Spain and Venezuela, confidence around the progress of the demonstrations intensifies during the period studied, while in the United States the trend observed at the level of Colombian residents is maintained, and in Ecuador there is a strong increase in messages associated with hate during the period analyzed.
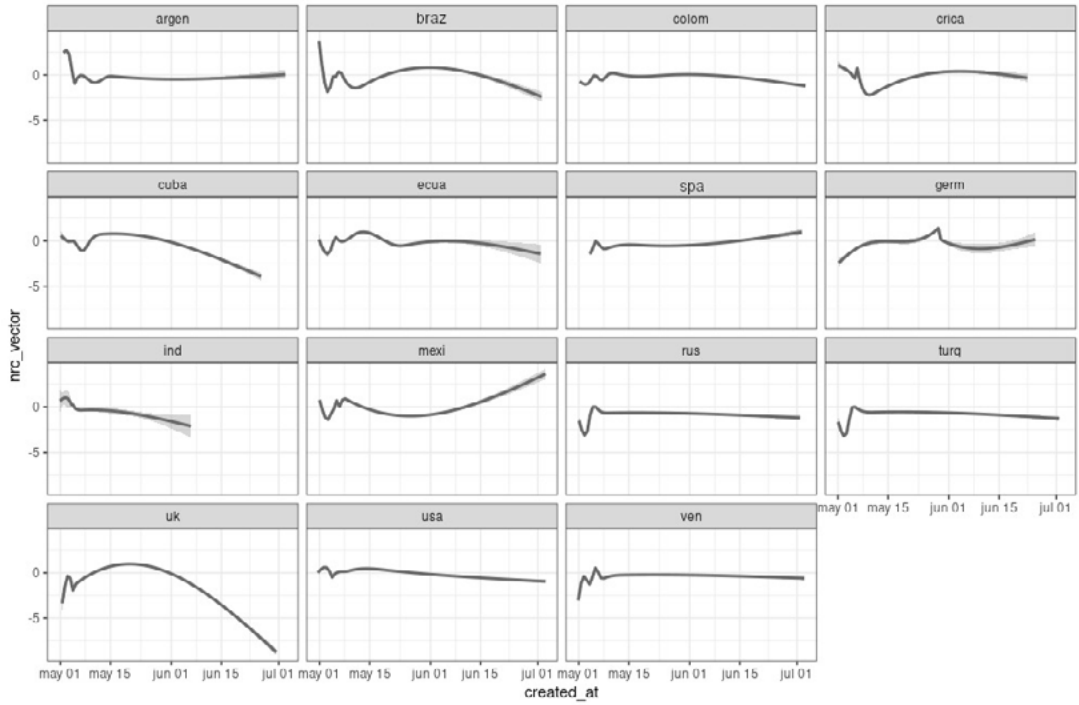
**Figure 5. Mean vector or sentimental polarization of messages
analyzed by country of publication**
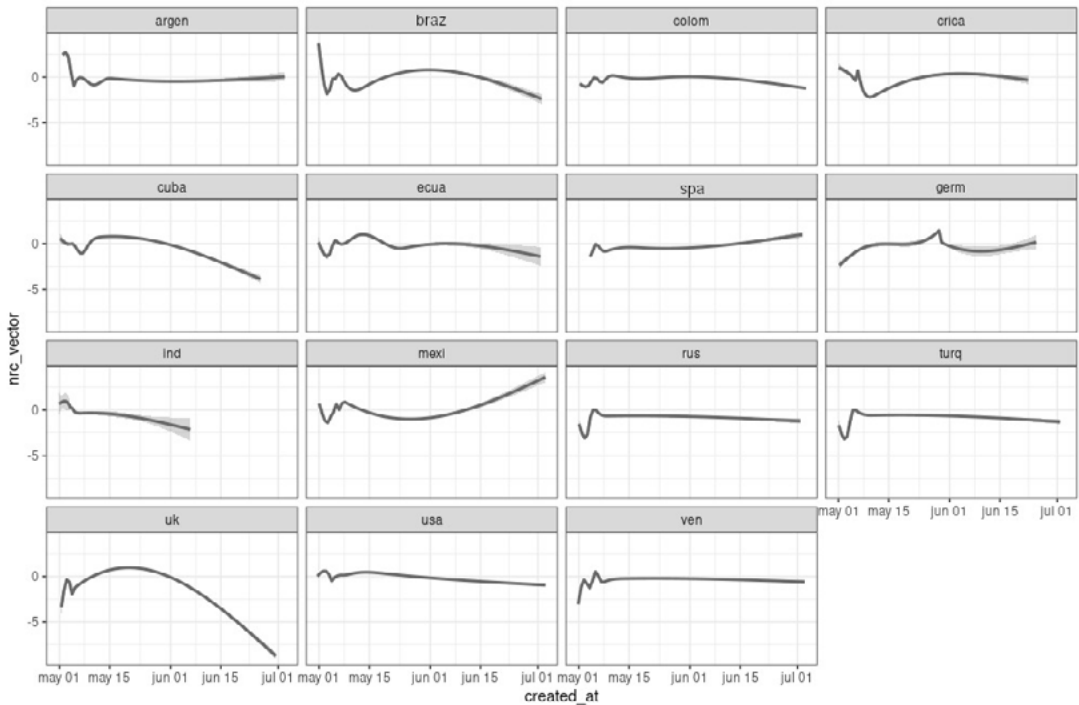
Source: Own elaboration.

**Figure 6. Presence of trust, fear, and hate in the messages analyzed
by country of publication**

Source: Own elaboration.

For the remaining countries, with a lower presence of Colombian residents, the levels of emotional intensity observed are similar to those of Colombia (Russia and Turkey). In Costa Rica, and especially in Cuba, trust drops markedly, and in Brazil and the United Kingdom the trend is reversed. With regard to emotions linked to fear or hatred, in the messages published in Mexico and the United Kingdom they increase at the end, while the other countries present fairly stable mean values with a low level of fear.

The predictive analysis of behavioral pattern by regression tree search allows determining a correlation of 0.434 and a mean absolute error (MAE) of 1.162. Therefore, the prediction obtained for a field such as social sciences, with a small associated error (Lantz, 2019), can be considered good (Lantz, 2019). According to the pattern found and shown in figure 7, from the analysis of basic emotions and polarity as variables versus hatred (as dependent variable), the highest levels of hatred come from a mixture of intensities, not very high anger (less than 1) and disgust or aversion (<3). On the other hand, if certain levels of trust are added, we can detect a greater presence of messages with this type of emotion with a low level of intensity. Thus, the most intense hatred is established, mainly, on an emotional base of intense anger, complemented with disgust. What has been observed reaffirms what has been pointed out by authors such as Wylie (2020), i.e., how the hatred detected in the analysis, by not stemming from fear, would provoke a scenario where it would spread in a more intense and lasting way over time. This scenario varies according to each country analyzed, with large differences among them in their patterns, regardless (in general) of whether or not there is a high percentage of Colombian residents. Thus, the percentage weight of each basic emotion on the level of hatred in each country is as follows:

- Colombia: anger, 25%; fear, 17%; sadness, 15%; vector, 15%; disgust, 13%; confidence, 5%; surprise, 5%; anticipation, 3%; joy, 2%. Cor: 0.566. MAE: 1.287.

- Countries with a high percentage of Colombian residents (table 2).

- Countries with a low percentage of Colombian residents (table 3).

The predictive analysis shown presents fairly high correlation values, bordering on an almost total fit in Russia, Turkey, and Cuba. Only Germany has a low predictive fit, although the MAE of this country is low, as in the rest of the countries from which the messages analyzed in this paper originate.

Country	Percentage of basic emotions detected	Statistical confidence
Venezuela	anger, 20%; fear, 18%; vector, 15%; disgust, 13%; sadness, 12%; surprise, 11%; confidence, 5%; joy, 4%; anticipation, 2%	Cor: 0.619; MAE: 1.136
United States	anger, 26%; fear, 19%; disgust, 17%; sadness, 17%; vector, 11%; confidence, 9%	Cor: 0.514. MAE: 0.917
Spain	anger, 26%; fear, 17%; disgust, 15%; sadness, 13%; vector, 13%; surprise, 6; confidence, 6%; anticipation, 3%	Cor: 0.767; MAE: 1.660
Ecuador	anger, 24%; fear, 20%; annoyance, 14%; sadness, 13%; confidence, 11%; disgust, 9%; joy, 4%; surprise, 3%; anticipation, 2%	Cor: 0.648. MAE: 0.875

Table 2. Basic emotions detected in messages posted on Twitter, in countries with a high percentage of Colombian residents

Source: Own elaboration.

Country	Percentage of basic emotions detected	Statistical confidence
Mexico	sadness, 23%; anger, 22%; fear, 17%; vector, 11%; disgust, 11%; confidence, 10%; surprise, 3%; anticipation, 2% joy, 2%	Cor: 0.765. MAE: 0.403
Argentina	sadness, 19%; anger, 17%; vector, 16%; disgust, 16%; fear, 16%; confidence, 7%; anticipation, 5%; surprise, 2%; joy, 2%	Cor: 0.765. MAE: 0.403
Brazil	vector, 20%; anger, 20%; sadness, 15%; fear, 15%; confidence, 13%; surprise, 7%; disgust, 6%; joy, 3%; anticipation, 2%	Cor: 0.325. MAE: 1.087
Russia	anger, 18%; fear, 18%; sadness, 16%; disgust, 15%; vector, 12%; confidence, 12%; surprise, 4%; anticipation, 3%; joy, 1%	Cor: 0.904. MAE: 0.421
Turkey	fear, 20%; anger, 18%; disgust, 16%; sadness, 15%; confidence, 12%; vector, 11%; surprise, 4%; anticipation, 3%; joy, 1%	Cor: 0.893. MAE: 0.463
Cuba	fear, 29%; confidence, 28%; anger, 12%; disgust, 10%; vector, 6%; joy, 5%; sadness, 5%; surprise, 3%; anticipation, 2%	Cor: 0.936. MAE: 0.144
United Kingdom	anger, 28%; vector, 18%; fear, 14%; confidence, 14%; sadness, 10%; joy, 6%; disgust, 5%; anticipation, 3%; surprise, 2%	Cor: 0.693. MAE: 0.108
Costa Rica	vector, 17%; confidence, 16%; sadness, 15%; disgust, 15%; anger, 10%; surprise, 9%; fear, 7%; anticipation, 6%; joy, 3%	Cor: 0.767. MAE: 0.594
Germany	anger, 27%; fear, 17%; sadness, 16%; surprise, 14%; vector, 13%; disgust, 10%; joy, 1%; anticipation, 1%; trust, 1%	Cor: 0.164. MAE: 0.164
India	anger, 27%; fear, 17%; sadness, 16%; surprise, 14%; vector, 13%; disgust, 10%; joy, 1%; anticipation, 1%; trust, 1%	Cor: 0.845. MAE: 0.204

Table 3. Basic emotions detected in messages posted on Twitter, in countries with a low percentage of Colombian residents
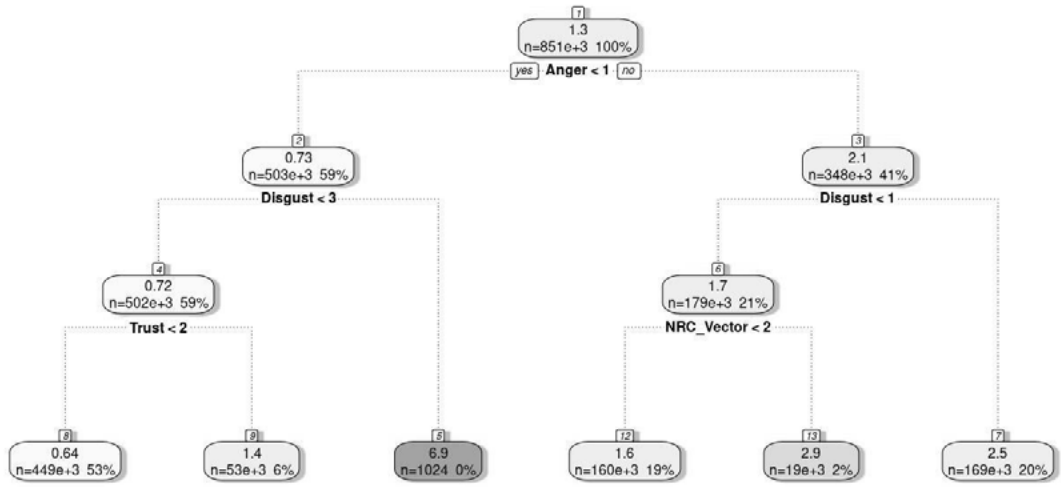
Source: Own elaboration

Figure 7. Global regression tree

Source: Own elaboration.

The above shows a context of social digital mobilization marked by a global sentimental pattern, dominated by anger and disgust, emotions that served as the basis for the viralization of the events studied. Likewise, we were able to identify other feelings that also played a prominent role, especially in countries with a low presence of Colombian residents (such as Cuba or Turkey), where fear was the main one, or in the case of Argentina or India, where sadness served such purposes. The rest of the feelings (e.g., trust), presented great disparities in countries such as Cuba or were non-existent within the messages analyzed (e.g., Germany).

DISCUSSION

This study confirms hypothesis 1, i.e., that messages with a negative sentimental charge were the main drivers of the digital citizen mobilization carried out on Twitter in the case studied. There was a sentimental charge dominated by disgust and anger and, to a lesser extent, fear, and in which hate was not predominant. This served as a basis to position certain discourses and arguments during the period studied (the beginning of the demonstrations) and would be in line with what has been exposed by authors such as Casero-Ripollés (2018), Serrano-Contreras and colleagues (2020), or others addressed here. This would seem to be aimed at favoring a rhetoric intended to polarize public opinion, which could have contributed to raise the level of conflict and the proliferation of prejudices against certain groups participating in these protests (against the Colombian government, the State security forces, and the media), and the increase in social unrest involved or not in these events.

What was observed from the analysis of the messages would partially support not only what was indicated by authors such as Gertrudis and Grill (2021), regarding the role that the diaspora of Colombian citizens living abroad could have played, but also that the mobilization was conducted by other anonymous users, located in countries with a low or null presence of these. This action served as an echo of what was happening in Colombia during the period analyzed, according to the distribution of messages over time and the main thematic axes addressed. Therefore, it would not seem to occur organically (spontaneously), but there could be a certain level of coordination, as authors such as Kovic and colleagues (2018) point out. The above is not conclusive in this work, but future works based on this assumption could contribute to deepen in this matter, especially considering the repeated dissemination of messages with prioritized thematic axes.

CONCLUSIONS

Despite the inherent limitations of the study, the results and discussions allow us to observe a context of digital mobilization that justifies developing new research to help delve into the truly organic (spontaneous) character in contexts such as those experienced in Colombia in 2021. The implications of the above would require advancing in studies that allow, for example, to identify and estimate the implementation of potential strategies such as CyberTurfing, raised by authors such as Leiser (2016), in favor of the dissemination, positioning, and weight of messages with negative sentimental charge, such as the one studied here. Likewise, studies would be needed to determine the association that may exist between this type of messages, the level of interaction, and the virality of the topics addressed in them, regarding the conditioning of public opinion under this type of actions. This would favor a better understanding of the role played by social networks such as Twitter as another tool to disseminate and organize strategies in the digital mobilization of public opinion, which may or may not encourage the citizens' democratic engagement, along the lines of what has been stated by authors such as van Dijck (2019). This scenario could occur not only in Colombia, but also in other contexts of social conflict, at the regional level (Latin America), if we consider what is shown in studies or reports highlighted by authors such as DiResta and colleagues (2019), Ponte (2022), or Conger and Raj (2022), and the electoral and public opinion conditioning observed in other countries (e.g., in the United States and Brazil), or to legitimize unilateral actions of violence against countries (e.g., Ukraine).

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