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## Analysis of the Twitter discourse in the 2019 electoral debates in Spain: a comparative algorithmic study

**Abstract**

This article analyzes and compares the following of Twitter users during the two electoral debates of the general elections in Spain in April and November 2019. Through the collection of the official hashtags #ElDebateDecisivo (970,706 tweets) and #DebateElectoral (821,521) respectively from 9 am on the day of the debate until 2 am the following day, we analyzed the polarity and basic emotions of the messages posted on the social network using algorithms with R software. A network theory study was also carried out to determine each account's affiliation to each group. The results show a polarization in the network, with well-defined groups with hardly any relationship with other groups of different ideologies. It is also observed that the entry of a new player, Vox, into the second debate completely alters the rest of the center-right parties, which end up seeing it from a much more negative perspective. This entry does not involve major changes among the left-wing parties, but it does mean an increase in fear.

**Keywords**

**Electoral debate, Twitter, emotions, polarization, elections.**

### 1. Introduction

Four general elections were held in Spain between 2015 and 2019: the elections in December 2015, June 2016, April, and November 2019. Polarization and deadlock were a constant in the Spanish political scene, with social networks as a scenario not only for the exchange of opinions but also as a way to measure public opinion, which had its highest peaks during the televised election debates.

This paper aims to shed light on the behavior of the online community using Twitter during the broadcast on television, radio, and live streaming of two of the most important election debates at the time: the second debate on 23 April between all candidates prior to the elections held that month, which ended with no agreement, and the one on 4 November 2019, the only debate scheduled as part of the electoral rerun. The aim is to analyze the behavior of the accounts following the main political parties throughout the day of the debate, their relationships and sentiments. The intention is to elucidate possible changes and the level of polarization among followers of each political option.

### 1.1. *Twitter and politics*

Halfway between a social network and a blog, partly forum and media outlet, fourteen years after its creation in 2006, the very nature of Twitter continues to spark debate. From the first possibilistic approaches that saw endless possibilities for participation and the expansion of democracy in the network created by Jack Dorsey (Innerarity & Champeau, 2012; Stieglitz *et al.*, 2012), to current ones that alert on the malicious use of this medium and the serious consequences of disinformation campaigns or those linked to the use of automated bots (Forelle *et al.*, 2015; Persily, 2017; Badawy *et al.*, 2018), the academic community is currently witness to the dizzying evolution of the microblogging platform with the responsibility to shed light on what is happening in an online platform whose importance in today's politics is indisputable (Parmelee, 2014).

Since its creation, the role of Twitter users has exceeded passive data consumption, turning them into producers and dynamizing agents of information (Jenkins, 2008). With Barack Obama's presidential campaign as an initial benchmark in 2008 (Bimber, 2014), Twitter is today a widely consolidated political communication tool with respect to information dissemination (Jackson & Lilleker, 2011), interaction between leaders and audiences (Engesser *et al.*, 2017), and mobilization (Gainous & Wagner, 2014), without disregarding its role in personalizing and humanizing political leaders (Vergeer *et al.*, 2013; Enli & Skogerbø, 2013; Bentivegna, 2015). In recent years, there have been many studies on its use in election campaigns (Enli, 2017; Enli & Naper, 2016; Jungherr, 2016; Conway *et al.*, 2015) and also those specifically related to live broadcasting of news and political events via Twitter, with political and election debates as elements of great interest. The analysis of the network during these television events not only provides data on the way politicians and communities relate (Hawthorne *et al.*, 2013; Trilling, 2014), but also on the threat of misinformation that surrounds this social network due to its dynamics.

### 1.2. *Media convergence: following of television events on Twitter*

Media convergence brings together traditional media such as television and social media (Jenkins, 2008). Phenomena such as the 'dual screen' (Vaccari *et al.*, 2015) are perfect examples of the use of social networks to improve the audiences of television content.

This phenomenon is even more visible on Twitter (Deltell, 2014) as, thanks to live interaction, which HbbTV will greatly increase (Fondevila-Gascón, 2012), users have the feeling of being in some sort of shared virtual living room (Gallardo *et al.*, 2016). This has normalized the promotion of official hashtags by audiovisual media as part of the promotion of their programs (Harrington *et al.*, 2013). This reality is even more striking in terms of political communication since, as Karlsen and Enjolras (2016) point out, it has been proven that the most influential candidates are those who create synergies between traditional media and social networks. All these reasons make Twitter a strategic network when it comes to assessing the impact and behavior of political parties and influencers in general and during the television broadcast of the election debate in particular (Vaccari *et al.*, 2017; Lago-Vázquez *et al.*, 2016; Trilling, 2014; D'heer & Verdegem, 2015; Elmer, 2013; Hawthorne *et al.*, 2013; Deller, 2011).

### 1.3. *Electoral debates, the decisive moment*

Since the legendary first televised electoral debate between Kennedy and Nixon in 1960, academic literature has reflected on the role of this tool in the world of politics (Maarek, 1997), which makes it possible to compare ideas, profiles, and images of the candidates (Berrocal, 2003). In Spain, the tradition of electoral debates has followed an erratic path mainly due to the fact that the organization of these debates is not included or regulated in the Organic Law of the General Electoral Regime (Herrero & Benoit, 2009). Due to the tactical positioning of political parties, Spanish citizens attended their first televised electoral debate in 1993,

between the then socialist president, Felipe González, and the leader of the Partido Popular, José María Aznar, and they had to wait 15 years for such an event to take place again. In 2008, the debate between the socialist José Luis Rodríguez Zapatero and the then president of the PP and leader of the opposition, Mariano Rajoy, resumed this practice and consolidated it for the following years. The lack of regulation has resulted in an array of different formats. Two debates were held in 2015: a four-candidate debate, with the absence of the leading candidate and then president of the Government, Mariano Rajoy (replaced by his vice president, Soraya Sáez de Santamaría), and a face-to-face debate between Rajoy and the opposition leader, Pedro Sánchez, in a traditional two-candidate format.

#### **1.4. The use of Twitter in Spanish politics and debates**

In Spain, several studies have analyzed the behavior of politicians (Zamora & Zurutuza, 2014; Alonso-Muñoz & Casero-Ripollés, 2018; Casero-Ripollés, 2018; Bustos Díaz & Ruiz del Olmo, 2019) journalists and the media (Fenoll, 2018) on Twitter. Papers like those by Marcos García *et al.* (2017) and López-Meri *et al.* (2017), which compare the activity on Twitter of traditional candidates and parties versus new parties in the 2016 elections (Podemos, founded in January 2014, and Ciudadanos, founded in Catalonia in 2005 but active in European and national politics since 2014) and in the investiture debate of those elections, respectively, shed light on the importance of this network in the analysis of the Spanish political arena. Furthermore, the following of Spanish electoral debates by the Twitter community has been the general trend since the appearance of this social network (Zamora & Zurutuza, 2014), although its evolution and level of participation have been related to the consolidation of the use of the network in Spain. As pointed out by Ruiz del Olmo and Bustos (2017), although activity on the network takes off in the debate between Rajoy and Rubalcaba in 2011, the emergence of its use takes place in 2015 during the above-mentioned four-candidate debate and the subsequent face-to-face debate, to consolidate definitively in the 2016 electoral rerun.

The study of political behavior on this network in Spain is recent and has mainly focused on the analysis of messages and content (Zamora & Zurutuza, 2014; López-Rabadán *et al.*, 2016; Casero-Ripollés 2016; Zugasti & García, 2018; Pérez-Curiel & García, 2019), as well as on the quantitative study of the actions carried out by the official accounts of the parties and their leading candidates, tweets, retweets, hashtags and trending topics (Campos & Calvo, 2017; Jivkova-Semova *et al.*, 2017; Fenoll *et al.*, 2018; Bustos & Ruiz, 2019), but not on the analysis of interactions, sentiments and emotions among users who follow the debate.

At the same time, some relevant media have identified the polarization of the political spectrum on Twitter or the existence of bots in Spain, using different data analysis methodologies to do so. Academic studies, however, are more inclined to research based on content analysis of user biographies (Bustos Díaz & Capilla del Fresno, 2013) or certain social issues such as gender (Orbegozo-Terradillos *et al.*, 2020). Along the same lines, papers like the one by Blas *et al.* (2019) have paid attention to the use of Twitter during key political moments such as election night, analyzing which groups lead the conversation on the network and highlighting the institutionalization of content production. Additionally, they have examined how the participation of anonymous users is carried out preferably through retweets, and have expressed the need to study the self-absorption of audiences and their connection to echo chambers. The most frequent contributors are not relevant social players (Blas *et al.* 2019).

Research on sentiment on Twitter has exceeded the mere analysis of content to irremediably shift toward massive analysis and the use of different methodologies to extract and analyze data (Stieglitz & Dang-Xuan, 2013). The results of some of this research, according to Campos-Domínguez (2017), inspire the first studies that see Twitter as a tool for political and social polarization. Due to the use of affinity algorithms, social networks provide users with information based on their preferences and intentionally hide opposing views in a

process Pariser (2011) called “filter bubbles.” Due to these filter bubbles, those messages are limited to the like-minded community, creating an amplifying effect that causes the same views to be repeated and reinforced, being amplified in the so-called sounding boards (Sunstein, 2001; Quattrociocchi *et al.*, 2016; Jamieson & Cappella, 2008).

Several studies have analyzed the role of Twitter in electoral debates in different environments and countries (Vaccari *et al.*, 2017; Lago-Vázquez *et al.*, 2016; Trilling, 2014; D’heer & Verdegem, 2015; Elmer, 2013; Deller, 2011). Therefore, the aim of this paper is to take a step further in the analysis of emotions and polarization of this social network in Spain by comparing the two debates held in 2019, at a time of particular political tension in the country, and paying special attention to the emotions, behavior, and migration of profiles between different political options between the two debates. The result of this research extends the quantitative analysis of the messages using algorithms not only to the profiles of the parties and their leaders but also to the full extent of followers and like-minded people.

This paper analyzes behavior, emotions, and relationships between profiles aligned with the most important political parties and influencers during the debates held in Spain before the general elections on Sunday, 28 April and Sunday, 10 November 2019 (held on 23 April and 4 November, respectively). The first debate to be analyzed was actually the second debate held before the elections (the first one had been broadcasted by La 1, the public television channel of Radio Televisión Española, RTVE) and it was an event organized by the private audiovisual corporation Atresmedia and broadcasted by its television channels Antena 3 and La Sexta, the radio station Onda Cero and the Internet through the website (<https://www.atresplayer.com>) and the app for mobile phones and tablets Atresplayer. It was attended by Pablo Casado (Partido Popular, PP), Pedro Sánchez (Partido Socialista, PSOE), Pablo Iglesias (Unidas Podemos, UP) and Albert Rivera (Ciudadanos, Cs). The second debate to be analyzed in this paper, motivated by the repetition of elections after failing to reach a government agreement, was organized by the Academy of Television Arts and Sciences and was attended by the same candidates from PP, PSOE, UP, and Cs with the addition of Santiago Abascal (Vox), after obtaining parliamentary representation in the April elections. The Television Academy opened its signal so that the debate could be broadcasted by other channels and be followed simultaneously through La 1 of RTVE, Antena 3, and La Sexta, as well as online through the mobile apps and websites of each corporation.

The main objective of this paper is the use of novel quantitative methodologies based on algorithmic analysis on all messages and all followers disseminating beyond the official profiles of political parties and their main leaders as a way of identifying the polarization of the social scene during each electoral debate. As a secondary objective, the paper also aims to determine what perception of sentiments and emotions exists during the day the debate is held. On the basis of this, two main hypotheses are put forward:

- H1. The existence of a very polarized environment with a great emotional burden but with expressed differences between the followers of each party on the network.
- H2. A change in the nature of polarization and emotions between debates as a consequence of the passing of time and especially, the emergence of Vox.

## **2. Methodology**

The sample was obtained using R software, through its RStudio visual environment in its 1.1.456 version, and with the aid of specific packages, especially the Rtweet package (Kearney, 2019) to be linked with Twitter’s application programming interface (API 1.1). The downloads using this method have allowed us to obtain all messages since their collection, carried out after the event, up to seven days before. The official hashtag was used as a search element, linking this research with those carried out by Blas, Moreno and Portilla (2019), which highlight the leadership of journalistic mediation in the choice of tags and help to focus the

research by narrowing the scope of the analysis. Of all collected data, only messages sent on the day of the debate, from 9 a.m. to 2 a.m. on the following day, were studied. Thus, the hashtag #ElDebateDecisivo was followed in the April debate, obtaining a total of 970,706 tweets, while #DebateElectoral was the option for the second debate, with 821,521 tweets. This means 164,791 less impacts, a decrease of 15.36% predictably due to fatigue and demotivation among audiences after the repetition of elections.

After data collection, several massive analysis techniques were applied:

- Network analysis through graphs: Network theory, with important implications for communication (Barabasi, 2016), has been applied using mathematical algorithms with the aim of identifying the profiles most followed and their graphic representation. To do so, the Gephi computer program in its 0.9.2 version was used, which allowed us to perform a graphic network and user connection analysis. Therefore, the relationship between data is studied through a graphic representation of nodes (users) and their connection or links, depending on the distance between points, the size, and the thickness of the lines that link them (Bastian *et al.*, 2009). The Open Ord algorithm, which is mainly intended to operate with large graphs of up to one million data (Martin *et al.*, 2011), was used for their graphic positioning, while the Yifan Hu algorithm was applied to deal with attraction and repulsion between nodes for multilevel data (Hu, 2006). Subsequently, the size of circles and texts was assigned based on their relevance using the average degree of input and the output of the tweets from each user. To analyze the network, a cluster or modularity study was carried out to determine groups of users that are related to each other (Blondel *et al.*, 2008). Likewise, various studies are applied to calculate the *eigenvector* (own vector) type network centrality (Freeman, 1978) with the aim of determining the relative importance within it and being able to establish those users that are more important in the social network, giving greater emphasis to connections with and between more central users than with peripheral ones. Therefore, it is an indicator of the importance of the user in the network to which it belongs. Similarly, the PageRank algorithm (Brin & Page, 1998), registered and patented by Google in 1999 for a family of algorithms, is also used in its initial model within the Gephi software to provide data in this study on the probability that any user, with 85% certainty, will browse and arrive directly at the link, in this case, of the user's discourse. This indicator therefore shows how likely it is that such a message will be found by someone unknown compared to other messages on the network. Both the eigenvector and the pagerank are expressed as parts per unit.
- Analysis of sentiments or polarization and emotions: an attempt is made to determine polarity or sentiments, as well as emotions expressed in discourses as an increasingly important element in public opinion studies (Fernández Vallejo, 2018). With this objective, in this investigation, in addition to determining positive or negative sentiments, basic feelings were also identified in people and their discourses: anger, anticipation (expression of rational thought), disgust or indignation, fear, happiness, sadness, surprise, and confidence (Sauter *et al.*, 2010). To achieve this objective, emotions are contrasted and assigned to each word in each tweet using the attribution lexicon developed by the 0.92 version of the National Research Council of Canada (NRC) in its Spanish version. In this determination, through the R algorithm of the tidytext package, stopwords, which do not provide any meaning, were removed: articles, conjunctions, and common use or connection words between terms, and then the Syuzhet package was applied with the help of the NRC. This vocabulary or dictionary of words (especially nouns, adverbs, and adjectives) assigns emotions and intensities to every word to allow the algorithm to determine the semantic orientation of the text (Taboada *et al.*, 2011). Likewise, the valence and its intensity are obtained

by assigning a positive and negative sense to each word included in the dictionary using a natural language process with NRC in the Spanish version of every message, with valence values between +1 to -1 per word, along with values of adverbs and adjectives that may increase or decrease it (Swati, Pranali & Pragati, 2015). Subsequently, the total sum of the entire message is calculated. This technique, which represents a way of determining the degree of positive or negative bias of each tweet and its intensity in large volumes of text, is very advanced in English, but is rather limited in other languages, having a certainty of around 70% in Romance languages (Mohammad, 2016). Next, the average valence of the tweets per period is represented using the R `ggplot2` package to see its trend over time. Examples of this technique can be found in Spanish, such as the ones by Arce-García, Orviz-Martínez and Cuervo-Carabel (2020) in communication or the one by Murcia, Moreno and Díaz-Rozo (2019) for education.

### 3. Results

The analysis focuses on the following of Twitter users for each electoral debate. The debate on 23 April was followed by the hashtag #ElDebateDecisivo, generating a total of 970,706 tweets between 19 April, four days before the debate, and 26 April, three days after it. Of all messages with that hashtag, only 164,791 (16.98%) were tweets made by users themselves and 805,915 (83.02%) were retweets (RT) or a forwarding of comments from others. In the November 4<sup>th</sup> debate, motivated by the electoral rerun, the total number of tweets with the official hashtag #DebateElectoral reaches 821,521, of which 128,909 (15.69%) were direct and 692,212 (84.31%) were RT or a forwarding of comments from others. This shows that, in both cases, rather than a horizontal debate involving intense content creation by anonymous profiles, audiences re-diffused messages from others, following the already established theory of bubble filters and resonance echoes. Highly re-diffused profiles or influencers correspond to political or social profiles.

In order to systematize and assign the behavior by ideological group, all tweets have been categorized based on their affinity to political parties participating in the debate using a cluster or modularity analysis through an algorithm (process called machine learning) which, depending on the people who are followed or retweeted more frequently, classifies users into one group or another. The created groups not only include followers of the participating political parties, but there are also ideological groups that are not represented in the debate with highly active profiles that generate particularly sensitive topics. Thus, groups with Catalan and Basque separatist/independence feelings (affiliated to parties like Partit Demòcrata Europeu Català-PDeCat, Esquerra Republicana de Catalunya-ERC and Euskal Herria Bildu), as well as accounts with no apparent political affinity, but with a high level of participation and social leadership classified under the name of influencers and which are, as will be seen below, generators of the largest share of debate.

Following the aforementioned segmentation, the groups identified during the first debate are affiliated to the Partido Socialista (PSOE), Partido Popular (PP), Unidas Podemos (UP), Ciudadanos (Cs), Separatists, and Influencers. The appearance of two new lobbies during the second debate linked to two political parties that enter the political scene very differently must be duly noted. Although they do not have as many identifiable supporters, and therefore their own content on Twitter, during the first debate, they do have it in the second debate and that is why they are included in this research. The first of these groups is Vox, the far-right party led by Santiago Abascal, which managed to obtain 29 parliamentary seats and more than 2.6 million votes (10.26%) in the 28 April elections. The other party is Más País, the feminist and green-left party led by the former leader of UP, Íñigo Errejón, launched on September 25, 2019 as a response to the 'possibilist' left wing that had harshly criticized the lack of agreement between UP and PSOE that had led to the electoral rerun.

As indicated in Chart 1, messages revolve in both debates around influencers initially unaffiliated with participating political parties, where both the *eigenvector* and *pagerank* values of their main accounts determine that they are in the most important center of the network and drive a third of all messages of the electoral debates. By political parties, there is extensive participation of UP followers, being in the second and fourth positions, respectively, in traffic percentage in both debates, and similar percentages in PSOE and Cs. The appearance of Vox in the second debate alters all other percentages, mainly in the most conservative spectrum and in its opposite, as it gathers over 11% of tweet traffic and caused, on the one hand, the drop around the PP from 9.36% to 1.45% and, on the other hand, the increase in participation of separatists from 6.44% to 10.13%. The appearance of Más País does not reach 1% of the tweets generated in the second debate and does not sufficiently explain the slight drop in percentage of UP. The main accounts of each group refer primarily to official accounts or the main political leaders of those parties.

**Table 1.** Main communities and influencers.

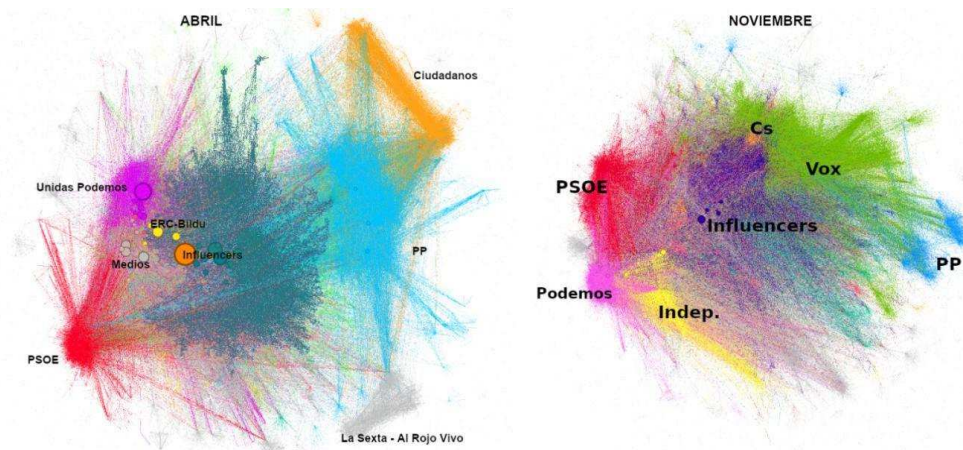
Group	April				November			
	Traffic	Account	Eigen-vector	Page Rank	Traffic	Account	Eigen-vector	Page Rank
Influencers	34,07%	eresmastipico	0,661	0,012	33,74%	cybermigu3	0,535	0,007
UP	12,53%	ahorapodemos	0,768	0,010	9,06%	ahorapodemos	0,558	0,010
PP	9,36%	populares	0,162	0,003	1,45%	populares	0,065	0,001
Separatists	6,44%	gabrielrufian	0,496	0,008	10,13%	gabrielrufian	0,721	0,009
PSOE	3,65%	PSOE	0,171	0,002	3,65%	sanchezcastejon	0,066	0,001
Cs	2,11%	Albert_Rivera	0,141	0,003	3,62%	CiudadanosCs	0,021	0,001
Vox	-	-	-	-	11,46%	Vox_es	0,577	0,008
Más País	-	-	-	-	<1%	MasPais_Es	0,040	0,005

Source: Own elaboration.

In Figure 1 the graphs generated according to the dispersion algorithms that determine the proximity between different clusters can be observed. This graphic representation of the groups, differentiated by colors, establishes, on the one hand, a constant between both debates: the influencers stay in the middle and connect to all other groups, leaving Unidas Podemos and the PSOE to the left, with plenty of interconnection between them and Ciudadanos and the Partido Popular (PP) to the right. The followers of separatist parties present in both cases a proximity to Podemos. The difference between debates is determined by the appearance of Vox in the second one, which absorbs most followers and causes a shift of the center-right parties in the chart. The relationships of Vox followers with other groups are much more intense between right-wing parties than in the April debate.

The main accounts used by influencers, a key element in the network, do not focus only on political issues. These accounts, which are rather important within the network, can raise doubts about their features, as the most important account during the first debate, @eresmastipico, only has 148 followers, while the second one, @cybermigu3, has 274 followers. At the time of the second debate, the first account had written 4,993 messages in 4 years of history, but in 2021 it had deleted most of them leaving only 4. The second account had written 420 messages in its first year, just before the debate. These are clearly accounts with a very low impact, but which suddenly become the most important accounts in the debate network.

**Figure 1.** Network graph of the April and November 2019 debates.

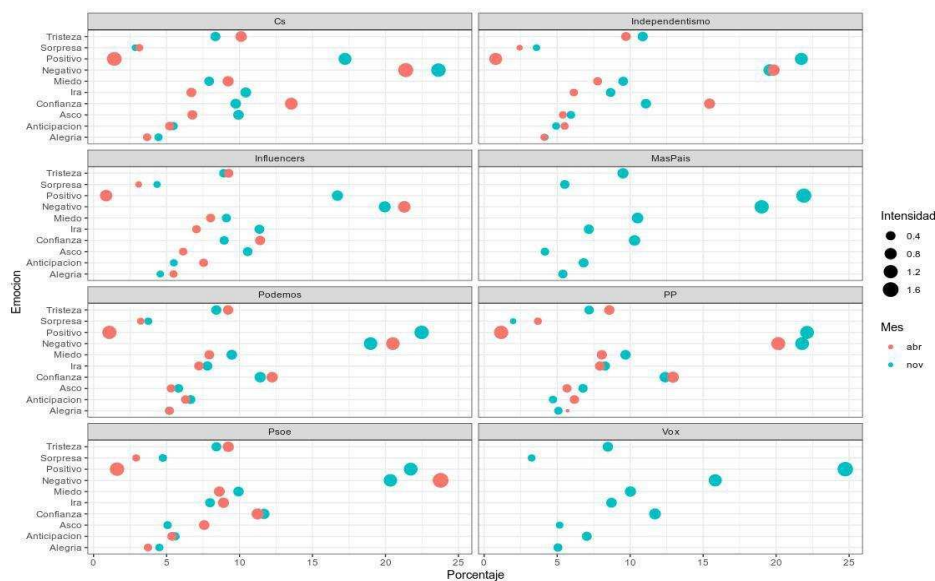


Source: Own elaboration.

### 3.1. Group sentiment and intensity

The analysis of sentiments and emotions of user messages based on the participating political parties also shows differences depending on the date of the debate. As can be seen in Figure 2, there are clear movements in sentiments and emotions between debates in all groups.

**Figure 2.** Emotions and sentiment polarity in the April and November 2019 debates.



Source: Own elaboration.



Messages with the most positive polarity shift from the separatists in the first debate (23.68%) to Vox in the second (24.74%). The percentage of messages with positive valence increases significantly in the second debate in most environments, while the negative ones remain nearly constant. The Vox environment provides the most positive messages and the least negative tweets (15.83%). In any case, all messages from followers of each party provide high-intensity positive and negative tweets, which would prove a high subjectivity and, therefore, polarization of all players.

Regarding emotions, the most frequent percentages revolve around trust, sadness, fear, and anger from highest to lowest. On the other hand, the least present emotions are surprise, joy, and annoyance, in addition to being low intensity.

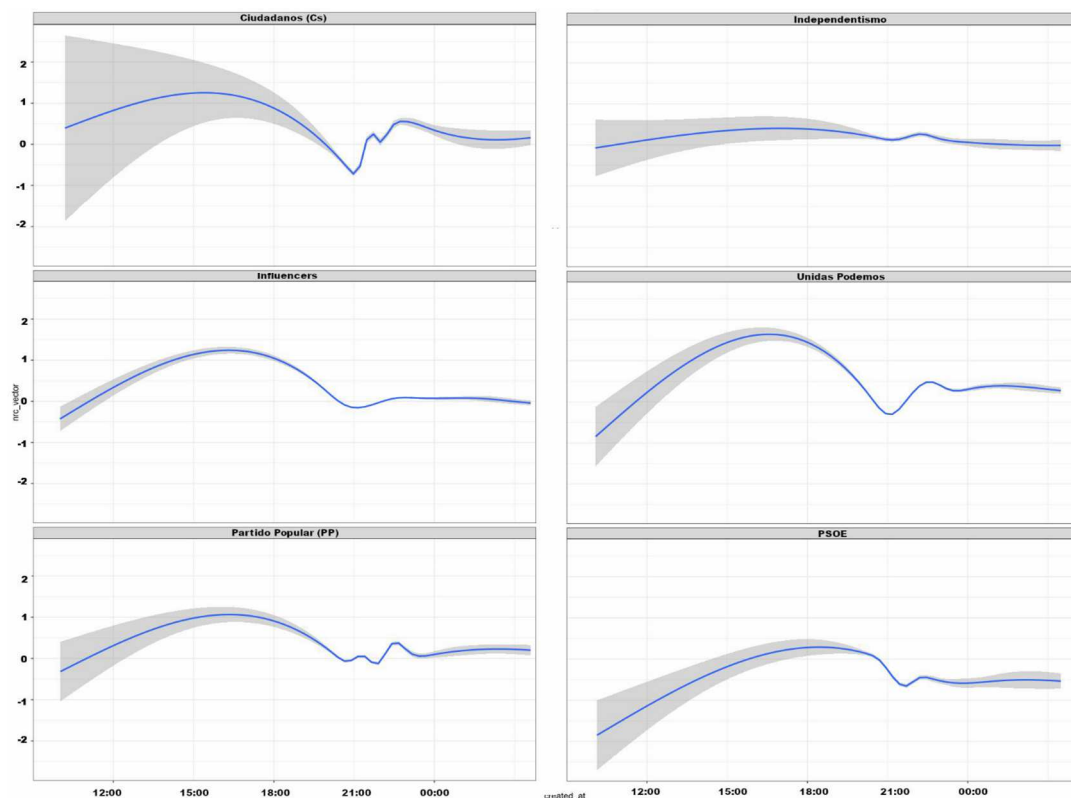
Although in most groups' emotions are similar in both debates, there are slight differences to be mentioned. For example, anger increases in all groups during the second debate, with the exception of the PSOE and slightly in the PP. Fear, on the other hand, increases among left-wing parties but remains the same or even decreases among right-wing ones. Trust can be found, especially during the second debate, around influencers, profiles aligned with separatists and Ciudadanos, remaining stable in all others. Surprise, although scarce, can be found mainly among left-wing parties, increasing in the second debate.

It can therefore be concluded that emotionally there have been no great changes between both debates, but the presence of Vox in the second one causes Anger to rise in general and Fear to do so among left-wing parties. Vox appears and bursts into the political scene with a fair amount of positive valence, surpassing all other parties in the same debate.

### **3.2. Analysis of the polarization through the evolution of the temporal valence**

The term 'valence,' extracted from psychology, refers to attraction (positive valence) or aversion (negative valence) toward an object or subject (Fridja, 1986, p. 207) in the analysis of the debate on emotions. The study of the average polarity or valence in the messages of the followers of each party throughout the day of each debate allows us to see the evolution of each group and their reactions over the following hours. In Figure 3, which corresponds to the April debate, it can be observed that the groups not directly participating in the debate maintain a lower variability throughout the day. Thus, separatists do not vary around a neutral position in all their messages, while influencers start hours before the debate with positive messages to subtly decrease at the start of the debate, slightly shifting towards the negative and later remaining neutral. However, the followers of the participating parties do experience variations, with a high positivity (over zero) before the debate to fall sharply when it starts, especially the followers of Cs and UP, and recover slightly at the end of the debate and in the following hours. The PP followers present a certain positivity at the end of the debate to remain neutral after it ends, while the PSOE followers have a minor drop at the beginning and remain in a negative polarity throughout the entire debate and subsequent hours.

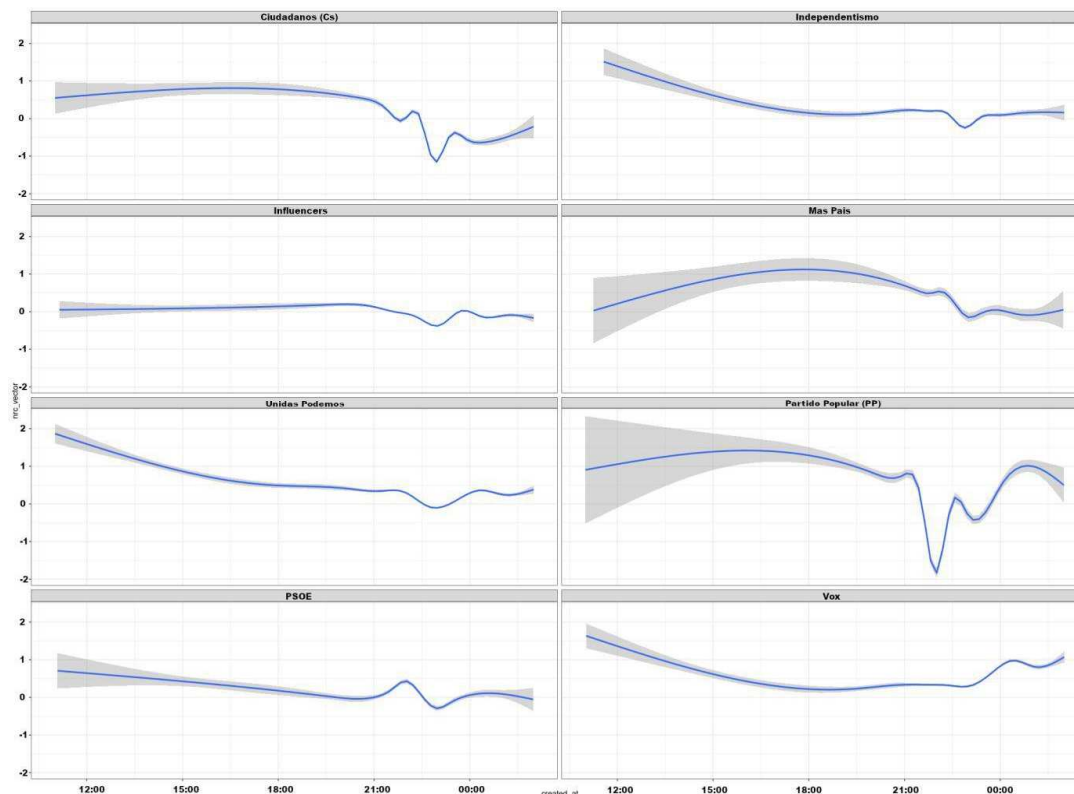
**Figure 3.** Sentiment valence in the 2019 April debate among followers of the different groups.



Source: Own elaboration.

In the analysis of the November debate, the two new groups are included in the valence analysis, as shown in Figure 4. There are major differences, although there are also similarities with the April debate, such as, for instance, that influencers and separatists do not vary their sentiment valence throughout the day, decreasing only at the start of the debate and remaining neutral afterwards. On this occasion, while the left-wing parties, UP and PSOE, experience slight swings at the start of the debate (in fact, PSOE followers increase their positivity in the first moments of the debate), they remain constant in positive areas, always over zero. On the other hand, there are differences in the right-wing spectrum. The Cs and PP followers experience important drops on two occasions during the debate, especially the PP followers, which reach an average valence of -2 and only recover at the end. Cs followers hardly recover from their drops and remain negative after the debate. Among the new groups, there are messages with positive valence in Más País all day long, and they remain neutral during the debate and after it. As for the followers of Vox, they always remain positive and have almost no variation throughout the debate, even rising at the end of it.

**Figure 4.** Sentiment valence in the November 2019 debate among followers of the different groups.



Source: Own elaboration.

#### 4. Conclusions

With a time span of only a few months and amidst a very bitter political climate, the 2019 electoral elections analyzed in this document marked a milestone in the history of Spain with the emergence and consolidation of different political parties. This paper is based on the analysis of relationships and sentiments on Twitter during the broadcast of the two main electoral debates that year and brings to the table a series of trends that took place between the April 28<sup>th</sup> elections and the November 11<sup>th</sup> rerun: the slight decline of PSOE and UP (which dropped from 28.7% to 28% of the votes and from 14.3% to 12.8% respectively), presumably due to abstention and the emergence of Más País, which obtained 2.3% of the votes, the collapse of Cs –from 15.9% to 6.8%–, the timid rise of the PP that loses the supremacy of the right –it rises from 16.7% to 20.8%– and the growth of Vox –rising from 10.3% to 15%.

The analysis of the content posted on Twitter during the analyzed debates reveals a scarcely productive audience that prefers to syndicate content from others through likes and retweets and acts as an amplifier. In this sense, there is a certain trend towards predefined messages, many of them from the start of the broadcast of the debate, which are posted without waiting to see how it develops, an obvious fact as there is hardly any valence variation in most groups throughout both debates. Therefore, support for one candidate and attacks against the other prevail, following the bubble filter and chamber resonance theories, in which followers do not listen to those messages against their ideas, focusing only on those that reaffirm their own. The analysis of clusters and modularity reveal a polarized scenario of well-shaped and strongly separated groups, which contributes to straighten those echo chambers (Sunstein, 2001; Quattrociocchi *et al.*, 2016; Jamieson & Cappella, 2008) of opinions and ideological content.

The fact that most tweets in social conversations –66.43% in April and 45.1% in November– do not belong to the official accounts of any party indicates that party activism is rather limited with the exception of the new parties such as UP and Vox. The difference in percentages –whose importance veers toward Vox in the ‘second round’– would fit into the strategies identified in articles such as those by Ong *et al.* (2019), which focus on how certain parties rely much more on social media, using very different strategies. The new parties have much more participation in social media than traditional ones, as can be seen in the traffic of tweets. The existence of influencers, with a very important or even central role in the network but originating in unknown accounts with a very limited number of followers, opens the door to a possible instrumentalization. Thus, it may be suspected that these would be what previous authors identify as accounts with an apparent apolitical nature that campaign for a certain party avoiding the risk of being rejected for appearing under the acronym of a political party.

The second debate and the presence in it of a new political player, Vox, entirely changes the center-right area of the social network, especially in the PP (that drops from 9.36% to 1.16%) and Ciudadanos, that vanishes, while the left structure remains the same.

The change in the ideological center-right area is not the only one, as the valence changes throughout the second debate, after 9 pm, are more intense in these parties than in the first debate, with more negative trends. The followers of left parties would have a more positive level in the second debate with the prospect of a possible victory.

A greater contrast can be seen in the sentiments expressed in both debates, especially noticeable around Cs, where anger and disgust clearly increase, and trust considerably decreases. Trust, in fact, is the sentiment that drops in all groups with the exception of the PSOE followers. Although there is an average positive vector in the messages, there are important percentages of disgust and anger in almost all groups as a response to the messages of the followers of Vox, which remain without alterations during the debate, always with a positive sense, even rising slightly at its end. The groups of non-participating parties remain almost identical.

The following conclusions can be drawn:

- The scenario of separate groups between left and right shows the degree of polarization in this network, with well-distinguished and separated groups. The followers of each political spectrum are organized in rigid communities where information is disseminated and influential personalities are echoed. These groups are only separated by the center of the network where influencers (from different topic areas and providing their opinion on the debate) and their followers are located. There is therefore a central discourse, apart from the polarizations of the groups, with connections to both parts, which is more influential in the network than the parties themselves, as determined by their pagerank levels of being found by a new user at random, first in the first debate and second in the following one. The main influencer accounts in each debate have an unknown origin, very limited use, and a small number of followers in their history, raising suspicions about their use.
- The analysis of sentiments and emotions allows us to know the differences in perception of each group over time. A certain disappointment can be identified during the first debate among left-wing groups and Ciudadanos, while during the second debate the emergence of Vox shifts and alters the entire center-right spectrum, moving them from their centered position in the network and leaving left-wing parties in a much more comfortable position.
- The appearance of Vox in the second debate raises the disgust and fear among left-wing parties, as well as the participation of separatist parties. This means that although the presence of Vox mainly transforms the right-wing in the network, it also provokes reactions in opposing sectors.

All these data not only corroborate the hypothesis of polarization and changes after the appearance of Vox as a new political player in the debate, but they also suggest that the use of social networks is much more intense by the new parties than by the traditional ones. This use displaces and disrupts the perception of the followers of established parties, who are much more emotionally affected towards negative vectors. This is especially visible in the right wing, while a rise in disgust and fear can be seen in the left wing. Meanwhile, Vox followers remain almost unchanged, confident in their arrival.

This paper points to a new approach to the massive analysis of followers and not of the actors of the debate, showing primary sentiments and emotions that can be deduced throughout two electoral debates and with the appearance of new parties that alter the composition of the communication network. Millions of messages must be analyzed in a time frame that would be impossible without algorithmic aid. This research has some limitations: these methodologies, although in constant evolution, show aspects to be improved with the progress of artificial intelligence, especially in non-English languages and in the identification of ironic or double meaning messages.

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