The Emotional Vote: An Experiment During the 23 July 2023 Spanish Election

El voto emocional: un experimento durante las elecciones del 23 de julio de 2023

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ABSTRACT

New technologies and neuroscience may help complement traditional poll-based vote projections. As such, facial expression analysis enables us to study the emotional reactions that images of logos or candidates' faces provoke among voters. This research note presents the experiment carried out prior to the 2023 Spanish general election in which we used this technique to define and quantify the emotional vote. The main methodological conclusion is that experimentally, an analysis of voting intention based on traditional surveys can be complemented by a study of respondents' emotional reactions. This emotional vote could shed new light, which would help us gain a greater understanding of voters' electoral behaviour.

KEYWORDS: emotional vote; elicited vote; neuroscience; demographic projections; facial expression analysis; emotional reactions.

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RESUMEN

Las nuevas tecnologías y la neurociencia pueden ayudar a complementar los estudios tradicionales de intención de voto basados en encuestas. Así, el análisis de expresiones faciales permite estudiar las reacciones emocionales que despiertan las diferentes candidaturas presentadas entre los votantes. En esta nota de investigación se presenta el experimento realizado con motivo de las elecciones generales de 2023 en España empleando este tipo de técnicas, definiendo y cuantificando el voto emocional en función de las reacciones emocionales mostradas ante imágenes de logos y caras de candidatas/os. La principal conclusión metodológica es que experimentalmente se puede estudiar de manera conjunta la intención manifestada de voto basada en encuestas tradicionales con las reacciones emocionales demostradas por los encuestados. Este voto emocional podría aportar nuevas vías de comprensión del comportamiento electoral de los votantes.

PALABRAS CLAVE: voto emocional; voto manifestado; neurociencia; proyecciones demoscópicas; análisis de expresiones faciales; reacciones emocionales.

1. Introduction

Emotions not only play a fundamental role in our reasoning and decision-making processes, but they also have a strong cognitive-intentional component. The study of emotions has become a notorious aspect of modern politics, since they can be manipulated to shape voters' behaviour (Ansolabehere and Puy, 2023; Jaráiz *et al.*, 2020; Marcus, 2000; Oñate *et al.*, 2022; Pereira *et al.*, 2021; Rivera Otero *et al.*, 2021; Schreiber, 2017; Velez *et al.*, 2020).

The neurology tools and techniques available (Glimcher and Fehr, 2008) allow us to study the impact of emotions on political decisions, in particular which candidate a person chooses to vote for. Emotions can be quantified in a number of ways, some of which using new technologies, as is the case with facial expression analysis (FEA). Such techniques and software are now being used in a wide range of fields, including brand analysis (Bigné *et al.*, 2023; Hamelin *et al.*, 2022; Ortigueira-Sánchez *et al.*, 2022), sports (Suominen, 2021), tourism (Gómez-Díaz, 2021) and engineering (Meza-García and Rodríguez-Ibáñez, 2021). In the political and economic realms, however, FEA still has limited applications (Masch *et al.*, 2021; Rodríguez-Fuertes *et al.*, 2022; Romero-Luis *et al.*, 2023) and there are no known applications linked to voting intention, perhaps due to the considerable cost and time required to perform them.

In this research note, we detail an experiment that has been carried out in the electoral field to methodologically test the potential of FEA to detect trends in voting intention based on emotional reactions to stimuli presented as images of candidates and logos. The experiment was carried out with a mainly young and student population in three Spanish cities (Madrid, Seville and Jerez) between 1 and 8 June 2023, during the build-up to the general election held in July of that same year. Alongside the experiment, a voting intention survey, compiled by the Andalusian CENTRA Foundation, and an attachment test (Melero and Cantero, 2008) were conducted in order to study the feasibility of combining responses from surveys and traditional tests with the emotional reactions obtained through FEA. The main takeaway is that FEA-based techniques open new avenues for the study and quantification of voting intention.

2. The Analytical Framework Used to Measure Emotional Voting

The methodology employed consists of recording the emotional reactions displayed on the faces of potential voters (microexpressions) when exposed to two stimuli—images of the different candidates' faces and logos (or "brands") of the political parties—and when filling out voting intention or attachment style questionnaires. These reactions were recorded and then analysed using the iMotions software (https://imotions.com/) and then an FEA was performed, which produced a series of indicators of emotional reactions linked to Ekman's (1993) seven basic emotions: joy, surprise, anger, contempt, disgust, fear and sadness.

By combining this information with the results of the surveys, we were able to develop a series of political, emotional and attachment-style indicators that can be used as the basis of a study on voting intention.

2.1. Experiment design

In order to allow us to obtain sufficient samples as quickly and cost-effectively as possible, the experiment's design combines techniques from neuroscience, psychology, experimental economics, and industrial engineering. Therefore, we broke up the activities to keep them as short as possible, which enabled the emotional reactions to the responses to be more clearly differentiated and the flow of people between the different stages of the experiments to be more efficiently managed, thus minimising the total time of the experiment and consequently maximising the number of participants who could perform the experiment per hour.

The experiments were broken down into the following steps:

1. Initial registration. The subject scans the QR code containing a questionnaire. They are assigned an ID code, which will be used to anonymise the data. After completing the questionnaire, they are given a paper document containing the informed consent, approved by Universidad Rey Juan Carlos (URJC)'s Research Ethics Committee.

2. Subjects receive a QR code confirming that they have signed the informed consent document.

3. iMotions_1. Subjects are then called in order by the experimenter in charge of managing the iMotions booths, where they are sat in front of a computer connected to a webcam. The distance between the subject and the device is adjusted and the webcam is checked to make sure it is recording properly. This first iMotions display shows the subject the faces of the main candidates for president of the Spanish government (Figure 1), and then two questions appear on the screen: "Do you know this candidate?" and "What is the likelihood of you voting for him/her?". In order to prevent unwanted trends from appearing in the answers, and to preserve the surprise effect, the images of the candidates are shown in a random order. Each image is displayed for five seconds

(Marques dos Santos *et al.*, 2016). A blank slide is inserted between each image, which serves to refresh the subject's brain and return them to their baseline emotional state. This blank slide is displayed for three seconds (Knutson *et al.*, 2007). Next, the subject is asked whether they voted in the last regional elections and, if so, for which party. Finally, they are asked whether they intend to vote in the upcoming general election.

4. QR code for the attachment questionnaire proposed by Melero and Cantero (2008). The questionnaire seeks to determine the type of affective bond that a person establishes, an expression of the relationship mental models formed by the subject's own interactions. The 40 questions are expected to take around five minutes to answer.

5. iMotions_2. The second iMotions system displays the logos of the main political parties in the upcoming Spanish general election for the Congress of Deputies (Figure 2), followed by two questions on the same screen: "Do you know this party?" and "What is the likelihood of you voting for it?" This sequence of images is also shown in a random order, with each being displayed for five seconds with a blank screen displayed for three seconds in between. Finally, the subject is shown the logos of the aforementioned political parties and then asked to rank them according to their voting intention, with 1 being their favourite and 5 their least favourite.

6. CENTRA QR code. This QR code redirects participants to the voting intention survey compiled by CENTRA (adapted for general elections). There are two different questionnaires depending on location (29 questions for Madrid and 31 for Andalusia), with an approximate duration of five minutes.

7. The experiment ends by thanking participants for their time. Thanking participants is essential for ensuring validity in the field of experimental economics (Otamendi *et al.*, 2018).

Figure 1
Experiment example sequence: candidates
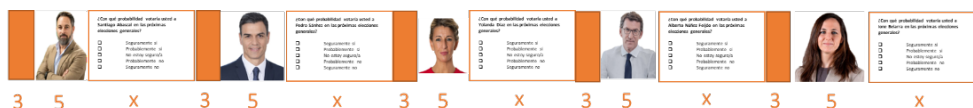
Source: own research.

Figure 2

Experiment example sequence: parties

N.B.: Official party logos ahead of the July 2023 election campaign.

It should be noted that this structure allows us to process 25 subjects every 90 minutes: each subject takes 18 minutes (six for exposure to stimuli and 12 for completing surveys and tests), with six subjects completing the experiment simultaneously.

2.2. Running the experiment

To recruit experimental subjects, posters were placed at the URJC (Vicálvaro campus) in the case of Madrid, while for all three test locations subjects were approached both on and off campus, asking them if they wished to participate in the experiments. Potential subjects were provided the absolute minimum information possible so as to not compromise the validity of the experiment, and they were also given a QR code, identical to the one shown on the posters, providing information on the study, the location and the schedule. Subjects had the option to register for the experiment or simply go straight to the room to begin the experiment immediately. Subjects could also register via the QR code and indicate the time they wished to attend. These tasks were conducted by an experimenter from the research team.

Participating subjects were welcomed at the room set up for this purpose—a classroom at URJC, and a hotel room in Seville (see Figure 3) and in Jerez—by a second experimenter, who was responsible for explaining to them what the experiment consisted of and, most importantly, obtaining the informed consent that they were required to sign if they eventually wished to participate.

Figure 3

Layout of the experiment room in Seville (Exe Sevilla Palmera hotel). Booths three and five are equipped with iMotions software

In the room were two computers with iMotions installed, and two other tables where the subjects completed the attachment style and voting intention questionnaires via a mobile application. A third member of the research team was tasked with managing the two iMotions devices and explaining to each subject how to position themselves and answer the questions, recording the participants and checking that everything worked correctly. The experimenter in charge of welcoming the participants also thanked them at the end of the experiment.

A total of 306 people participated in the various experiments—148 men and 155 women—the majority of which were young people under the age of 25 (77.45%). These people comprised the pilot sample of our experiment. Practically all participants answered over 99% of the questions, while the records of 17 subjects were deemed invalid as a result of their unsuccessful facial recognition during the iMotions_2 portion of the Seville experiment. Table 1 shows the distribution of participants by location and gender, including dates of completion.

Table 1

Participants in the experiments by location and gender

GENDER	Male	Female	Other	Total
MADRID (1–2 June)	58 (48%)	61 (50%)	3 (2%)	122 (100%)
SEVILLE (5–6 June)	41 (45%)	50 (55%)		91 (100%)
JEREZ (7–8 June)	49 (53%)	44 (47%)		93 (100%)
TOTAL	148 (48%)	155 (51%)	3 (1%)	306 (100%)

Source: own research.

2.3. Legal framework of the experiments

Safe collection and storage and the confidentiality of the recordings are of utmost importance in this type of study. During the experiment, all issues and risks related to the protection of the participants' personal data were dealt with in accordance with current national laws (Organic Law 3/2018, of 5 December, on the Protection of Personal Data and Guarantee of Digital Rights) and European Parliament guidelines (Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence [Artificial Intelligence Act], enacted in 2021, and the amendments made to it in 2023). As such, before commencing, the subjects signed a specific and complete informed consent document outlining the details and implications of the experiment, as well as its purpose and objectives, thus obtaining the required expression of their free will.

Other measures were also adopted, such as data anonymisation, restriction of access to unauthorised team members and two-factor authentication for accessing the data, among others. In addition, secure URJC programs and servers certified by Microsoft were used; the custody of data and the prevention of information leaks are two very sensitive issues. Similarly, it is worth mentioning that the European AI Act will greatly hinder this type of experiment in the future, which is why we have had to anonymise the data in order to prevent personal identification and categorisation using biometric data. Finally, the data were permanently deleted upon completion of the study.

2.4. Categorisation and quantification of indicators

We developed the EMOTIVOTO tool (see interface in Figure 4), which consists of a relational database and a series of indicators that synthesise the emotional vote, elicited voting intention and attachment style. In addition, each subject was identified in the database by their gender, age and the location where they were going to vote, allowing the analysis to be personalised according to the needs of the researcher.

Figure 4

EMOTIVOTO control panel. Pictured is the profile of a young, left-wing male voter in Seville
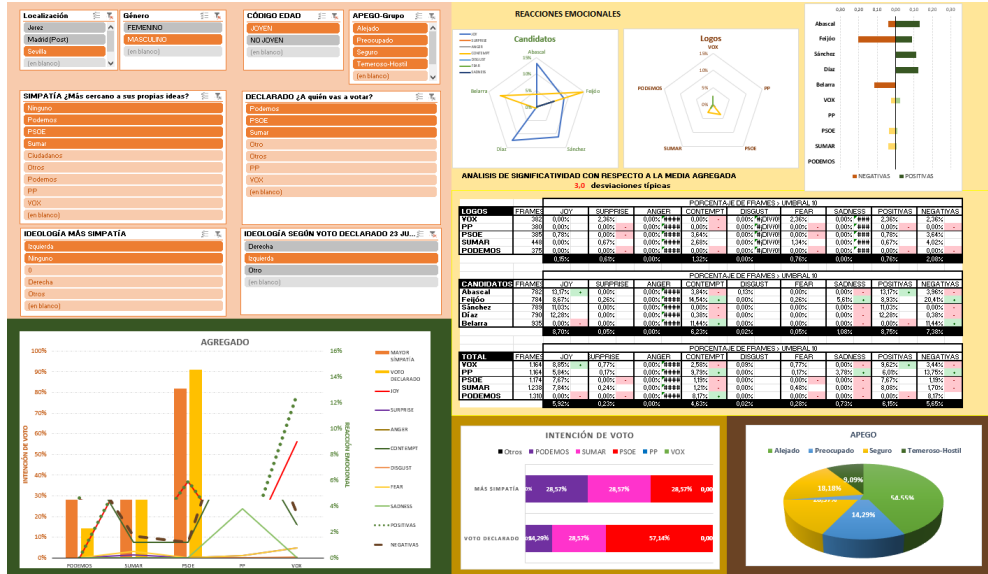
Source: own research.

To characterise and quantify the emotional vote, emotional reactions were converted into each of Ekman's (1993) seven basic emotions, which was performed directly by the iMotions software. Results were obtained for reactions both to the image of the logo and to the image of the candidate, giving us a total of 14 values. Reactions can be grouped into positive (joy and surprise) and negative (anger, contempt, disgust, fear and sadness) (Ekman, 1972, 1999; see also Timme and Brand, 2020).

Regarding the elicited voting intention, we obtained two indicators about the participants' affinity to the different political options shown to them based on their responses to the following questions included in the CENTRA Foundation questionnaire:

a. "How likely are you to vote for ***** in the upcoming national election?". The party they indicate that they are most likely to vote for is classed as the "elicited vote".

b. "Which party are you most sympathetic to or most closely represents your own ideals?". We call this "sympathy".

The answers, originally the name of the political parties, have been further grouped into ideological blocks: right (Vox, People's Party [PP]) and left (Spanish Socialist Workers' Party [PSOE], Sumar, Podemos).

Finally, regarding attachment, each subject was assigned a style based on the classification proposed by Melero and Cantero (2008): avoidant, secure, angry and anxious.

3. Aggregate Results

The main descriptive results for each of the three groups of indicators are presented below.

3.1. Emotional vote

The main takeaway—which applies to the entire sample—is that it is the candidates (images of their faces) who generated more emotional reactions, while the parties (represented by logos) aroused less emotions.

As for the political parties, the PP—both the photograph of the candidate and the party's logo—failed to provoke a strong emotional reaction. Likewise, the PSOE's logo was unsuccessful in generating a reaction. Vox, on the other hand, triggered the greatest emotional response, both positive and negative, while Podemos generated high doses of negative emotions, as opposed to positive ones. The latter is also true of Sumar and the PSOE. The positive emotions generated by (PSOE candidate and incumbent prime minister) Pedro Sánchez and Vox's Santiago Abascal and the negative ones provoked by Sánchez and Sumar candidate Ione Belarra also stand out (Figure 5).

Figure 5

Emotional reactions to candidates and faces
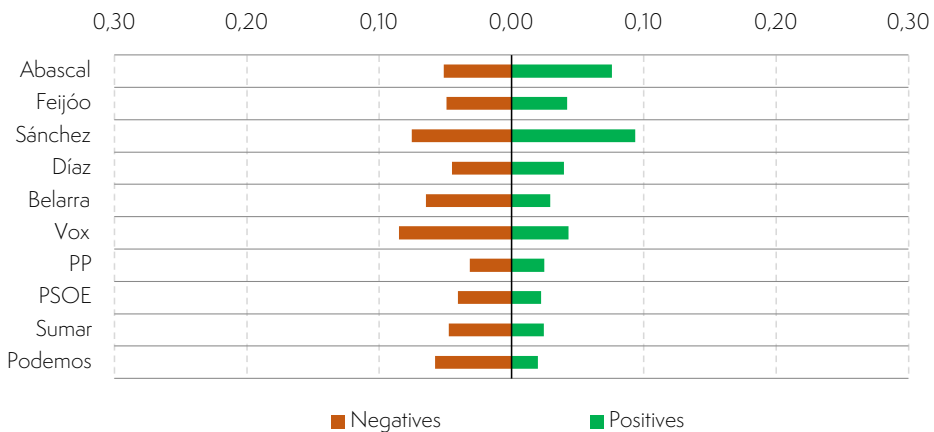
Source: EMOTIVOTO.

3.2. Voting intention

Table 2 compares voting intention data obtained from polls conducted by opinion polling companies and the "elicited vote" and "sympathy" indicators obtained in the experiment with the results of the national election. In the experiments, the order of voting preference was: the PP (37.25%), followed by the PSOE (25.49%), with Vox (11.15%) and Sumar (9.84%) practically tied for third, and Podemos (6.56%) in last place. Also of note is the high percentage of others (16.99%) indicated in the elicited vote, which includes participants who did not vote and those who were undecided.

Table 2
Forecasts and result of 23 July 2023 elections (in percentage of the vote)

	NC Report	Gad3	Sigma Dos	CIS	Elicited vote	Most sympa-thy/ closeness	Result (23 July)
PP	37.2	36.9	35.4	30.8	37.25	32.79	33.05
PSOE	28.3	28.6	28.0	32.2	25.49	21.64	31.70
Vox	11.1	11.7	11.2	11.8	10.78	11.15	12.39
Sumar	11.3	11.5	13.6	14.9	7.52	9.84	12.31
Podemos*	N/A	N/A	N/A	N/A	1.96	6.56	N/A
OTHERS	12.1	11.3	11.8	10.3	16.99	9.84	10.55

Note: Polls published on 17 July 2023. The experiments were conducted between 1 and 8 June.
*At the time of the experiments, Podemos and Sumar were running as separate parties, but in July 2023, Podemos joined the Sumar ballot.
Source: own research.

The discrepancy between most sympathy (closeness) and the elicited vote is quite remarkable, especially for the two main parties: the PSOE (21.64% sympathy versus 25.49% of elicited votes) and the PP (32.79% sympathy versus 37.25% of elicited votes).

3.3. Attachment

In terms of attachment, the experimental subjects presented mainly the "avoidant" style (47.19%), followed by "secure" (36.30%). The "angry" and "anxious" affective styles accounted for 11.22% and 5.28%, respectively.

4. Emotional Vote versus Elicited Vote

To understand the potential of conducting neuropolitics experiments that combine FEA and traditional questionnaires, below we describe the general results of the emotional vote and the elicited vote, analysing them by gender, age and location and ideology of the political party.

4.1. Gender

Women were more likely to vote for the PSOE and against Vox, and we can see that Vox provoked generally negative emotions in this demographic. In addition, women had more positive emotional reactions to both Sánchez and the PSOE, and negative reactions to Vox. In the case of men, the greatest emotions—both positive and negative—were provoked by Pedro Sánchez.

4.2. Age groups

In our experiment, young subjects behaved very similarly to the sample as a whole in terms of emotions. This could be partly due to the fact that young people make up the majority of the sample; even so, the data for this section of the population is quite similar to that of the other age groups.

Among "non-young" subjects (those over the age of 25), it is evident that the candidates on the whole, and those representing Vox and Podemos in particular, generated predominantly negative emotions. In addition, the elicited vote for non-young people favoured the left wing (45% left wing versus 36.2% right wing).

4.3. Location

Madrid and Seville displayed rather similar voting patterns, although emotions, especially negative ones, are slightly more pronounced in Seville. In Jerez, however, the pattern is somewhat different. Here, the greatest amount of votes were cast for the PSOE, although if we look at it in terms of left-right split, this is counterbalanced by a significant number of votes in favour of Vox. In addition, in Jerez emotions are stronger, especially against the left.

4.4. Ideology

Virtually 100% of left-wing voters chose left-wing candidates. The same can be said for right-wing voters, who in turn voted for the right-wing candidates. This reveals a strong allegiance to one's political ideology—ideological voting seems to greatly influence voting intention.

The variance between sympathy and intention to vote both for the PSOE (51.4% sympathy versus 72.9% of elicited votes) and the PP (62.6% sympathy against 77.6% of elicited votes) is staggering. Also of note is the predominantly negative emotions that left-wing voters have towards the candidates representing leftist parties. On the right-hand side of the political spectrum, however, aside from the negative emotions aroused by the left-wing parties, the negativity that Vox provokes among the right-wing electorate is striking, even surpassing the levels recorded among left-wing voters.

Therefore, although the PP was the party that received the most elicited votes, it failed to generate as many emotions as the other parties, whether positive or nega-

tive. In fact, the PSOE stood out in many social groups and locations in terms of the positive (joy) and negative (contempt) reactions it provoked. Vox also elicited strong emotions, but to a lesser degree, with Podemos generating mainly negativity, mostly expressed as sadness in comparison to the rest of the parties.

5. Advantages and Obstacles of Analysing the Emotional Vote

Any study of this nature will obviously have its shortcomings and dangers, but it will also open up new opportunities for development. The main advantage of our analysis is the robust and contrasted method we used, enabling us to gather and use data on our experimental subjects' reactions to stimuli regarding their voting habits. The methods used and the tools designed for the analysis boast many potential applications in voting intention analysis, such as assessing the design of demoscopic surveys and even testing the design of electoral campaigns and candidate selection from an emotional point of view.

On the other hand, the principle obstacles to this methodology are possible biases and the potential lack of representativeness of the chosen samples. Participating in such an experiment, in addition to the high cost involved, requires that subjects are, at least *a priori*, familiar with new technologies and not weary of privacy concerns. This is mainly the case with the younger population.

Although there are various types of threats—such as computer attacks, security breaches in protocols for handling highly sensitive data, etc.—in our opinion, the future viability of this type of study may be put in jeopardy by legislative changes in the European Union regarding personal data security and by possible bans on experiments considered threatening to citizens' rights.

6. Conclusions

Nowadays, the availability of neuroscience tools and techniques opens up new avenues for the study of the impact of emotions on voting habits. Our experiment has proven the validity of the analytical framework and the usefulness of the EMOTIVOTO tools in detecting differences between experimental subjects' voting intention and the emotional vote. The variability of the responses obtained, which were recorded and structured in the database, and the results of the models used and integrated into EMOTIVOTO, have made it possible to identify the characteristics of different groups of voters based on their gender, age, location, ideology, etc.

Thanks to the experimental methodology used in this study, based on industrial engineering and task synchronisation, we were able to obtain a sufficient sample size, which in fact was larger than in most other studies that use facial recognition analysis, and thus obtain a meaningful sample.

As such, we have been able to discern differences between different social groups (based on gender and age) in most of the answers given in the surveys and question-naires. It should be noted, however, that although the young university population makes up the majority of our sample, the elicited voting intention obtained in this study is similar to other sample populations, such as those used by other opinion polling companies.

Likewise, the software used—iMotions in particular—has proven to be a sufficiently effective way to test the methodology and develop parametrised tools for analysing results.

In short, this type of experiment permits more detailed and complementary analy-ses than those based on more common techniques—such as surveys—for studying voting intention.

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