







Hate speech analysis as a function of ideology: Emotional and cognitive effects

Análisis del discurso de odio en función de la ideología:
Efectos emocionales y cognitivos

-  Dr. Natalia Abuín-Vences. Professor, Department of Applied Communication, Complutense University of Madrid (Spain) (nabuinve@ucm.es) (<https://orcid.org/0000-0002-4153-9390>)
-  Dr. Ubaldo Cuesta-Cambra. Full Professor, Department of Communication Theory and Analysis, Complutense University of Madrid (Spain) (ucuestac@ucm.es) (<https://orcid.org/0000-0001-7023-7132>)
-  Dr. José-Ignacio Niño-González. Associate Professor, Department of Communication Theory and Analysis, Complutense University of Madrid (Spain) (josenino@ucm.es) (<https://orcid.org/0000-0001-6940-2399>)
-  Carolina Bengochea-González. Assistant Professor, Department of Communication Theory and Analysis, Complutense University of Madrid (Spain) (cbengoch@ucm.es) (<https://orcid.org/0000-0003-2250-160X>)

ABSTRACT

Hate speech is a major problem, especially in the political environment, where it generates polarization and social conflict. There are no experimental laboratory studies that have analyzed the mechanisms of action of hate speech using biometric records to evaluate the implicit negative emotion caused by these discourses, despite the essential importance of emotion in this problem. This work investigates the interaction between the ideology of the source and the audience (progressive vs. conservative) and the type of message (hate vs. non-hate) on cognitions (perception of the veracity of the message and the source) and negative emotion (biometric and self-reported). Biometric emotion was assessed by recording heart rate variability and electrodermal response. The results highlight the importance of evaluating implicit biometric responses that reveal inaccessible data with other methodologies: conservatives show more emotion in their biometric records than in self-reported ones. With these measures, hate desensitization effects are also detected in both audiences. With self-reported measures, more negative emotion is detected in progressive audiences only when the source is contrary to their ideology; on the other hand, conservatives show less negative emotion in all cases. These results are interpreted as a consequence of normative pressure and endogroup cognitive biases.

RESUMEN

El discurso de odio constituye un importante problema, especialmente en el entorno político, donde genera polarización y conflicto social. No existen trabajos experimentales de laboratorio que hayan analizado sus mecanismos de acción empleando registros biométricos para evaluar la emoción negativa implícita provocada por estos discursos, a pesar de la importancia esencial de la emoción en este problema. El objetivo de este trabajo es investigar, en una muestra universitaria, la interacción entre la ideología del emisor y el receptor (progresista vs. conservador) y el tipo de mensaje (odio vs. no-odio) sobre las cogniciones (percepción de credibilidad del mensaje y del emisor) y la emoción negativa (biométrica y auto-informada). La emoción biométrica se evaluó mediante registros de la variabilidad intercardíaca y la respuesta dermoeléctrica. Los resultados destacan la importancia de evaluar las respuestas biométricas implícitas que revelan datos inaccesibles con otras metodologías: los conservadores muestran mayor emoción en sus registros biométricos que en los auto-informados. También se detectan, con estas medidas, efectos de desensibilización del odio en ambas audiencias. Con medidas auto-informadas, se detecta mayor emoción negativa en las audiencias progresistas solo cuando el emisor es contrario a su ideología. En cambio, los conservadores manifiestan menor emoción negativa en todos los casos. Se interpretan estos resultados como consecuencia de la presión normativa y de sesgos endogrupales de conformidad.

KEYWORDS | PALABRAS CLAVE

Hate speech, implicit emotion, ideology, neuro communication, credibility, GSR.
Discurso de odio, emoción implícita, ideología, neurocomunicación, credibilidad, GSR.



1. Introduction and state of the art

In recent years, social networking sites have functioned as amplifiers (Colleoni et al., 2014) of more radical views than face-to-face interaction, enabling hate speech to infiltrate political discourse through these digital media. Likewise, it seems that this escalation in hate speech is accompanied by a higher prevalence of this type of crime on the streets: 1,598 in 2018, 1,706 in 2019, and 1,401 in 2020 (the decline during this year was due to home confinement and mobility restrictions resulting from the COVID-19 pandemic (Ministerio del Interior, 2018; 2019; 2020). Hate speech models the ideology of recipients with like-minded ideas, aiming to reaffirm social identity and setting the difference with other social groups resulting in the phenomenon of desensitization, increasing prejudice, and prompting avoidance of the subjects targeted by hate, potentially triggering violent acts.

Socially, the problem seems to be increasing, so research in this field is growing and providing new ways to understand and behave. Thus, research on homophobic behaviors through allocation matrices developed by Fasoli et al. (2014) provided important new avenues of work (e.g. on discrimination and resource allocation). Furthermore, Saha et al. (2018) formulated machine learning models for the detection of gender-based violence on social media platforms that enable the screening of hate messages using algorithms.

In this paper we also try to bring new perspectives to this area of study: we seek to analyze the emotional impact of hate speech in young university students according to their ideology, using new models and tools derived from neuro communication for the evaluation of the emotional impact. More specifically, the study examines whether an ideology aligned with the subject who utters the speech interacts with this type of messages and whether they are perceived as hate or, on the contrary, when the individual who delivers the speech has ideas aligned with those of the receiver, a desensitization phenomenon is produced, which causes the individual to normalize this discourse, increasing its persuasive capacity.

1.1. Hate speech, social identity, and ideology

Delgado and Stefancic (1995) defined hate speech as a public, conscious, and deliberate statement aimed at denigrating a group of people. In this sense, in his pioneering work Tajfel (1978) indicated that the configuration of social stereotypes is characterized by the need to highlight the perceived similarities between members of the same group or social category and to emphasize the differences with different groups or categories, frequently denigrating the opposing group.

Billing and Tajfel (1973) concluded that group construction and intergroup behavior occurred as a result of social categorization processes, which activate a social identity that triggers behaviors related to endogroup favoritism. In fact, social identity is the psychological driver of intergroup behavior, which is based on a social categorization mechanism that triggers a social comparison process. As identification with the in-group increases, one moves from the interpersonal to the intergroup extreme (Canto & Moral, 2005). This pushes the individual to search for and accentuate a positive differentiation in favor of his group when compared to others (Tajfel & Turner, 1979). This theory would help to explain that the targets of hate speech are other identity groups since it explains prejudice, discrimination, and intergroup relations by resorting to social categories where certain social identities are reaffirmed. In this line, Leets (2002) indicates that hate speech intends to denigrate a given target based on perceived differences.

Leader-Maynard and Benesch (2016) argue that both this discourse and the dangerous ideology that promotes it constitute a real risk of turning into crimes and attacks, so it is necessary to monitor and combat all hate speech given its dangerousness. As early as 1954, Allport (1954) indicated that verbal expressions of prejudice, which he called antilocutions, can lead to avoidance of the target group, discrimination, physical attack, and extermination. A clear example of this scale is the Nazi extermination, which began by singling out a particular group and facilitated its isolation and subsequent elimination (Bilewicz & Soral, 2020). In this sense, we can state that there is considerable consensus among scholars and international actors that surrounding ideologies and discourse play a fundamental role in the escalation of violence (Leader-Maynard & Benesh, 2016).

Likewise, and as indicated by Atienza-Cerezo and van-Dijk (2010), social identities are not innate, but are acquired from childhood, although it is true that they gradually change and transform through

discourse and other forms of interaction. Moreover, discourse aimed at promoting a given social identity involves underlying ideological components that can create prejudice towards certain groups (Atienza-Cerezo & van-Dijk, 2010). This suggests that different ideologies contribute to the configuration of social identities that coexist in society and do so through discourse. Thus, the relationship between discourse and ideology has long been a subject of theoretical reflection in different scientific disciplines such as linguistics, philosophy, history, political theory, and social theory (Leader-Maynard & Benesh, 2016). However, it generally lacks theoretical clarity in the contemporary literature on mass violence. This is highly relevant, as discourse and ideology are intrinsically related.

Following recent trends in the study of ideology in the social sciences, we conceptualize ideology broadly, defining it as a distinctive system of normative ideas, typically shared by members of groups or societies, that underpin their understanding of the world and guide their political behavior (Leader-Maynard & Benesh, 2016). As systems of ideas, ideologies are stored in the memory, providing cognitive resources for thought processes, including decision-making, and thus shaping individual behavior. Each person's ideology is unique, but social scientists also analyze group ideologies: analytic constructs that describe important similarities between group members' personal but heterogeneous ideologies (Leader-Maynard & Benesh, 2016).

Ideologies can also acquire important social dimensions by being embedded in institutions and recognized in political discourse. There is also evidence that hatred fuels political intolerance, defined as the support or willingness to denounce basic democratic values and equal rights of people belonging to a defined out-group in a particular society (Gibson, 2006), and is considered one of the most problematic phenomena in democratic societies. Moreover, in today's informational contexts, different types of discourse such as anti-vaccine, hate speech, negationism, and polarization, contribute to creating strong social unrest and hindering public health policies, which is especially relevant in cases such as the COVID-19 pandemic (Picazo-Sánchez et al., 2020). To study the emotional effects of hate speech in this context of polarization and political intolerance, the stimuli used in this research involved two political figures that provoke socio-political polarization (Olaz-Capitán & Ortiz-García, 2021): Pablo Iglesias and Santiago Abascal.

1.2. Exposure to hate speech, populism, desensitization, and selective perception

When we speak of discourse, we refer to any act of human communication, not only in the form of verbal discourse but also to non-verbal communication such as images, gestures, music, rituals, among others. Ideologies are communicated through discourse and, consequently, they are constructed and altered through discourse. They are also produced through an individual's thinking, but genuinely creative thinking is arduous. Most people avoid it most of the time, and instead appropriate ideas they glean from social discourse (Leader-Maynard & Benesh, 2016).

Individuals' continued exposure to such messages produces the phenomenon of desensitization: after an initial physiological and affective (negative) arousal, individuals gradually learn to ignore these messages and become desensitized. The General Model of Aggression outlined by Carnagey et al. (2007) explains how these physiological responses generate cognitive and affective outcomes that could lead to increased aggressive behavior and a decreased likelihood of helping victims. Desensitization processes observed at lower physiological levels (decreased heart rate and decreased skin conductance) reflect the extinction of negative emotional reactions towards violence associated with: decreased perception of the seriousness of the aggression decreased attention to violent events, decreased sympathy for victims of violence, increased belief that violence is normative, and decreased negative attitudes towards violence. Along the same lines, Soral et al. (2018) conducted several experiments that demonstrated that the greater the desensitization of the individual towards hate speech, the greater the persuasive capacity of the message and the prejudice towards the group targeted by hatred. In short, the individual becomes desensitized, normalizes hate speech, and transforms it into resentment, increasing prejudice and violence towards the subjects of hate.

Likewise, it is important to consider that when speakers delivering hate speech display traits such as aggressiveness, shyness, or fear, this affects their credibility (Cole & McCroskey, 2003), which becomes more pronounced in the case of a political figure delivering the message. Thus, the deployment of

aggressive persuasive strategies negatively affects the credibility of the message, which is perceived more negatively (Nau, 2012).

In this sense, it should be emphasized that hate speech feeds political intolerance, defined as the support or willingness to denounce basic democratic values and the equal rights of people belonging to a defined out-group in a particular society (Gibson, 2006). This is considered one of the most problematic phenomena in democratic societies. Hence the importance of analyzing the emotions it provokes, how individuals perceive this type of message and how ideology influences resulting emotions and perceptions. Desensitization to violence and hatred has been widely studied in the field of videogames (Bermejo-Berros & Soto-Sanfiel, 2015), but there is very little scientific evidence derived from experimental work in the case of political discourse in the media.

On the other hand, “selective perception bias” favors the positive evaluation of the discourse by senders with ideological affinity and the rejection of ideologically opposed discourse, especially in the field of political communication (Paz-García et al., 2020). These phenomena are causing an intense political polarization often accompanied by emotional reactions that are more linked to the sender’s profile than to the discourse itself. Some authors interpret these psycho-social mechanisms within the framework of “post-truth theories” (Waisbord, 2018).

Moreover, the elaboration likelihood model has demonstrated the importance of peripheral aspects in understanding the persuasive effectiveness of a message (Petty et al., 1983; Paredes et al., 2021). In the field of political communication, peripheral processing plays a very important role, given that receivers are not usually motivated to exert the effort to process through the central route (Marañón-Lazcano, 2015). In this sense, this model would confirm the importance of cognitive biases related to selective perception, as well as theories of intergroup biases, conflict, and prejudice (Crawford & Brandt, 2020). These theories analyze related but different mechanisms, such as desensitization, processing type, cognitive biases of selective perception, intergroup biases or polarization, and populism. However, all of them agree in proposing a likely result when analyzing political discourse mediated by a highly polarized and ideologically defined speaker: the cognitive and emotional effects provoked by hate messages will not depend so much on the content of the discourse as on the ideological affiliation of the receiver with that of the sender. Accordingly, this paper proposes the following hypotheses:

- Hypothesis 1: The cognitive and emotional effects triggered by discourse (hate vs. neutral) delivered by highly polarized senders will depend on their ideological affinity with the receiver
- Hypothesis 2: These effects will also display interaction between the main repeated measures factor (message type) and the grouping factor (ideology).

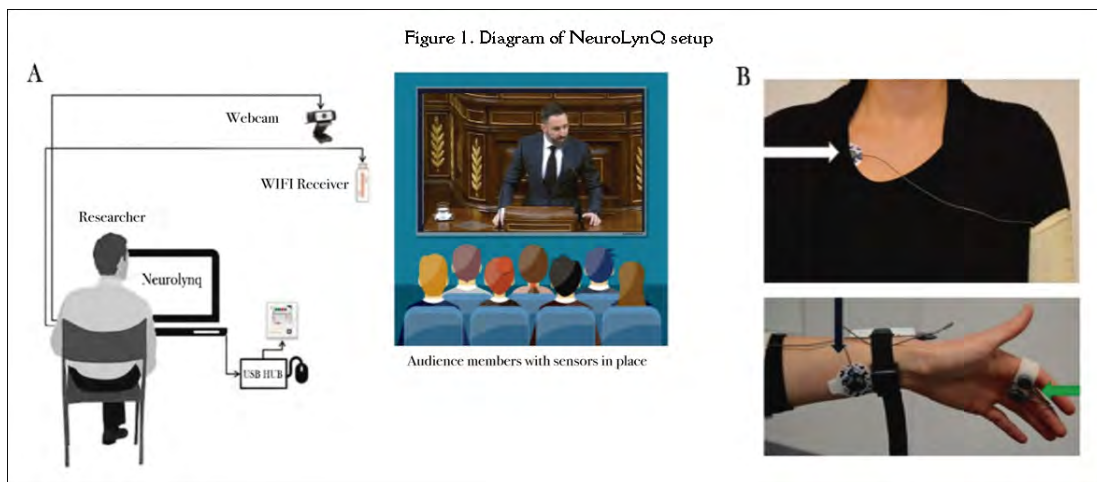
2. Material and methods

2.1. Material and instruments

This research aims to analyze the cognitive and emotional effects of the message. In this sense, there is strong empirical evidence that shows that the “perceived truthfulness” of both the sender and the message is among the most important cognitive effects (Hovland et al., 1953). The assessment of these variables has been shown to be very effective using traditional Likert-type self-report scales (Woodruff & Cashman, 1993). However, the assessment of emotion elicited by political speech has been controversial, since self-reports are often unreliable. This is due to the emotions that are produced implicitly, and the subjects’ insufficient awareness of the emotion elicited by the situation since it is produced at a pre-conscious level (Smith, 2020). This methodological difficulty has been a major problem for the objective study of emotional processes. However, neuro communication techniques are now available, making it possible to evaluate these emotions using highly accurate and valid biometric measures. In this area, the pioneering work of Cline et al. (1973) analyzed young people’s “desensitization” to broadcasts of violence on television using a methodology based on the measurement of autonomic responses (electrodermal skin response and heart rate variability). However, this line of research has not been developed, due to the enormous technical difficulties that existed to evaluate both variables together, to synchronize them adequately with the stimulus presented, and to carry it out in a non-invasive environment. In this study, we have evaluated the biometric emotional response using the NeuroLynQ tool, which allows the simultaneous collection of

biometric data from participants by measuring emotional arousal through electrodermal activity (EDA) and heart rate variability (HRV). Heart rate variability (HRV) is the result of interactions between the autonomic nervous system (ANS) and the intrinsic heart function mechanism. HRV is based on the balance between the sympathetic nervous system (SNS) and the parasympathetic nervous system (PNS), and it is one of the most effective measures of emotion (Fonfría et al., 2011).

Thus, the measurement of cardiac variability not only provides relevant information about emotional changes, but it is also the variable that allows validating the values obtained in the measurement of the electrodermal response avoiding false positives due to internal homeostasis processes (Tarnowski et al., 2018). This occurrence of false positives in the assessment of emotion by EDA is, unfortunately, very frequent, limiting the validity of the measurement. Consequently, the use of both measures simultaneously (HRV and EDA) is a dramatic advance in the objective assessment of subjects' emotions. Figure 1 shows a diagram of setup A, which includes both the computer with NeuroLynQ and the WIFI receiver with a webcam to record the session, and setup B for each participant, which includes both electrodes for heart rate (white arrow) and galvanic response (black and green arrow).



2.2. Methods

A multigroup repeated measures design was used. The “within-group” independent variable (repeated measures) was “type of speech/video” with four experimental conditions: Video-Iglesias-Hate, Video-Iglesias-No-Hate, Video-Abascal-Hate, Video-Abascal-No-Hate). The independent “between-group” (grouping) variable was “ideology type”. The dependent variables were measures of message and sender perception, as well as biometric and self-report measures of emotion. A group of 39 volunteer participants (31 females and eight males with a mean age of 21) at the undergraduate level were randomly recruited for the experiment. Previous work has validated that this sample size allows reliable conclusions to be reached (Cuesta et al., 2020). They were informed that they would be watching videos, but no information was provided about the purpose. They were then presented with a series of four 20-second videos featuring two Spanish politicians. Two of the videos featured Pablo Iglesias and the other two featured Santiago Abascal. Each politician was featured in one video delivering a neutral speech (about global politics) and one video delivering a hate speech (about immigration and inter-party power struggles). The videos were practically identical: they lasted 20 seconds and took place in the Spanish Parliament. These videos were designed by three experts in political communication, specifically, three political communication university professors with experience in defining these types of messages and procedures. A pilot study carried out with 15 university students confirmed the validity of the stimuli.

Before watching the videos, participants were given a questionnaire in which they indicated their political ideology on a scale from one (very conservative) to seven (very progressive). The videos were then presented to them, pausing after each one for participants to complete a 7-point Likert-type questionnaire

where they reported on the degree of credibility of the message and of the speaker, as well as on the “anger” (emotion) produced by the video. This type of scale has been previously used in similar research, where they have demonstrated its validity for this type of study (Cuesta et al., 2012). The order of the videos was randomized. The session was recorded with a webcam that sent the feed to a computer that collected the biometric signals, in order to identify the intervals where the videos were shown and synchronized with the biometric signals. The participants were finally informed about the purpose of the study following the ethical protocols validated by the university.

2.3. Data analysis

To compare the percentage of emotional response in the biometric variables between videos, a one-factor ANOVA (type of speech) was performed, followed by a Turkey post hoc test and Q-test to find out the effect between different stimuli. The significance level was set at $p \leq 0.05$. In addition, the graphs provided by the NeuroLynQ tool where emotion levels are reflected as a function of the type of video and the ideological affiliation of the recipient were analyzed. For this purpose, the political affiliation variable was dichotomized (1=conservative, 2=progressive) based on the extreme values of the scale. The results of the dependent variables, perception of the truthfulness of the sender and the message, as well as self-referred emotion (anger), were also subjected to analysis of variance and post hoc tests.

3. Analysis and results

Figure 2 shows how subjects holding a conservative ideology (red line) show a significantly lower level of emotion when confronted with Santiago Abascal’s two videos (hate and non-hate) than subjects holding a progressive ideology (blue line). However, their emotion levels increase during the two statements of Pablo Iglesias, although to a much lesser extent when confronted with Pablo Iglesias’ hate speech. This decrease in emotion in the face of the hate message coincides with the interpretation of desensitization theory. The emotional pattern presented by subjects whose ideology is progressive is very different: they show very similar elevated indices when faced with the four types of discourse, with a slight decrease in emotion when faced with Abascal’s hate condition. As in the previous case, these data coincide with the interpretation of desensitization theory.

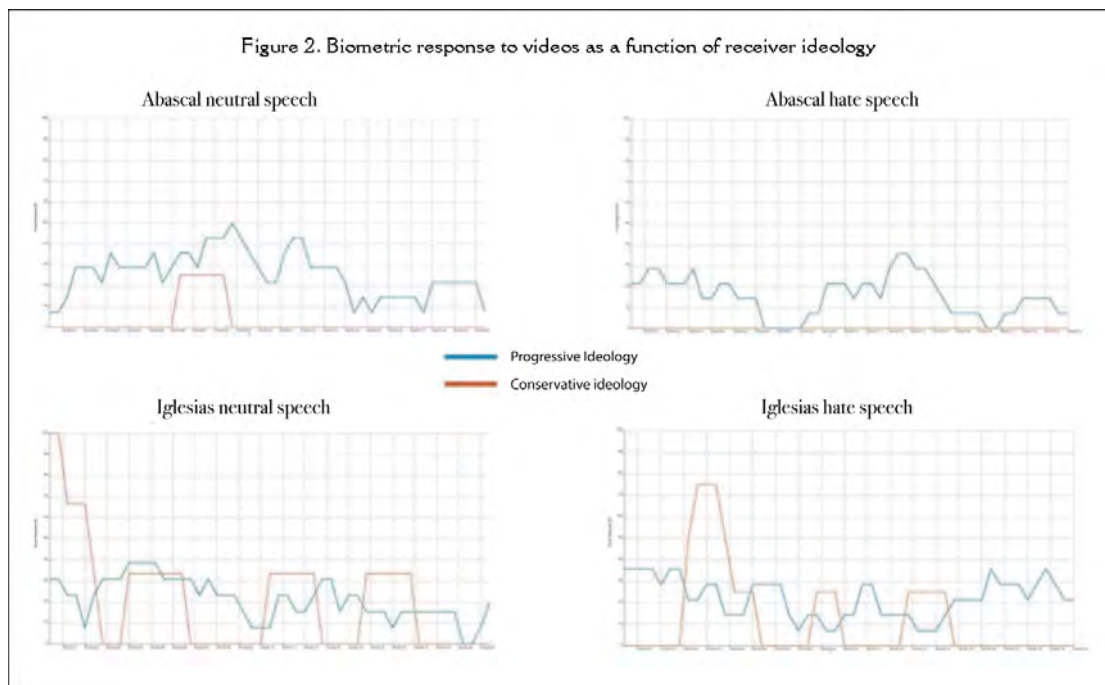
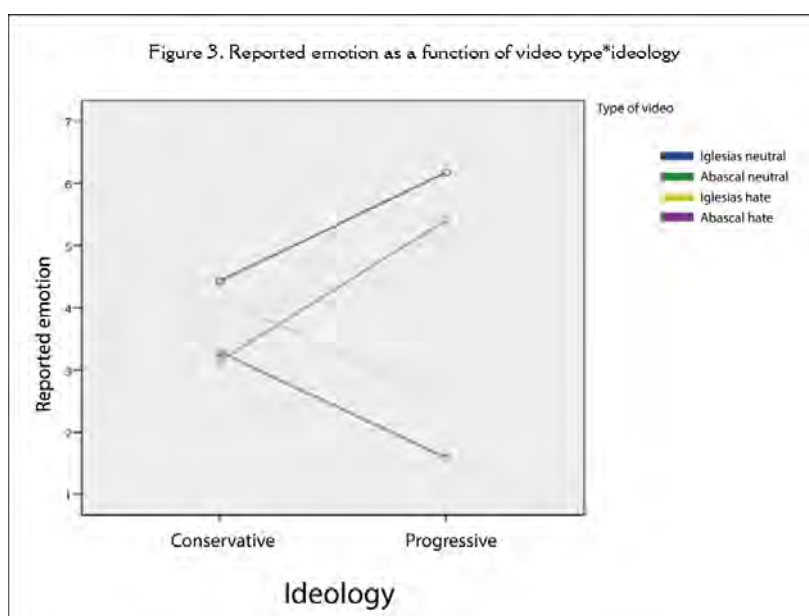


Table 1 shows the mean values and variances for these results. This confirms the data presented in Figure 2: the mean value of biometric emotion for the progressive group, in general (21.17) was higher than the level for the conservative group (9.27). The analysis of variance performed using the repeated measures factor “type of video/message” as an independent variable yielded a significant main effect ($p < .000$). Mean differences post hoc tests showed statistically significant values for the conservative group ($p < .000$): the conservative group shows, in general, less biometric emotion than the progressive group (9.27) but it increases significantly compared to the progressive sender (22.43 Iglesias-neutral and 11.76 Iglesias-hate). The pattern for the progressive group is very clear: their emotional level is much higher in general (21.17), and only shows a slight decrease in the “Abascal-hate” message (15.34). In summary: conservatives generally display less biometric negative emotion except when the sender is contrary to their ideology and delivers a hate message. Progressives show more emotion in general, but especially when it comes to the “Abascal-hate” condition.

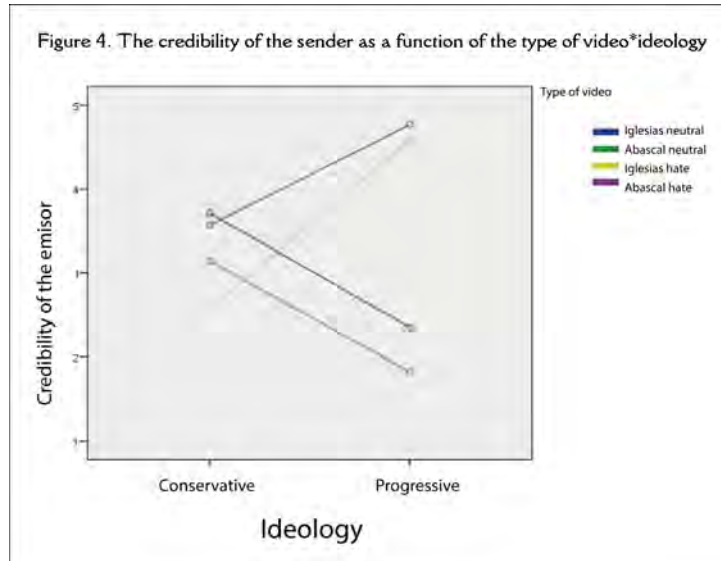
Table 1. Means and variances of biometric emotion for the groups (progressive vs conservative) as a function of video type

Progressive		
Groups	Mean	Variance
Iglesias neutral	21.28	94.45
Abascal neutral	25.36	123.20
Iglesias hate	22.69	99.37
Abascal hate	15.34	94.06
Total	21.17	
Conservative		
Groups	Mean	Variance
Iglesias neutral	22.43	772.15
Abascal neutral	2.88	65.04
Iglesias hate	11.76	433.82
Abascal hate	0	0
Total	9.27	

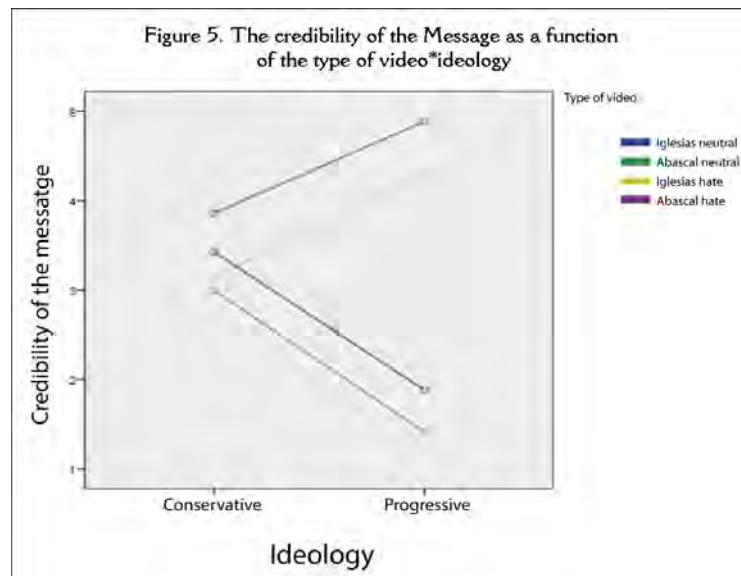
An analysis of variance was then performed using the independent variable “type of video” as a repeated-measures factor and the independent variable “ideology” as a grouping factor. In this case, however, the dependent variable was “reported emotion” (dichotomized from the continuous scale). The analysis of variance yielded significant interaction of both main effects of video type ($p < .001$) and video*ideology interaction effects ($p < .003$). Figure 3 presents the graph where these effects can be seen for the dependent variable “reported emotion”.



This figure shows that the results are similar, although not identical to those found with the “biometric emotion”: subjects with a conservative ideology tend to present lower and more stable mean values of emotion. Thus, they present very similar values for the four videos: 3.14; 3.29; 4.14; 4.42. These values do not differ from a statistically significant value ($p > .10$), which means that for conservative subjects there is no difference either between the type of message (hate vs. non-hate) or between the type of sender (Abascal vs. Iglesias).



For the progressive group, the pattern is different: the emotion values are low, 1.59 and 2.53 for Iglesias' discourse non-hate and hate, respectively (but the differences are not significant $p < .10$) and very high for Abascal's discourse: 5.41 and 6.18 for Abascal's non-hate and hate respectively (neither have significant differences between them $p > .10$). This means that for progressive subjects what is relevant is not the type of message (hate vs. non-hate) but the type of speaker: Abascal provokes anger, regardless of his message; Iglesias does not provoke anger, also regardless of his message.



Finally, an analysis of variance was performed using the independent variable “type of video” as a repeated-measures factor and the independent variable “ideology” as a grouping factor, but this time using “credibility of the message” and “credibility of the sender” as dependent variables. The analysis of variance yielded significant interaction of both main effects of video type ($p < .001$) and video*ideology interaction effects ($p < .003$). Figures 4 and 5 below present the results of this analysis of variance showing both main and interaction effects.

As can be seen in the two figures, the pattern of behavior of both dependent variables is identical to that observed for the variable “provoked emotion”: among subjects of conservative ideology, neither the type of discourse nor the type of sender has an influence, while among progressive subjects, when the speaker is Abascal, both variables (credibility of the message and the sender) decrease, and when the speaker is Iglesias, both increase. The statistical significance values are also identical to those found for the dependent variable “reported emotion”. The inclusion of “gender” as a co-variable in the analysis of variance showed that its effect does not affect the conclusions.

4. Discussion and conclusions

One of the most important results of this study demonstrates the importance of the polarization of audiences according to conservative vs. progressive ideologies. In this work, we have analyzed the emotional impact of hate speech in young university students according to their ideology, analyzing if an ideology akin to the speaker interacts with these types of messages and they are perceived as hate or if, on the contrary, when the speaker has ideas that are similar to those of the receiver, a desensitization phenomenon occurs, which causes the individual to normalize the speech, thus increasing its persuasive capacity.

In this sense, the first hypothesis put forward is in line with other similar empirical studies: “The cognitive and emotional effects triggered by discourse (hate vs. neutral) delivered by highly polarized senders will depend on their ideological affinity with the receiver”. The research results have partially confirmed the hypothesis: ideology strongly modulates the cognitive (perceived truthfulness of the sender and the message) and emotional (anger and biometric activity) effects of the message. In this sense, the results of this research provide a substantial contribution since the interaction hypothesis is also partially confirmed: conservative subjects experience lower levels of reported emotion towards both political leaders, regardless of ideological bias. On the other hand, progressive subjects experience higher levels of reported emotion towards the conservative speaker and lower levels of reported emotion towards the speaker of their own ideology.

Our study provides several important contributions to existing research. First, there is an unexpected interaction effect, since “message type” asymmetrically interacts with ideology. In other words, “message type” only interacts with “sender type” among progressive subjects. Moreover, the interaction does not occur due to the variable “hate”, but due to the variable “Iglesias”, meaning that it is at experimental treatment levels 1 (non-hate Iglesias) and 3 (hate Iglesias) of the “message type” variable that the highest levels of reported emotion appear, but only among progressive subjects (Figure 3).

Secondly, the results related to the dependent variables degree of “truthfulness of the message” and “truthfulness of the sender” present a profile in line with the previous ones: among conservative subjects, neither the type of message (hate vs. non-hate) nor the type of sender (Abascal vs. Iglesias) modifies the variables. However, among progressive subjects, the message and the sender are perceived as more credible when it is consistent with their progressive ideology (Figures 4 and 5). These results are of great interest: they confirm previous literature indicating that the higher the negative emotion, the lower the credibility of the sender and the message, thus providing greater robustness and confirming previous data regarding the interaction “type of message*ideology”.

Thirdly, this research contributes novel data to the scientific literature on hate messages, ideology, and emotion: the biometric study of emotions. Again, the results are of great interest: conservatives show, in general, less biometric negative emotion, except when the sender is contrary to their ideology and delivering a hate message. Progressives show more biometric negative emotion in general, but especially when it comes to the “Abascal-hate” condition.

These data seem to indicate the following. In essence, the patterns of biometric and reported negative emotion essentially agree. In this sense, there is less overall activity in the conservative group and more in the progressive group, especially when the ideology of the sender does not coincide. However, there are some relevant differences between the two types of measures: among conservatives, the progressive speaker elicits some biometric emotion, which is “denied” in self-reported emotion. Both the conservative and progressive groups experience “less” negative emotion with hate messages than with neutral ones, which is consistent with the interpretation of desensitization theory (Soral et al., 2018). Thus, biometric emotion seems to be more reliable when assessing ideology*message interactions. As previous researchers have highlighted, biometric measures are more reliable when assessing topics where the “politically correct” bias exerts strong pressure (Cuesta et al., 2021).

As a whole, this research confirms that the “selective perception bias” favors the positive evaluation of the discourse by speakers with whom there is ideological affinity and the rejection of discourse by speakers whose ideology is in conflict, especially in the field of political communication (Paz-García et al., 2020) and with a certain independence of the degree of hate transmitted, which would confirm the importance of the cognitive biases of selective perception, as well as the theories on intergroup biases, conflict, and prejudice (Crawford & Brandt, 2020). This research has several limitations to be resolved in future work. For instance, it is necessary to increase the sample size and representativeness, which will allow for the study of gender, age, and social class differences. Experimental procedures of non-repeated measures should also be tested. Finally, it is necessary to work with hate messages at different levels and categories in the future, also manipulating the type of senders and their ideological affiliations.

Authors' Contributions

Idea, U.C., N.A.; Literature review (state of the art), N.A.; Methodology, U.C.; Data analysis, C.B.; Results, U.C.; Discussion and conclusions, U.C.; Writing (original draft), J.I.N.; Final revisions, J.I.N.; Project design and funding agency, N.A.

Funding Agency

This research has been carried out as part of two projects: 1) MINECO PID2019-105613GB-C31 “Cartography of hate speech in Spain from the field of Communication: sports, bullfighting and politics”, financed by the Ministry of Economy and Competitiveness; and 2) MINECO RTI2018-097670-B-I00 “Sentiment and popularity of pro- and anti-vaccine messages in social networks: analysis of explicit and implicit responses using EEG, GSR, facial recognition and eye-tracking”, funded by the Ministry of Economy and Competitiveness (Spain).

References

- Allport, G.W. (1954). *The nature of prejudice*. Addison-Wesley. <https://bit.ly/33EVBRX>
- Atienza-Cerezo, E., & Van-Dijk, T.A. (2010). Identidad social e ideología en libros de texto españoles de Ciencias Sociales. *Revista de Educación*, 353, 67-106. <https://bit.ly/3DOD263>
- Bermejo-Berros, J., & Soto-Sanfiel, M.T. (2015). Efectos psicofisiológicos longitudinales de desensibilización a la violencia en videojugadores. In I. M. de Salazar-Muñoz, & D. Alonso-Urbano (Eds.), *Videojuegos: Diseño y sociología* (pp. 93-109). Editorial ESNE. <https://bit.ly/3oYzYA2>
- Bilewicz, M., & Soral, W. (2020). Hate speech epidemic. The dynamic effects of derogatory language on intergroup relations and political radicalization. *Political Psychology*, (51), 3-33. <https://doi.org/10.1111/pops.12670>
- Billig, M., & Täjfel, H. (1973). Social categorization and similarity in intergroup behaviour. *European Journal of Social Psychology*, 3(1), 27-52. <https://doi.org/10.1002/ejsp.2420030103>
- Canto-Ortiz, J., & Toranzo, F. (2005). El sí mismo desde la teoría de la identidad social. *Escritos de Psicología-Psychological Writings*, 1(7), 59-70. <https://doi.org/10.24310/epsiesepsi.vi1.13399>
- Carnagey, N.L., Anderson, C.A., & Bushman, B.J. (2007). The effect of video game violence on physiological desensitization to real-life violence. *Journal of Experimental Social Psychology*, 43(3), 489-496. <https://doi.org/10.1016/j.jesp.2006.05.003>
- Cline, V.B., Croft, R.G., & Courier, S. (1973). Desensitization of children to television violence. *Journal of Personality and Social Psychology*, 27(3), 360-365. <https://doi.org/10.1037/h0034945>
- Cole, J.G., & McCroskey, J.C. (2003). The association of perceived communication apprehension, shyness, and verbal aggression with perceptions of source credibility and affect in organizational and interpersonal contexts. *Communication Quarterly*, 51(1), 101-110. <https://doi.org/10.1080/01463370309370143>
- Colleoni, E., Rozza, A., & Arvidsson, A. (2014). Echo chamber or public sphere? Predicting political orientation and measuring political homophily in Twitter using big data. *Journal of Communication*, 64(2), 317-332. <https://doi.org/10.1111/jcom.12084>
- Crawford, J.T., & Brandt, M.J. (2020). Ideological (A)symmetries in prejudice and intergroup bias. *Current Opinion in Behavioral Sciences*, 34, 40-45. <https://doi.org/10.1016/j.cobeha.2019.11.007>

- Cuesta, U., Canel, M.J., & Gurrionero, M. (2012). *Comunicación y terrorismo*. Tecnos. <https://bit.ly/3GJq7nA>
- Cuesta, U., Niño, J.I., & Martínez, L. (2021). *Viaje al fondo del neuromarketing*. Fragua. <https://bit.ly/3q4ZQcz>
- Cuesta, U., Niño, J.I., Martínez, L., & Paredes, B. (2020). The neurosciences of health communication: An fNIRS analysis of prefrontal cortex and porn consumption in young women for the development of preventive health programs. *Front Psychol*, 11, 1-16. <https://doi.org/10.3389/fpsyg.2020.02132>
- Delgado, R., & Stefancic, J. (1995). Ten arguments against hate-speech regulation: How valid symposium: Political correctness in the 1990s and beyond. *The Northern Kentucky Law Review*, 23, 475-490. <https://bit.ly/3l1hZpi>
- Fasoli, F., Maass, A., & Carnaghi, A. (2014). Labelling and discrimination: Do homophobic epithets undermine fair distribution of resources? *British Journal of Social Psychology*, 54(2), 383-393. <https://doi.org/10.1111/bjso.12090>
- Fonfría, A., Poy, R., Segarra, P., López, R., Esteller, A., Ventura, C., Ribes, P., & Moltó, J. (2011). Variabilidad de la tasa cardíaca (HRV) y regulación emocional. *Fòrum de Recerca*, 16, 903-914. <https://bit.ly/3ur5tUq>
- Hovland, C.I., Janis, I.L., & Kelley, H.H. (1953). *Communication and persuasion; psychological studies of opinion change*. Yale University Press. <https://bit.ly/33u0SHv>
- Leader-Maynard, J., & Benesch, S. (2016). Dangerous speech and dangerous ideology: An integrated model for monitoring and prevention. *Genocide Studies and Prevention: An International Journal*, 9(3), 70-95. <https://doi.org/10.5038/1911-9933.9.3.1317>
- Leets, L. (2002). Experiencing hate speech: Perceptions and responses to anti-semitism and antigay speech. *Journal of Social Issues*, 58(2), 341-361. <https://doi.org/10.1111/1540-4560.00264>
- Marañón-Lazcano, F.D.J. (2015). *El spot como herramienta de persuasión política. Análisis del impacto de la publicidad política en la desafección política a través de la ruta central y periférica*. [Doctoral Dissertation, Universidad Autónoma de Nuevo León]. <https://bit.ly/3ywMdxP>
- Ministerio del Interior (Ed.) (2018). *Informe 2018 sobre la evolución de los delitos de odio en España*. <https://bit.ly/3ygSkzj>
- Ministerio del Interior (Ed.) (2019). *Informe 2019 sobre la evolución de los delitos de odio en España*. <https://bit.ly/3ygSkzj>
- Ministerio del Interior (Ed.) (2020). *Informe 2020 sobre la evolución de los delitos de odio en España*. <https://bit.ly/3ygSkzj>
- Nau, C. (2012). *The impact of gender and verbal aggressiveness on speaker and message perception in political speeches*. International Communication Association Conference. <https://bit.ly/3lRxnjc>
- Olaz-Capitán, A.J., & Ortiz-García, P. (2021). Polarización afectiva sobre las élites políticas. *Más Poder Local*, 45, 41-55. <https://bit.ly/3ikHelM>
- Paredes, B., Martínez, L., Cuesta, U., Briñol, P.A., Petty, R.E., & Moreno, L.M. (2021). The role of meta-cognitive certainty on pornography consumption. *Psicothema*, 33(3), 442-448. <https://doi.org/10.7334/psicothema2021.8>
- Paz-García, A.P., Brussino, S., & Alonso, D. (2020). Efectos del tratamiento periodístico sesgado ideológicamente en el procesamiento cognitivo de información política. *Opinião Pública*, 26(2), 351-376. <https://doi.org/10.1590/1807-01912020262351>
- Petty, R.E., Cacioppo, J.T., & Schumann, D. (1983). Central and peripheral routes to advertising effectiveness: The moderating role of involvement. *Journal of Consumer Research*, 10(2), 135-146. <https://doi.org/10.1086/208954>
- Picazo-Sánchez, L., De-Frutos-Torres, B., & Gutiérrez-Martín, A. (2020). La COVID-19 en la prensa española. Encuadres de alarma y tranquilidad en las portadas de El País, El Mundo y La Vanguardia. *Revista de Comunicación y Salud*, 10(2), 355-384. [https://doi.org/10.35669/rcys.2020.10\(2\).355-384](https://doi.org/10.35669/rcys.2020.10(2).355-384)
- Saha, P., Mathew, B., Goyal, P., & Mukherjee, A. (2018). *Hateminers: Detecting hate speech against women*. <https://bit.ly/3q5kU2C>
- Smith, R. (2020). The three-process model of implicit and explicit emotion. *Neurosci Enduring Change*, 89(3), 25-55. <https://doi.org/10.1093/oso/9780190881511.003.0003>
- Soral, W., Bilewicz, M., & Winiewski, M. (2018). Exposure to hate speech increases prejudice through desensitization. *Aggressive Behavior*, 44(2), 136-146. <https://doi.org/10.1002/ab.21737>
- Tajfel, H. (1978). *Differentiation between social groups: Studies in the social psychology of intergroup relations*. Academic Press. <https://bit.ly/3p1TJXn>
- Tajfel, H., & Turner, J.C. (1979). An integrative theory of intergroup conflict. In *The social psychology of intergroup relations* (pp. 33-47). Brooks/Cole. <https://bit.ly/3m5BuhV>
- Tarnowski, P., Kołodziej, M., Majkowski, A., & Rak, R.J. (2018). Combined analysis of GSR and EEG signals for emotion recognition. *2018 International Interdisciplinary PhD Workshop (IIPHDW)*, (pp. 137-141). <https://doi.org/10.1109/IIPHDW.2018.8388342>
- Waisbord, S. (2018). The elective affinity between post-truth communication and populist politics. *Communication Research and Practice*, 4(1), 17-34. <https://doi.org/10.1080/22041451.2018.1428928>
- Woodruff, S.L., & Cashman, J.F. (1993). Task, domain, and general efficacy: A reexamination of the self-efficacy scale. *Psychological Reports*, 72(2), 423-432. <https://doi.org/10.2466/pr0.1993.72.2.423>