Negative Sentiment and Congressional Cue-Taking on Social Media

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ABSTRACT Congressional candidates regularly turn their frustration into posts on Facebook, fueling extreme partisanship and "echo-chamber" dialogue with their negative sentiment. In this research, we provide new evidence demonstrating the power of that negative sentiment to elicit more user engagement on Facebook across various metrics, illustrating how congressional candidates' use of negativity corresponds with greater negativity in public responses. To fully comprehend the impact of these online political messages, we use a dictionary-based computational approach to catalog the tone of US House of Representatives candidates' messages on Facebook and the user responses they elicit during the 2020 election. This research speaks to the power of elite rhetoric to shape political climates and pairs candidate strategies with user responses—contributing new insights into the mechanisms for voter engagement.

Facebook is under increased scrutiny for fueling a race to the bottom, in what many have described as a "cesspool" that stokes divisions.[1] Internal reports from Facebook show a prevalence of negative impacts on children and adults, sparking outcry at the far-reaching effects for a platform with 200 million users in the United States. However, although members of Congress chastise social media executives in congressional hearings, the platform remains a primary vehicle for campaign support. Candidates for Congress routinely turn to social media to promote their political brand, framing the political climate through different emotions and a tone that influences attitudes and participation (Brader 2006; Evans, Cordova, and Sipole 2014; Haenschen 2016; Valentino, Gregorowicz, and Groenendyk 2009). The persistence of Facebook campaigns, paired with decreasing levels of political trust and higher levels of party polarization, creates an information environment in which candidates can stoke divisions among online users. The appeals coming from politicians are overwhelmingly negative (Soroka, Fournier, and Nir 2019). Facebook whistleblower Frances Haugen testified before Congress that negative emotions can grow an audience on Facebook, which corroborates research that found that negativity spurs viewership (Ridout et al. 2015).

Because congressional candidates continue to ramp up the negative rhetoric on social media (Auter and Fine 2016; Evans, Cordova, and Sipole 2014; Gervais, Evans, and Russell 2020; Russell 2020), we explored the important implications of that negative sentiment for user engagement and the viral spread of emotions. Prior research on political advertising suggested limited mobilizing effects of negativity (Ansolabehere and Iyengar 1995). However, social media provides a new environment in which candidates can wield sentiment with greater success to motivate partisans and potential voters. Although there is variation in the public's response to partisan cues and appeals (Krupnikov and Bauer 2014; Weeks 2015), we offer new explanations for how the bevy of negative appeals that candidates make on Facebook motivates users in systematic ways that incentivize engagement and fuel the spread of negative content. Beyond the classic engagement features of "likes" and "shares," Facebook offers an additional interactive feature allowing users to assign specific emotional "reactions" to posts. This provides an important

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window to assess both the "supply side" of candidate appeals, in which specific types of politicians ramp up the negative rhetoric, and the "demand side," in which users can engage with candidates' rhetoric.

Our research reveals new evidence about the power of negative sentiment to not only go viral but also to motivate public engagement. More specifically, we show how congressional candidates use negativity to elicit more user interaction and facilitate greater responsiveness on Facebook. We used a dictionary-based approach to label 2020 US House of Representatives candidates' Facebook posts along with the user responses, or "reactions," that those negative appeals elicit. Our analysis suggests a complex picture of reactions to candidates' communication on Facebook, showing that negativity from politicians is associated with more likes, comments, and shares. Additionally, posts with negativity are more likely to elicit negative responses among users, meaning that politicians have the power to shape not only the message but also the emotional response.

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NEGATIVE RHETORIC AND ENGAGEMENT ON FACEBOOK

Emotions are woven into politics through the everyday norms of political communication, which gives political elites the opportunity to engage voters and build up or maintain support (Gadarian and Van der Vort 2018). Campaigns consistently facilitate an array of reactions from voters, but negative rhetoric has become more prominent—both in practice and in scholarship (Brader 2006; Gross and Johnson 2016; Lodge and Taber 2005; Marcus 2003; Valentino et al. 2011). Affective Intelligence Theory suggests that voter anger or anxiety can be activated by candidates seeking voters' attention, and candidates seeking to change the status quo will turn to negativity to gain an electoral advantage (Brader 2006; Marcus 2003). Negative appeals in the form of visuals also are used strategically to persuade voters; photographs and videos, for example, are becoming a mainstay of Facebook persuasive content (Albertson, Dun, and Gadarian 2020).

In addition to persuasiveness, evidence from field experiments reveal that negative sentiment can influence electoral participation and mobilization (Freedman and Goldstein 1999; Panagopoulos 2011), although this activation often is conditional on timing, context, and individual attributes of a candidate (Krupnikov and Bauer 2014). This suggests that negative information may be an important antecedent to participation, given that voters weigh it more heavily than positive information (Garramone et al. 1990), and negativity may be more likely to break through voters' persistent inattention (Soroka 2014). Beyond motivating action, negativity also can produce more emotional or affective responses that stay with voters over time and induce content sharing across social media (Berger and Milkman 2012). This emotional activation is particularly poignant when linked with social media networks designed to capitalize on the weak connections among users.

Congressional candidates increasingly are using social media as voter outreach tools and relying on Facebook and Google for their strategic communications (Kreiss and McGregor 2019). Data from the 2008 elections show that politicians' Facebook use strongly impacted the growth of political participation (Bode et al. 2014; Borah 2016). Tweets from political parties during the 2013 Italian elections suggest that emotional appeals, particularly negative ones, had positive impacts on vote intentions (Ceron and d'Adda 2016). Facebook gives users a way to make appeals, both logical and emotional, to other users (Bazarova and Choi 2014). Although the true nature of that interactivity is debatable, the potential for that engagement continues to draw candidates and followers together on social media. Candidates in the United States and abroad use Facebook to select information for voters and target messages based on their audience (Bond 2017; Waterson 2017). On Facebook, that audience is part of a self-selected network where information can be curated further for a unique audience. This highlights the importance of considering differing levels of positive and negative emotions across platforms that support variable levels of strong and weak ties among users (Bode et al. 2016; Waterloo et al. 2018).

SYSTEMATIC VARIATION IN POLITICAL RHETORIC AND ENGAGEMENT

The October 2021 release of the "Facebook Files" highlights the power of social media engagement by detailing, among other issues, the company's efforts to modify the tone of the platform—creating a ranking system to increase interactions and shape users' News Feeds.[2] Under this system, "likes" received 1 point each, reactions and shares received 5 points each, and comments received 15 or 30 points (depending on how "significant" they were) (Hagey and Horwitz 2021). The more points that a post received, the wider it spread—meaning that for political candidates, those engagements were linked directly to message spread. The intricacies of Facebook's News Feed algorithm illustrate the importance of understanding what fuels engagement and the type of posts that candidates can use to build support because norms reinforced on Facebook can spur user mobilization (Haenschen 2016).

The tone that candidates use online and the responses from users have implications beyond only the political "echo chamber," and that tone—even indirectly—shapes the political climate for campaigns. Because negativity has become a dominant feature of social media campaigns, the authors examined the impact of that negative rhetoric to elicit varying responses among users. To do so, we explored whether negative appeals are associated with more user engagement and if those user responses match the negative appeals by candidates in terms of sentiment. We expected that the

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Table 1

Facebook Post Frequency by Candidate Type

	Type (N Candidates)	Median	Mean	Minimum	Maximum
Incumbency	Incumbent (347)	221	322	1	2,820
	Non-Incumbent (349)	374	481	3	3,209
Gender	Female (244)	384	497	3	3,209
	Male (452)	243	350	1	2,820
Party	Republican (347)	266	378	1	2,383
	Democrat (349)	321	425	1	3,209
2020 District Competitiveness	Competitive (161)	435	503	24	2,234
	Non-Competitive (535)	261	371	1	3,209
	All Candidates (696)	297	402	1	3,209

negativity politicians share on Facebook is likely to spur engagement through likes and comments but, even more important for campaigns, that content is more likely to be shared. Additionally, the impact of that negativity is not only spread but also the specific types of reactions that users give to those posts, which fuels more negative reactions that shape the broader dialogue on Facebook and gives politicians agenda-setting power. Following are our negative-engagement hypotheses:

- H1: *Candidates are more likely to receive higher levels of public engagement (i.e., likes, shares, and comments) on Facebook posts with more negative sentiment.*
- H2: *Candidates are more likely to receive more negative reactions on Facebook posts with more negative sentiment.*

DATA AND METHODS

To test our hypotheses, we used CrowdTangle to collect all Facebook posts from the campaign accounts of 696[3] candidates who ran for Congress in the US House of Representatives in 2020, from January 3, 2019, to November 13, 2020 (N = 279,580 posts) (Macdonald, Russell, and Hua 2022). CrowdTangle[4] allowed us to track public content as well as interactions with that content (i.e., reactions, likes, comments, and shares). Although engagement data are imperfect and do not provide the entire picture of how candidates and users interact on social media, they do reveal important and valuable insights into how candidates use their Facebook platforms and how certain content performs on their pages.

Table 1 summarizes the statistics for post frequency by all candidates. Candidates were coded as an incumbent if they were elected in the 2018 midterms or in a special election before November 2020 and coded as a non-incumbent otherwise. Of the total candidates in our data, 347 were incumbents and 349 were challengers. We used scores from the 2020 Cook Report to label each district as competitive or non-competitive.[5] If the Cook Report labeled a district as likely Democrat/Republican, to lean Democrat/Republican, or a toss-up as of November 2, 2020, we considered the district to be competitive. Of the 435 districts in 2020, 89 were considered competitive using this benchmark.

The average candidate posted on Facebook 402 times (see table 1). We also observed candidate-level variation among our variables: the average non-incumbent posts more than the average incumbent; Democrats more than Republicans; women more than men; and those running in competitive districts more than those running in non-competitive districts, on average. Figures A1–A4 in the online appendix plot tweets over time for these groups.

DO NEGATIVE APPEALS RECEIVE MORE ENGAGEMENT?

Individuals pay more attention to negative information (Soroka 2012); therefore, how candidates integrate negative words into their Facebook posts has implications for engagement. We observed a high prevalence of posts with negative words in our data, which illustrates how candidates are regularly integrating negativity into their campaign messaging. To measure the use of negative sentiment and label negative posts, we used a dictionary approach. We measured candidates' reliance on emotional appeals with an emphasis on negative sentiment.

The dictionary used for our analyses was derived from the NRC Word–Emotion Association Lexicon (Mohammad and Turney 2013).[6] We labeled Facebook posts as negative using a keyword dictionary of words associated with negative valence. Previous work manually evaluated all words in the NRC negative-sentiment dictionary (k = 3,342 unigrams) to determine whether each word reasonably could be used in the political context of congressional campaigns to signal negativity (Hua and Macdonald 2020). This modified dictionary was used to label posts by calculating a frequency score of the number of emotion-associated words in each post.[7] For example, a Facebook post with a score of 13 means that 13 words from the modified negative-language dictionary appeared in that post.[8]

Relative to other social media platforms, Facebook offers greater variation in the types of responses that users can make to posts. Alongside likes, shares, and comments (e.g., as on Twitter), Facebook users also can react emotionally to content with "love," "wow," "haha," "sad," "angry," and "care." We considered more likes,[9] shares, and comments to be indicative of a higher public response and engagement. Additionally, "angry" and "sad" reactions were categorized as negative responses in our analysis.[10]

We estimated ordinary least squares (OLS) regression models for different types of engagement. The first three columns in table 2 test Hypothesis 1 and consider likes, comments, and shares. For each of the three models, the dependent variable was the average number of each engagement per candidate-week-post type, respectively. "Post type," or multimedia, was defined as whether a post is a multimedia post (i.e., video, photograph, or

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Table 2

OLS Regressions of Proportion of Average Negative Words per Post (by Candidate-Week-Post Type), with Controls

	Dependent Variable				
	Average Post Likes	Average Comments	Average Shares	Average Sad Reactions	Average Angry Reactions
	(1)	(2)	(3)	(4)	(5)
Proportion Negative	0.432***	2.750***	3.520***	4.490***	5.310***
	(0.127)	(0.152)	(0.150)	(0.122)	(0.151)
Female	0.088***	0.092***	0.001	0.012	0.009
	(0.009)	(0.011)	(0.011)	(0.009)	(0.011)
Republican	0.219***	0.378***	0.307***	−0.084***	0.108***
	(0.009)	(0.010)	(0.010)	(0.008)	(0.010)
Incumbent	0.043***	0.424***	−0.446***	−0.171***	−0.160***
	(0.010)	(0.012)	(0.012)	(0.009)	(0.012)
Competitive	0.253***	0.058***	−0.102***	−0.085***	−0.144***
	(0.010)	(0.012)	(0.011)	(0.009)	(0.012)
White	0.268***	0.280***	0.107***	0.021**	0.152***
	(0.010)	(0.012)	(0.011)	(0.009)	(0.012)
Overall N Posts	−0.010*	0.040***	0.042***	0.128***	0.165***
	(0.006)	(0.007)	(0.007)	(0.006)	(0.007)
Overall Average Page Likes	0.665***	0.645***	0.637***	0.319***	0.411***
	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)
Multimedia	0.247***	−0.149***	−0.103***	−0.441***	−0.641***
	(0.008)	(0.009)	(0.009)	(0.008)	(0.009)
Constant	−1.540***	−3.750***	−3.040***	−2.860***	−3.780***
	(0.082)	(0.097)	(0.096)	(0.078)	(0.097)
Observations	66,750	66,750	66,750	66,750	66,750
R^2	0.474	0.426	0.338	0.249	0.278
F Statistic	389***	321***	220***	144***	166***

Notes: Degrees of freedom = 154, 66,595. *p < 0.1; **p < 0.05; ***p < 0.01. Models include week and state fixed effects.

live) or otherwise (i.e., link or status). The explanatory variable of interest was the average proportion of negative words (i.e., "proportion negative"). To calculate this, we divided the average number of negative words by the average number of words per post for each candidate-week-post type, considering the fact that there can be a wide range of length in Facebook posts. We also included controls for candidate gender, party, incumbency, district competitiveness, race, total number of Facebook posts, and total average page likes. To account for variation during the course of the campaign and differences among states, we included week and state fixed effects.

We found support for Hypothesis 1 in table 2—that is, the higher the proportion of negative words, the higher average likes, shares, and comments that candidate posts received. These results suggest that choosing to incorporate more negative rhetoric into their Facebook posts may enable candidates to achieve a greater spread of their message on the platform—particularly through shares—which is a central goal of campaigns. We observed this negativity bias across different social media platforms and among elected officials in office (Gervais, Evans, and Russell 2020; Russell 2018). Negativity is one of the strongest and most consistent predictors of reactions. Candidates who want their content to spread virally are more likely to have it shared if the post contains a higher proportion of negativity. However, we also observed meaningful differences across party and gender that could moderate some of those effects similar to prior research (Gervais, Evans, and Russell 2020; Macdonald et al. 2022).[11]

Candidates who want their content to spread virally are more likely to have it shared if the post contains a higher proportion of negativity.

To test Hypothesis 2, we estimated OLS models of the same format as described previously. We predicted that candidates receive more negative reactions when they use more negative rhetoric in their posts, suggesting that elite rhetoric can condition the type of response. The results are shown in the last two columns of table 2. The main independent variable "proportion negative" was used again, as well as the same control variables. In these

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models, the dependent variables are now the average "sad" and "angry" reactions received by candidate-week-post type. We found strong support for our expectations. When candidates used higher proportions of negative sentiment in their posts, they received more "sad" and "angry" reactions.[12] The ability of candidates to use tone to elicit different types of reactions from users provides additional clarity on the power of Facebook engagement and the discretion that candidates have to shape the political climate.

To account for concerns that we were sensing a different dynamic than negativity, other analyses are in the online appendix. Appendix table A5 shows the same analysis as in table 2, except that the dependent variable is the proportion of positive words. We found very different results: all of the coefficients for the proportion of positive words were negative and the coefficients for comments and angry reactions were statistically significant.[13] Candidates who used more positive language, on average, received less engagement than those who used more negative language.[14]

DISCUSSION AND CONCLUSION

Negative rhetoric on Facebook is particularly important for developing supporter connections, where social media users who engage with political information may be more motivated to participate (Bosetta, Dutceac Segesten, and Trenz 2017). Our analysis suggests that negativity is a consistent component of voter connections made on Facebook, where posts with more negative words are likely to generate higher levels of public engagement. The implications of this are that negativity is more likely to connect candidates to users and has an outsized effect in engagement in comparison to positive rhetoric. In particular, the increased engagement often matches the sentiment of the post with negative messaging, leading to more negative reactions such as "sad" and "angry." This finding suggests a link between the tone that candidates set in their appeals and the emotional responses triggered by those users on Facebook who follow the candidates' pages. Candidates who successfully and strategically use Facebook have dual power in both setting the tone of the political climate and increasing engagement across users.

This study takes advantage of a timely opportunity to understand how candidates use negativity on Facebook and the variability associated with that engagement. One limitation of our study, however, is the lack of information on the users who respond to these posts; CrowdTangle does not provide access to user details. Although we have limited information about people who are more likely to use and comment on Facebook, future research should focus more specifically on investigating further the types of users who follow these candidates and the choice of reaction to different types of posts. The users who follow or choose to interact with a candidate on Facebook are likely not representative of the public. Additionally, scholars suggest that the success of negativity used by campaigns is patterned by gender and party. Given the importance of negativity, as shown by our research, how different types of candidates grow support on a digital platform is an important question moving forward. Candidates' strategies on Facebook are not likely to be uniform, given that some are more likely than others to spur engagement and the individual traits that the media covers may be variable (Banda and Cassese 2021), likely varying by experience and quality (Porter and Treul 2020).

This study takes advantage of a timely opportunity to understand how candidates use negativity on Facebook and the variability associated with that engagement.

Despite these limitations, we contend that this study begins an important conversation about the relationship between candidates' appeals and public reactions. If Facebook is a tool for voter engagement (or disengagement) with politics, communicating with a partisan base every two years has the potential to shift public expectations for how and when our candidates communicate.

DATA AVAILABILITY STATEMENT

Research documentation and data that support the findings of this study are openly available at the *PS: Political Science & Politics* Harvard Dataverse at https://doi.org/10.7910/DVN/JXBLX6.

SUPPLEMENTARY MATERIALS

To view supplementary material for this article, please visit http://doi.org/10.1017/S1049096522001299.

CONFLICTS OF INTEREST

The authors declare that there are no ethical issues or conflicts of interest in this research. ■

NOTES

1. Witness testimony by Frances Haugen. Washington, DC: Senate Committee on Commerce, Science, and Transportation. www.commerce.senate.gov/services/files/FC8A558E-824E-4914-BEDB-3A7B1190BD49.
2. Source: *Wall Street Journal.*
3. This list of candidates is the official CrowdTangle-curated list. It contains 701 politicians, but only 696 had at least one Facebook post during our period of interest.
4. CrowdTangle does not offer data on a post's reach (i.e., the number of people exposed) or impressions (i.e., the number of times a post was seen).
5. See https://cookpolitical.com/ratings/house-race-ratings.
6. The NRC Word–Emotion Association Lexicon is publicly available online at http://saifmohammad.com/WebPages/NRC-Emotion-Lexicon.htm.
7. Before using the dictionary object, we preprocessed the Facebook posts in our dataset by lowercasing and removing conventional English stop words, punctuation, URLs, and numbers.
8. Repeated words are included separately in this score, where applicable.
9. This also is known as the "thumbs-up" reaction.
10. We estimate results of the same form for the remaining reactions in appendix table A6.
11. The results hold when controls are not included, as shown in appendix table A1. The results also hold for candidate-level analyses for comments and shares, as shown in appendix table A2.
12. These results are robust without controls (see appendix table A1) and when using the proportion of "sad" and "angry" reactions as a proportion of total interactions per candidate-week (see appendix table A4). They do not hold for candidate-level analysis (see appendix table A2).
13. These results are robust to candidate-level analysis, as shown in appendix table A3.
14. We found consistent results when considering other Facebook reactions in appendix table A6: higher average negativity was related to fewer "love" reactions and to more "care," "wow," and "haha" reactions; these could be used sincerely or ironically. Appendix table A7 estimates models of a similar format but with average positivity as the independent variable; we found results that suggest the latter may be the case.

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