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A Bad Workman Blames His Tweets: The Consequences of Citizens' Uncivil Twitter Use When Interacting With Party Candidates

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Existing studies focusing on politicians' adoption of Twitter have found that they use it primarily as a broadcasting tool. We argue that citizens' impolite and/or uncivil behavior is one possible explanation for such decisions. Social media conversations are rife with harassment and politicians are a prime target. This alters the incentive structure of engaging in dialogue on social media. We use Spanish, Greek, German, and U.K. candidates' tweets sent during the run-up to the recent European Parliament elections, and rely on automated text analysis and machine learning methods to measure their level of civility. Our contribution is an actor-oriented theory of political dialogue that incorporates Twitter's specific affordances, clarifying how and why Twitter's democratic promise may be limited.

Keywords: Political Communication, Machine Learning, Social Media, Twitter, Civility, Politeness, Automated Text Analysis.

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Over the past decade, social media have been integrated and widely used by politicians worldwide (Grant, Moon, & Grant, 2010; Gulati & Williams, 2010). The ease of adoption, the capacity to bypass the mainstream media and create a personal publicity channel, and the limitless opportunities for personalized communication have made them important campaign tools that candidates can use as a permanent form of communicating with the electorate (Grant et al., 2010; Larsson, 2014; Lee & Oh, 2012; Williams & Gulati, 2010). Twitter, perhaps the most widely adopted platform by politicians and one with the capacity to enable a more direct and interactive engagement with the public, was supposed to open the door for more citizen voice and

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participation in the political process via different means, counteracting one of the main inhibitors of political involvement—the fact that "nobody asks" (Rosenstone & Hansen, 1993). Despite this promise, neither the adoption nor the use of Twitter by politicians managed to live up to these normative expectations. Even though this is often seen as a supply-side problem, attributed to politicians' tendency to not take advantage of the platform's interactive opportunities and their persistence on using the platform in a broadcasting style (Graham, Broersma, Hazelhoff, & van't Haar, 2013; Grant et al., 2010), fewer explanations have taken into consideration the interaction between the supply and demand side, as well as the platform's own limitations and "dark sides."

In this paper we address the question of why politicians may be using the platform in ways seemingly inconsistent with the promotion of democratic deliberation. But rather than focusing on the supply side only, we take advantage of the unique asymmetrical relationship structure of Twitter and advance existing literature by proposing an explanation that lies in the *interaction between the supply and demand sides*. Specifically, taking into consideration that information and communication technologies have built-in features and affordances that can both enable and constrain social relationships (Latour, 2005), we investigate the possibility that the demand side, that is, the users, bolstered by Twitter's wall of anonymity and the platform's weak capacity to deal with harassment and trolling (Hern, 2015), may also be falling short of their responsibilities as counterparts in political discourse. We argue the style of a candidate's engagement with their followers, and their decision to interact with someone in a public space, are subject to decisions and trade-offs involving whether some sort of civilized and constructive dialogue can take place.

Although most online interactions are civilized, online spaces are rife with incivility and abuse (Mason, 2016). While extreme cases of uncivil behavior have often led to penalties and even imprisonment of political Twitter trolls (BBC, 2014) most of everyday trolling is probably considered unavoidable. However, this by no means indicates that the presence of such responses to candidates' tweets should not alter how they approach their social media communication. Politeness and civility are fundamental requirements for democratic discourse (Mutz & Reeves, 2005; Papacharissi, 2004) and the anonymity behind which many users choose to hide themselves allows for limitless abuse (Cheng, Danescu-Niculescu-Mizil, & Leskovec, 2015; Davis, 2009), which can ultimately influence the motivations behind the communication style of candidates.

We empirically test this argument with data from the Twitter communication of Spanish, British, Greek, and German candidates who ran for a seat during the 2014 European Parliament (EP) elections. Our analysis provides evidence of a positive relationship between candidates' engagement on Twitter and exposure to attacks and harassment from citizens. Our theoretical contribution is twofold. We extend prior research by shifting attention to potential disincentives grounded in the behavior of the *public* that ultimately influences how candidates make use of Twitter. In this sense, we explain why the use of social media might not be able to live up to

its own promise for politics. Second, we show that this explanation fits within an actor-oriented approach of the use of social media in politics, but emphasize systematic differences contingent on candidate characteristics. By revealing the trade-offs that candidates for office face when articulating their communication strategies on social media, our study yields important insights about how the use of these platforms may affect the quality of public discourse and voters' knowledge of their options in the voting booth.

Candidates on social media: Engaging versus broadcasting communication

Social networking sites and microblogging platforms have been put to use as everyday channels for reaching the public, and have been strategically embedded in local, national, and supranational electoral campaigns (Gibson, 2013; Gulati & Williams, 2013; Koc-Michalska, Lilleker, Surowiec, & Baranowski, 2014; Nulty, Theocharis, Popa, Parnet, & Benoit, 2016; Vergeer & Hermans, 2013; Vergeer, Hermans, & Sams, 2011b). The sharp rise in social media adoption by candidates stems from the quick realization that there are significant benefits in adopting these tools for enriching traditional political communication practices and enhancing the much-strained relationship with voters (Wattenberg, 2002). It has also given the opportunity to candidates in party-centered systems to engage in personal promotion outside the auspices of their parties (Karlsen & Skogerbø, 2015; Larsson & Moe, 2011).

Much of the recent literature on the political properties of social media has focused on social media platforms' different "affordances" (Earl & Kimport, 2011): For example, contrary to Facebook, Twitter is particularly suitable for an active, engaged style of messaging a candidate's followers due to the embedded asymmetrical structure of relationships that allows for direct interaction between unknown people (Grant et al., 2010). This makes Twitter of particular interest as it not only can facilitate genuine engagement from the public but can also have important benefits for candidates. Lee and Oh (2012), for example, argue that directly addressing followers on Twitter can stimulate feelings similar to those of face-to-face communication, overcoming the depersonalizing effects of digital communication and enhancing one's feelings of presence, ultimately increasing emotional closeness felt towards the candidate and eliciting positive evaluations (Lee & Shin, 2012). In the same vein, Lyons and Veenstra (2016, p. 13) found that compared to an unengaging, broadcast-focused politician, one who includes conversational cues is likely to be viewed more positively overall. Despite these advantages over other platforms, empirical evidence, with few exceptions (Enli & Skogerbø, 2013), shows that Twitter is scarcely ever used in an interactive way by politicians (Glassman, Straus, & Shogan, 2010; Golbeck, Grimes, & Rogers, 2010; Graham et al., 2013; Grant et al., 2010; Larsson & Moe, 2011; Small, 2011). Although much research has focused on factors explaining the presence or frequency of policy elites' activity on social media (Nulty et al., 2016; Obholzer & Daniel, 2016; Van Dalen, Fazekas, Klemmensen, & Hansen, 2015), less attention has been paid on what may be explaining candidates' *style* of use.

Incentive structure of adopting an engaging communication style on Twitter

A crucial first step for understanding why candidates may not engage in dialogue with users on Twitter is to examine motivations for using Twitter that, despite not requiring interaction, can nevertheless offer them concrete benefits. Our overall approach can be situated within Benoit's functional theory of political discourse and Stromer-Galley's controlled interactivity thesis, both of which posit that candidates' communication and messaging tactics are predominantly aimed at achieving one goal: winning the election (Benoit, 2007; Stromer-Galley, 2014). Building on this research, as well as on the conceptualization of Enli and Skogerbø, we posit that in an actor (candidate)-oriented framework, there are three clear, universal motives for investing resources—in this context referring to personal time and money—on social media: *marketing*, *mobilization*, and *dialogue* (Enli & Skogerbø, 2013).

Marketing reflects the most obvious benefit, as it allows for increased visibility (Lassen & Brown, 2011; Lyons & Veenstra, 2016) and provides ample opportunities for political message personalization (Enli & Skogerbø, 2013). Maintaining a Twitter profile leads to greater reach and thus expands candidates' visibility during, but also outside, electoral campaigns. It functions not only as a personal publicity channel, allowing candidates to distinguish themselves from other candidates without depending on the news media (Benoit, 2007), but also as a method of rapidly reacting to critical ongoing political developments, communicating with the press, and responding to the spread of questionable information or personal attacks without being limited by gatekeepers. At the same time, Twitter affords candidates the opportunity to post messages in frames that they (or their consultants) think present them in a positive light to their followers (Lyons & Veenstra, 2016), and allows them to present the content in a personal and direct way. Consequently, Twitter represents an incredibly powerful tool for building a public image and for revealing a personal side as well. Twitter has been considered the quintessential social media platform for *mobilizing* citizens for protest events (Barberá et al., 2015; González-Bailón, Borge-Holthoefer, Rivero, & Moreno, 2011; Lotan et al., 2011; Theocharis, Lowe, van Deth, & García Albacete, 2015), but is also ideally suited for *voter mobilization*. It allows the fast diffusion of speech announcements, invitations to campaign events, donation requests, and volunteering requests at a very low cost (Williams & Gulati, 2010), with some studies suggesting that more intensive online activity even pays off at the polls, at least in the context of EP elections[1] (Vergeer, Hermans, & Sams, 2011a).

With positive outcomes for both candidates and democracy, marketing and mobilization are already two strongly and sufficiently beneficial incentives for using Twitter. Most importantly, both yield benefits without necessitating the adoption of an engaging style of communication with the citizens. A baseline hypothesis thus is:

H1: Politicians make broadcasting rather than engaging use of Twitter.

Despite the clear benefits of broadcasting use, engaging in *dialogue* with citizens has consistently been the most desirable and revolutionary, from a normative point of view, aspect of the internet; one thought of as being able to benefit both the politician and, most crucially, democracy (Barber, 2004; Etzioni, 1993; Rheingold, 1993; Stromer-Galley, 2014). Perhaps the most well-documented cause for citizens' disconnection from politics is that they feel that they have no say in what government does and no influence in political affairs, primarily because there is little public dialogue and discussion with politicians, and because politicians do not listen to them (Coleman & Blumler, 2009; Hay, 2007; Henn, Weinstein, & Wring, 2002; Stoker, 2006). The possibility of two-way interaction between citizens and political actors is, thus, seen as a major step towards re-establishing democratic accountability and facilitating public participation.

Two-way interaction on social media can thus not only reinvigorate democracy, but also provide direct input from voters and improve political communication. Direct communication with the voters can play a significant role in repairing the damaged relationships between voters and politicians in general, in reinstating some level of trust through greater intimacy, and in facilitating the emergence of a democratic online public sphere by opening up a new avenue for citizen voice and deliberation. Importantly, and beyond the theoretical and normative benefits, empirical evidence shows that there are real gains in adopting an engaging (as opposed to broadcasting) style of tweeting—both for the candidate who makes the extra effort to engage the public, and for democracy in general (Lee & Oh, 2012; Lee & Shin, 2012; Lyons & Veenstra, 2016). Why, then, do candidates continue to use Twitter in a one-directional manner?

Impoliteness and Incivility as an inhibitor of engaging use of Twitter

We argue that part of the explanation lies in the incentive structure and relates to trade-offs, risks, and responsibility on the part of the candidate. Engaging citizens online has long been considered a risky business for politicians, and research has suggested that political campaigns do not use digital media to genuinely engage citizens and supporters but merely to create a "spectacle of interactivity" (Stromer-Galley, 2014, p. 5). Early research has showed that the reasons why politicians were hesitant to use the interactive features of their websites lay not only in strenuous work schedules and limited time (Coleman & Blumler, 2009) but also in fear of losing control over the content—and thus an intentional ambiguity over policy positions, by having to specify claims or policy positions (Stromer-Galley, 2000). Yet this risk is substantially reduced on Twitter. The platform's word limit allows for greater control of the content (than e.g., blogs, websites, or even Facebook), and this laconicism is ideal for strategic ambiguity. These properties counteract two of the major inhibitors for directly engaging with the public: loss of control and ambiguity of campaign communication (Stromer-Galley, 2000). However, dialogue does come with responsibility. If one decides to engage, one must be prepared to follow up

(i.e., engage with multiple members of the public). This, due to the higher resources required, may, *unless there are clear gains*, bring dialogue to the bottom of the incentive list.

We suggest that, in the outlined incentive structure, engaging in dialogue on Twitter comes at the bottom of a candidate's list because much of the content addressed to them is democratically damaging, or undermines fundamental discussion norms. Despite the high level of control that Twitter messages enable, especially prominent politicians are often victims of abuse, with heavy insults directed at them seconds after they post.[2] Extant psychological research on the side effects of anonymous computer-mediated communication shows that sometimes communicators tend to be more susceptible to group influence, social attraction, stereotyping, gender typing, and discrimination (Postmes, Spears, & Lea, 1998; Postmes, Spears, Sakhel, & de Groot, 2001). At the same time, due to the internet's affordances, "harassers can take advantage of being unidentifiable, anonymous, and invisible, in addition to having immediate, easy-to-execute, almost untraceable escape route mechanisms" (Barak, 2005, p. 83). This implies that trolling in an environment such as Twitter is not only a very low-cost, but also a very low-risk activity. Thus, the more a candidate attempts to engage, the more material she will provide to potential trolls.

Previous research has found that impolite and uncivil discourse can have a widespread poisonous and polarizing effect on discussions (Anderson, Brossard, Scheufele, Xenos, & Ladwig, 2013; Lyons & Veenstra, 2016). To our knowledge, there is no study examining how candidates, or political actors in general, react to impolite and uncivil language. Although most existing research on incivility[3] focuses mainly on candidates' attacks on one another (Brooks & Geer, 2007; Mutz, 2015; Mutz & Reeves, 2005), in this study we argue that much of the content that is addressed to politicians on Twitter *also* goes far beyond robust discussion (Bartlett, 2015), being, at best, impolite and, at worst, uncivil.[4] Impoliteness and incivility tend to be conflated due to their conceptual resemblance (Papacharissi, 2004). Specifically, even though for some scholars uncivil discourse is defined by "communication that violates the norms of politeness for a given culture" (Mutz, 2015), we agree with Papacharissi that to capture incivility one needs to move beyond rudeness and poor manners. We thus provide a more fine-grained measure of incivility that involves impolite behavior with direct democratic consequences, such as when people offend individuals or social groups by denying their personal freedoms and stereotyping them. This implies that we conduct a stricter test for incivility than previous studies. Based on these theoretical considerations, from a democratic point of view, engaging use of Twitter, which mainly involves dialogue with citizens, should be prioritized over broadcasting use that involves mobilization and marketing. As from the candidate's point of view conflict aversion should be prioritized, the above incentive structure changes so as to reflect a style of tweeting that leaves the candidate less exposed to risk, with less responsibilities and, at the same time, with as great a benefit as possible.

Against this background, it is reasonable to assume that there will be variation when it comes to broadcasting and engaging use of the platform by, say, a high-ranked candidate from a resourceful party who has strong presence in the media as well as dedicated staff, and young and upcoming candidates who are in a greater need to attract voters and thus have higher incentives to use the platform for engaging the public. Following this rationale, our second hypothesis is:

H2: Engaging style of tweeting is positively related to impolite or uncivil responses.

Data collection and case selection

The data used in this paper were collected as part of the European Election Study 2014, Social Media Study. The study identified and collected the candidate list of all major parties competing in the 2014 EP elections. Afterwards, starting from January 2014, a list was created with all the Twitter handles and Facebook user names for candidates who were present on social media. This list was updated right before the elections in May 2014. All in all, we found that across the entire space of the European Union a total of 2,482 out of 15,527 identified MEP candidates (16%) had a presence on Twitter (for a detailed discussion see Nulty et al., 2016, and Appendix S1).

Using the Twitter firehose, we collected all the social media communication centered around the candidates, resulting in a dataset containing every tweet, retweet, and response of a candidate as well as all the responses to these tweets. Furthermore, we also collected all the tweets that mentioned the candidates in any form. The data collection procedure lasted 4 weeks from 5 May 2014 until 1 June 2014, covering the last 3 weeks of the electoral campaign and the week following the elections. The final outcome is a database of approximately four million tweets that we believe accurately depicts the Twitter communication in the 2014 EP elections.

For the specific purpose of this paper we choose to concentrate on four countries: Spain, Germany, United Kingdom, and Greece. These were chosen based on the degree of support for the EU and whether or not the countries received financial aid during the public debt crisis in the Eurozone, while also taking into account the use of Twitter during the campaign 2014 EP election campaign (see more details in Appendix S1). As incivility is related more to contextual than to habitual factors (Herbst, 2010), our general expectation is that the level of politeness and civility would vary depending on these two contextual factors. To be more specific, in the online environment "weightier" frames are prone to generate a higher percentage of uncivil responses (Coe, Kenski, & Rains, 2014). Thus, the interplay of strong anti-EU feelings and severe economic conditions (i.e., receiving substantial financial international support) is expected to add more "weight" and also increase the level of conflict (i.e., more polarization) around the EP elections (Hobolt & de Vries, 2016; Popa, Rohrschneider, & Schmitt, 2016), resulting in a more frequent use of impolite and uncivil language in the social media communication around the EP elections. In Table 1 we provide a summary of our dataset used for the analyses of Twitter communication during the 2014 EP elections in all four countries included in this study.

Table 1 Data Coverage per Country (included in multivariate analyses)

Country	Lists	Candidates	Total Tweets (including public)	Mean Engaging Tweets (candidates)	Mean Impolite Tweets (public)
Germany	10	92	80,901	37%	6%
Greece	9	79	15,057	25%	18%
Spain	12	211	447,357	45%	4%
United Kingdom	28	271	251,421	53%	5%

Automatic classification of social media posts

Generating a labeled dataset

In order to test our hypotheses, it was necessary to classify tweets along various different dimensions of interest, such as their level of politeness, or how engaging they are. We achieved this goal by selecting for labeling a random sample of 7,000 tweets in each country, which we then used to train a machine learning classifier that predicts the category to which all tweets in our dataset correspond. The coding scheme used in the labeling process was developed by the authors and contains the following three categories related to the tweet content:

1 **Communication style** is the dependent variable of this study and differentiates between *broadcasting* tweets (i.e., tweets that simply depict statement or an expression of opinion) and *engaging* tweets (i.e., tweets that are directed to someone else/another user or are a direct response to a previous tweet).
2 **Polite versus impolite** distinguishes between tweets that are written in a well-mannered and nonoffensive way versus tweets that are ill mannered, disrespectful, or contain offensive language.
3 **Morality/Democracy** refers to whether the tweet contains a reference to moral and/or democracy issues, which are roughly covered by the Freedom and Democracy Domain and the Social Fabric Domain present in the EP Election Study 1979–2009, Manifesto Study (Braun et al., 2015).

In addition, we also constructed a measure of **incivility** for each tweet combining the information in these two last categories. We consider incivility as a subcategory of impolite tweets that also refer to moral issues or democracy (e.g., tweets that make reference to one of the following topics: freedom and human rights, traditional morality, law and order, social harmony, freedom and human rights, democracy, constitutionalism). The basic assumption that guides our operationalization is that impolite remarks with direct democratic consequences constitute an uncivil tweet. To be more specific, by making impolite remarks such tweets stereotype and offend individuals/social groups and/or challenge their freedoms/rights, disrespecting thus collective democratic traditions. Further details of the coding scheme and examples for each

category can be found in Appendix S1. The overall results of the coding process, including estimates of intercoder reliability and summary statistics for these variables, are in Appendix S1. We obtain above 80% coder agreement across the board despite the unbalanced distribution in terms of tone and content, resulting in lower reliability scores. Finally, we also emphasize that these results should not be considered as measures of reliability in the traditional sense (for concept measurement), as the classification stage incorporates any disagreement at the human coding level into the estimation. The data that resulted from the coding procedure are supplemented by a number of other variables that will mainly serve as controls in our analyses. These refer to both candidate (i.e., gender, incumbency status in the EP, electoral viability,[5] estimated ideological position) and party features (size of party, incumbency status, placement on left/right and pro-/anti-EU dimension).

Training machine learning classifiers

Using the dataset of labeled tweets from each country, we then constructed machine learning classifiers that allow us to estimate the probability that each individual tweet in each country in our dataset corresponds to one of the three categories of interest. Our analysis is divided in three steps: text preprocessing, training and validation of the classifiers, and application to our entire corpus (see Hastie, Tibshirani, & Friedman, 2009, for a more technical description, and Barberá, Boydstun, Linn, McMahon, & Nagler, 2016, for an application to media texts). As described in Appendix S1, in most cases we find levels of accuracy (percentage of tweets correctly predicted by our classifier) that outperform the benchmark of just choosing the modal category for each variable.[6] The performance of this method is similar in magnitude to the intercoder reliability among the coders of the labeled set, which suggests that our classifier is able to approximate the quality of human coding.[7]

As additional validation for the outcome of our automated classification method, we also examined that the terms that the model identifies as being most associated with each category indeed correspond to our expectations. As an example, we found that the classifier predicts as *engaging* those tweets that indicate direct communication (e.g., an @ sign followed by what could be the beginning of a message, such as "thank you" or "hi"), as *impolite* those tweets that contain insults and expletives, and as mentioning *moral and democracy* issues those tweets with words such as "freedom," "democracy," "peace," or "rights." We also validated that our estimate of a given tweet being engaging is accurate by relying on our behavioral expectations. In particular, we tested whether tweets sent by candidates with a higher probability of being classified as engaging are receiving more responses by ordinary citizens, under the assumption that a good measure of whether candidates are reaching voters is observing that voters are indeed reacting to that message. Figure 1 displays the results of this validation exercise. Here, we use a Poisson model where we regress the number of responses to each tweet on the predicted probability of that same tweet being considered engaging, and display the predicted number of responses and a 95% confidence interval. The results confirm our expectation and strengthen our claim that the

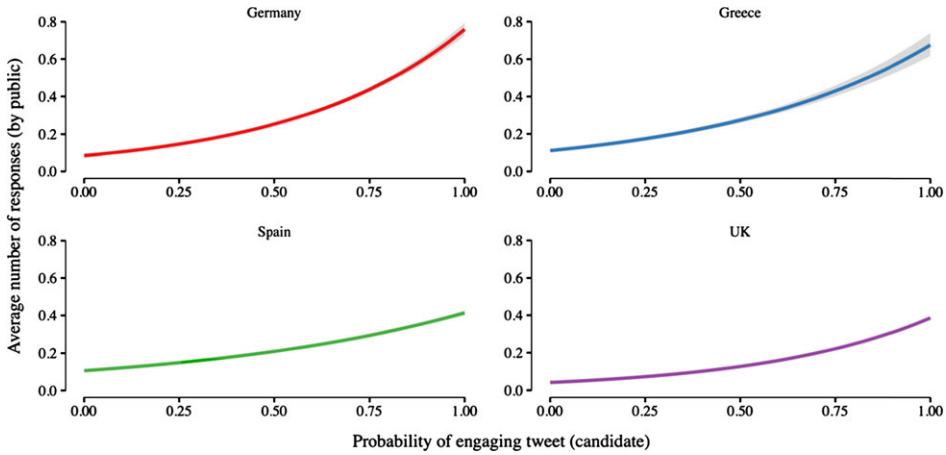

Figure 1 Validation: Citizens are more likely to respond to engaging tweets by candidates.

automated classification method we employ is accurately measuring our dimensions of interest.

The final step in our analysis is to predict the labels for all the tweets in our dataset. To do so, we apply the same text-preprocessing procedure to the text of the tweets, construct the feature matrix, and compute the predicted probability that each tweet corresponds to one category or the other. Finally, we aggregate these probabilities at the candidate level, both for the tweets that he or she sent, and for the tweets that he or she received (that contained a mention to twitter handle).

Analysis

In order to test our two hypotheses, we conduct two separate sets of analyses. First, we use the dataset described in the previous section to test if it is indeed the case that most candidates use Twitter as a tool to broadcast content, as our first hypothesis states. Second, we examine if part of the variation in candidates' willingness to engage with citizens on social media is related to their exposure to *impolite* tweets, our main dependent variable. To test whether there is a positive relationship between these two variables, we estimate three complementary regression models, each of them using data at a different level of aggregation: across candidates, within candidates and over time, and across individual tweets. First, we aggregate all tweets at the candidate level and use multivariate linear regressions to demonstrate that candidates who send more engaging tweets are also more likely to receive more impolite responses, holding all else constant. Second, we adopt a dynamic perspective to provide evidence that candidates who send more engaging tweets in a given week are more likely to be exposed to more impolite responses the following week. Finally, we focus on individual tweets and rely on multilevel regression models that reveal that tweets that are classified as engaging also tend to receive more impolite responses.

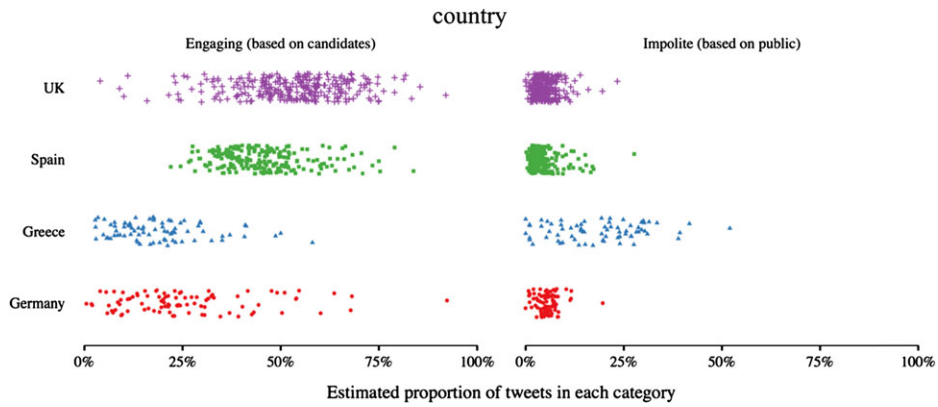

Figure 2 Proportion of engaging tweets sent and impolite tweets received, by candidate and country.

Results

Do politicians make broadcasting or engaging use of Twitter?

Table 1 lists the means of our main dependent and independent variables with distributions displayed in Figure 2. We find substantive variation in our variables of interest both across and within countries. Candidates in the United Kingdom and Spain tend to send more tweets that are directed to the users, although still a large proportion of tweets in these countries are classified as broadcasting (47% and 55%, respectively), which provides support for our first hypothesis. Greece and Germany lie at the other extreme of this distribution—here, for most candidates less than 40% of their tweets engage with citizens in any way, and the total of broadcasting tweets is 74% and 63%, respectively. The variation within countries also appears to correspond to our expectations: Candidates that belong to the Pirate Party in the United Kingdom, Spain, and Germany are clear positive outliers, with the highest average proportion of engaging tweets (68%, 61%, and 58%).

We also find variation across countries and within countries in our second variable of interest.[8] Greece is by far the country with most impolite tweets: On average, 18% of all tweets mentioning a candidate were classified as impolite (vs. 6% in Germany, 4% in Spain, and 5% in the United Kingdom). An examination of some of the outliers within each country corresponds to our expectations: For example, 10% of tweets mentioning UKIP's Nigel Farage were impolite, and 20% of tweets mentioning German extreme right-wing activist Ricarda Riefling were impolite. As we show in Appendix S1, these differences are stable over the campaign.

Do engaging tweets receive more impolite and uncivil responses?

Table 2 shows the results of our first approach to testing our second hypothesis: a set of multivariate linear regressions of the proportion of engaging tweets sent by each candidate on the proportion of impolite tweets they receive,[9] weighing our observations

Table 2 OLS Regressions of Impolite Tweets (Models 1–4) or Uncivil Tweets (Model 5) Received on Engaging Tweets Sent

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	4.56***	4.54***	15.38***	5.17***	0.41
	(1.02)	(1.34)	(4.11)	(1.62)	(0.25)
% Engaging tweets sent	0.05***	0.05***	0.03**	0.02	0.01***
	(0.01)	(0.01)	(0.01)	(0.03)	(0.00)
Greece (dummy)	12.70***	12.74***	15.42***	12.58***	0.29
	(1.34)	(1.34)	(1.52)	(1.96)	(0.28)
Spain (dummy)	−2.84**	−3.20***	−3.21**	−4.74**	−0.22
	(1.13)	(1.14)	(1.31)	(1.91)	(0.25)
United Kingdom (dummy)	−1.55	−1.72	−2.79*	−2.65	−0.21
	(1.15)	(1.16)	(1.46)	(2.01)	(0.24)
Candidate is incumbent		0.13	−0.20	0.15	−0.07
		(0.49)	(0.51)	(0.49)	(0.07)
Viability: Safe		−0.13	−0.05	−0.13	0.05
		(0.55)	(0.53)	(0.56)	(0.08)
Viability: Unpromising		0.07	0.01	0.10	−0.03
		(0.38)	(0.36)	(0.38)	(0.06)
Candidate is male		−0.30	−0.28	−0.31	−0.07*
		(0.26)	(0.25)	(0.26)	(0.04)
log(count of followers)		0.14	0.22*	0.15*	−0.01
		(0.09)	(0.13)	(0.09)	(0.01)
Vote share (national)		−5.37	−2.09	−5.40	−0.95
		(3.96)	(4.48)	(4.03)	(0.86)
Prime minister (national)		0.08	0.00	0.07	0.07
		(1.38)	(1.44)	(1.40)	(0.26)
LR position			−0.60**		
			(0.25)		
EU position			−1.35**		
			(0.59)		
Engaging × Greece				0.00	
				(0.05)	
Engaging × Spain				0.04	
				(0.04)	
Engaging × United Kingdom				0.03	
				(0.04)	
Num. obs.: candidates	600	600	455	600	600
Num. groups: parties	58	58	48	58	58
Var: party (Intercept)	3.84	3.76	4.96	3.92	0.22
Var: Residual	1783.59	1784.89	1447.82	1786.86	39.17

***$p < .01$. **$p < .05$. *$p < .1$.

by the number of tweets sent by each of them.[10] We find clear support for our hypothesis. In the first two models, where we add country fixed effects and our main set of control variables, we find a positive partial correlation between engaging tweets sent and impolite tweets received: The model predicts that an increase of 25 percentage points in engaging tweets sent (which is similar to a change from the 25th to the 75th percentile in this variable) is associated with an increase in impolite tweets received of 1.19 percentage points, which corresponds to around 19% of the standard deviation in this variable. In other words, the results suggest that candidates who try to engage in conversations with voters receive more vitriol.

This result is robust to the inclusion of other potential covariates that might explain the relationship between these two variables, such as the number of followers, the vote share for the party they belong to, and their expected success according to their position on the party list. Although we did not have specific hypotheses regarding the effect of these covariates, the results are consistent with conventional wisdom: candidates from small parties and with few followers, as well as female candidates, appear to receive more impolite responses, even though these two last effects are not statistically significant. However, Model 3 shows that the magnitude of the estimated effect decreases when we control for the position on the left-right and European integration dimensions, which we measured by scaling the follower networks of the MEP candidates and the national MPs in each country.[11] We find that right-wing and pro-Europe candidates are more likely to receive impolite tweets.

In Model 4 we explore country-level heterogeneity by interacting our main independent variable with the country dummies. After computing the marginal effects of the number of engaging tweets sent, we find that the estimate has the expected sign in Germany (0.02, $p = 0.31$), Greece (0.03, $p = 0.33$), Spain (0.07, $p = 0.01$), and United Kingdom (0.05, $p = 0.03$), but it is only significant in the Spanish and British cases. However, part of this pattern could be due to not having enough sample size to properly estimate country-level differences. Finally, we also try to disentangle the effects of impoliteness versus civility by replicating our analysis using as dependent variable a measure of the proportion of uncivil tweets received by candidates. In particular, this variable is the product of the proportion of impolite tweets received by the proportion of tweets received that mention morality or democracy issues. As we discuss earlier in the paper, we consider incivility as impolite behavior with direct democratic consequences, because it features attacks on social groups and their rights. Here, we still find a statistically significant effect of engaging tweets sent on uncivil tweets received, and of similar relative magnitude: An increase from the 25th to the 75th percentiles in the independent variable is associated with an increase in uncivil tweets received of 0.27 percentage points (around 34% of the standard deviation in this variable).[12]

One of the limitations of our analysis is the possibility that candidate-specific characteristics such as their ideological positions explain *both* how often they engage with citizens on Twitter and the type of response they receive. To address this limitation, we now turn to a time-series analysis of how candidates' tweeting behavior changed during the campaign. We split the tweets sent by each candidate

and the tweets mentioning each candidate by week, into three groups: tweets sent in the third week before the election, the second week before the election, and the week before.[13] For each of these weeks, we then compute again the average probability that tweets by the candidate are classified as engaging, and also that tweets mentioning the candidate are impolite, which results in a panel dataset where the unit of analysis is candidate × week.[14]

Using this new dataset, we examine the relationship between candidates' communication style on Twitter and their exposure to impolite messages by estimating a bivariate linear regression with candidate fixed effects. Since our comparison is now within candidates, it is not necessary to control for other variables in the previous analyses, which remain constant. More specifically, we regress the *change* in the proportion of impolite tweets received on the *lagged* proportion of engaging tweets sent by that candidate. This allows us to observe whether candidates who interact with their followers more often are more likely to increase the levels of harassment they are exposed to as a result, during the following week. Table 3 displays the results of this analysis, first pooling all data together and then for each of the four countries we consider. We find strong support for our hypothesis in the pooled model: Candidates who are more engaging in their communication style tend to receive more impolite tweets as the campaign progresses. In particular, we estimate that a one-standard-deviation positive change in the proportion of engaging tweets (around 19 percentage points) increases impolite tweets received by 5.2 percentage points (around 73% of the standard deviation in this variable). As it was the case before, when we disaggregate by country we find coefficients in the expected direction, but generally not reaching conventional levels of statistical significance.

We turn to our third type of analysis, where we offer a more fine-grained examination of how individuals react to candidates by taking tweets as our unit of analysis. We consider only those tweets sent by candidates (134,330 during our period of analysis), and look up in our full dataset any tweet by citizens that was a direct response to each of these tweets.[15] We then aggregate the predicted probability of each response being

Table 3 OLS Regressions of Impolite Tweets Received on Engaging Tweets Sent, With Candidate Fixed Effects

	All	United Kingdom	Spain	Germany	Greece
% Engaging tweets sent (lagged)	0.28**	0.07	0.35	0.43*	0.41
	(0.14)	(0.05)	(0.36)	(0.22)	(0.30)
Intercept	−0.12**	−0.05*	−0.15	−0.09*	−0.06
	(0.06)	(0.03)	(0.15)	(0.05)	(0.05)
N (candidates)	505	212	187	64	42
N (observations)	907	339	370	123	75
R^2	0.10	0.03	0.13	0.23	0.06

Dependent variable: Change in proportion of engaging tweets sent, by week. Robust standard errors in parentheses. Sig.: *10% **5% ***1%.

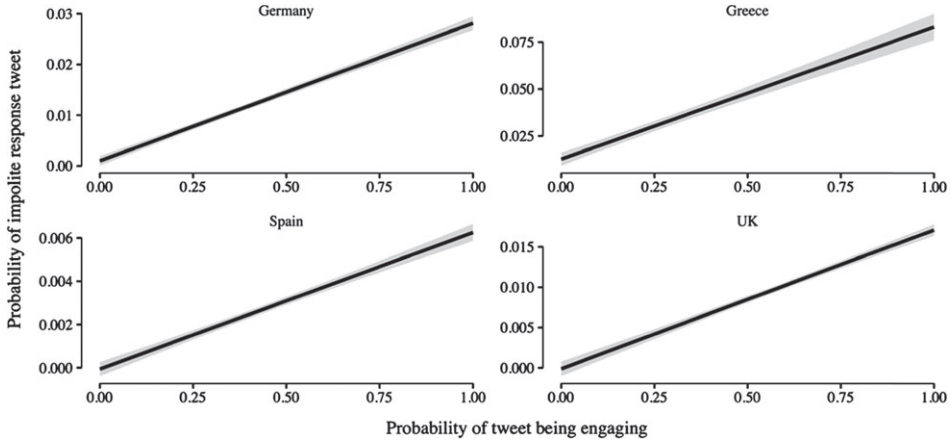

Figure 3 Impoliteness in responses to individual tweets at estimated probabilities of being engaging, by country.

classified as impolite to compute a measure of the level of negativity that candidates are exposed to, after they post each individual tweet.

Figure 3 provides a first look at the relationship between these two variables at the tweet level. Here, we display the predicted impoliteness in responses to candidate tweets, as a function of how engaging they are estimated to be, in a linear regression fitted separately for each country. In all cases we find strong, significant evidence that candidates' efforts to reach voters directly tend to generate higher levels of impoliteness in citizens' responses.

Part of this relationship could be due to candidate- or country-specific characteristics. In order to show that this result is robust to controlling for some of these other covariates, we now offer estimates from multilevel regression models with varying slopes where our key covariate is the probability that each tweet by the candidate is classified as engaging. This approach allows us to model the structure of the data (tweets nested within candidates) and is flexible enough to estimate whether the effect of engagement on impoliteness varies across candidates.

Table 4 displays the results of this analysis, which confirms our result that tweets that are classified as being engaging receive many more impolite responses. In particular, according to the results in Model 2, we find that an increase in the probability of a candidate tweet being engaging from 0.17 to 0.78 (25th and 75th percentiles in this variable, respectively) increases the average impoliteness in the responses to that tweet in 14 percentage points. As in the previous analyses, we find some heterogeneity across countries, but in this case we find positive and statistically significant effects in all cases. In particular, the estimated marginal effects are 0.017 ($p < 0.01$) in Germany, 0.019 ($p < 0.01$) in Greece, 0.005 ($p < 0.01$) in Spain, and 0.011 ($p < 0.01$) in the United Kingdom.

Table 4 Multilevel Linear Regressions of Impolite Responses on Engaging Tweets, at Individual Tweet Level

	Model 1	Model 2	Model 3	Model 4
Intercept	0.55**	−0.65	−0.64	−0.87*
	(0.22)	(0.43)	(0.61)	(0.44)
Prob. tweet is engaging	0.01***	0.01***	0.01***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
Greece (dummy)	1.82***	1.86***	3.07***	1.84***
	(0.32)	(0.31)	(0.31)	(0.35)
Spain (dummy)	−0.64**	−0.77***	−0.99***	−0.30
	(0.26)	(0.26)	(0.23)	(0.30)
United Kingdom (dummy)	−0.16	−0.14	−0.86***	0.04
	(0.26)	(0.25)	(0.27)	(0.29)
Candidate is incumbent		0.08	0.14	0.08
		(0.31)	(0.24)	(0.31)
log(count of followers)		0.17***	0.21***	0.17***
		(0.04)	(0.06)	(0.04)
Candidate is male		0.15	0.08	0.15
		(0.12)	(0.09)	(0.12)
Prime minister (national)		0.15	0.07	0.15
		(0.30)	(0.25)	(0.30)
Viability: Safe		−0.09	−0.09	−0.09
		(0.23)	(0.23)	(0.24)
Viability: Unpromising		−0.07	−0.06	−0.07
		(0.22)	(0.22)	(0.23)
Vote share (national)		−1.08	−1.02	−1.12
		(0.89)	(0.68)	(0.89)
LR position			0.04	
			(0.06)	
EU position			−0.45***	
			(0.14)	
Engaging × Greece				0.00
				(0.01)
Engaging × Spain				−0.01***
				(0.00)
Engaging × United Kingdom				−0.01
				(0.00)
Num. obs.: tweets	134,330	134,330	120,798	134,330
Num. groups: candidates	612	612	451	612
Num. groups: parties	59	59	48	59
Var: candidates (Intercept)	3.05	2.96	3.61	2.91
Var: candidates (Engaging tweet)	5.02	4.98	5.92	4.38
Cov: candidates (Intercept, Engaging tweet)	−2.41	−2.34	−3.45	−2.10
Var: party (Intercept)	0.11	0.09	0.00	0.09
Var: Residual	17.01	17.01	16.33	17.02

***$p < .01$. **$p < .05$. *$p < .1$.

Discussion

Twitter has become an important platform for electoral campaigning. Not only is it an efficient tool for a politician's image promotion and policy position distribution, but it also offers a platform for voter mobilization and provides a space on which candidates can present a more personal side, reducing the emotional distance with citizens. Most importantly, from a democratic point of view, Twitter provides an incredible opportunity for interactive communication between candidates and citizens. On Twitter, candidates can listen to citizens' feedback directly, while they also have the opportunity to respond using a platform whose laconic conversational structure allows for short and concise messages that enable strategic ambiguity and reduce the danger of loss of content control. Interactive use has been shown to have benefits for both sides, with politicians standing to especially benefit by being generally seen more positively when they interact with the public than when they don't.

Despite these important advantages for the politician at a personal level and for democracy in general, previous research has shown clearly that politicians, even when generally active on the platform, choose to make broadcasting, rather than interactive use. We have confirmed this pattern in this paper as well. Extant literature has offered little insight as to why this may be the case on Twitter—a platform whose affordances shield candidates from many of the potential dangers highlighted in the literature (Stromer-Galley, 2000).

Here we have argued that, in the design of communication strategies on social media platforms, candidates face an important trade-off between what is normatively desirable and what can be advantageous during an election campaign. On the one hand, using social media websites like Twitter or Facebook to connect with the electorate and establish a constructive dialogue with them is normatively desirable, and at least *a priori* also what voters prefer. On the other, this type of behavior implies giving up some communication control in order to reap the interactive benefits of social media, and is thus risky: It can attract the vitriol of citizens who, protected by the apparent anonymity of the platform, harass or attack the candidate, downgrading the quality of the debate and discouraging others from participating while potentially also destroying the candidate's reputation. From this perspective, although as our study shows the majority of tweets addressed to candidates do not include harassment, perhaps a strategy of just using social media as a one-way communication device–bypassing traditional media outlets and reaching the electorate directly–could actually improve candidates' electoral performance.

Our findings have important ramifications for political communication research, especially normative accounts about the benefits of two-way interaction, at least as far as Twitter is concerned. Placing *less* emphasis on what can be called *misaffordances* of social media, extant literature has generally assumed that (a) the two-way interaction enabled by platforms such as Twitter will be crucial for democratic reinvigoration, that (b) if citizens are given the opportunity to engage they will do so conforming to

generally accepted standards of politeness, and that (c) candidates' efforts to reach the public are, more often than not, insufficient.

Our study stresses that highly optimistic accounts about the potential of new media platforms to enhance democracy through direct interactions often fail to see a darker side of this type of communication. Twitter offers a radically new, direct, minimal, eponymous, and public way for interacting with politicians in real time. This communication is a radical replacement of the traditional act of, for example, writing letters to politicians (even if via e-mail)—an indirect, wordy, eponymous, and private way for interacting in asynchronous time. The benefits of this new type of interaction compared to the old are clear, and although most candidates approach Twitter with caution, many make an effort to exploit its capacities for more effective political communication to their full potential. Yet, our study also shows that the deliberative democratic potential offered by the platform's own affordances may be inhibited not (only) because of the potential lack of willingness on the part of candidates, but because of the ways citizens often tend to behave in largely anonymous online contexts, and because of the constraints imposed (or at least not prevented) by the platforms themselves.

The Twittersphere is full of potential but, at the same time, an oftentimes hostile new media environment that candidates do not fully understand. In an instructive example of a candidate's Twitter communication strategy gone sideways, in 2015 Hillary Clinton became the target of an immense volume of trolling after asking young people to express their views on their student loan debts on Twitter using 3 *emojis* or less. One of the features of Twitter political communication is that, alongside the possibility for productive exchanges, there is also the possibility of controversy, and controversy on Twitter often implies virality and spectacle for the audience (an audience which, lest we forget, is there primarily for social/entertainment purposes). Although the recent campaign of Donald Trump has shown that tweeting can be turned into a spectacle, which in turn could be a currency in the political Twittersphere, very often even well-crafted tweets approved by political communication specialists end up being damaging for candidates. With chances for even highly calculated, *non*interactive tweets to backfire, candidates become dis-incentivized and their approach to Twitter communication has to be adjusted accordingly, de-prioritizing interactive discussion in the medium. Those who decide to take the risk to engage in interactive communication ought to know what to expect and to have a specialized team that can deal with this issue. These insights call for more research on the misaffordances of new digital tools, as well as on how to integrate the kind of citizen behaviors they give rise to—and their consequences, within our broader understanding of political and campaign communication dynamics. Importantly, moving the focus away from the well-studied phenomenon of incivility *among* politicians, our findings urge that more attention in political communication research should be paid to the demand-side and the consequences of direct interactions between citizens and politicians.

Our analysis also illustrates the large potential of automated text analysis techniques applied to the study of social media platforms. Although the iterative process to develop a codebook and train coders required a significant effort, the data generated proved to be useful in training supervised learning algorithms that allowed us to code the content of hundreds of thousands of tweets with accuracy that matches human coding. In combination with recent development in crowdsourcing techniques (Benoit, Conway, Lauderdale, Laver, & Mikhaylov, 2016), we believe our approach will enable researchers to answer standing questions in the study of political communication that up to now required an extensive and expensive coding process. However, our analysis is not without shortcomings.

First, we are not able to establish whether these relationships are causal. We cannot distinguish whether candidates who send more engaging tweets attract more "trolls," or whether they send this type of messages more often precisely because they are responding to such attacks. Our analysis of how candidates' behavior evolves during the campaign partially addresses this concern, although an experimental setup would be more useful. Second, although we have tried to make a distinction between impoliteness and incivility, in our analysis we did not find any meaningful differences in their effects on candidates' behavior. However, this could be due to the difficulty of distinguishing these two dimensions empirically, and not necessarily because they have identical effects. Finally, given the party-centered electoral system of the EP elections, we were not able to examine the effect of different campaign strategies at the candidate level of their subsequent electoral success, which is clearly a missing piece in the puzzle of why candidates may decide to make only broadcasting use of social media platforms.

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Notes

1 In terms of party and candidate related differences, smaller or opposition parties have been found to be both early adopters and heavier users of the platform (Vergeer et al., 2011a) while, on average, in Europe younger and incumbent candidates report more activity on the platform (Lorenzo Rodriguez & Garmendia Madariaga, 2016).

2 Impolite remarks are presumably not always perceived as discouraging (see an overview of this argument in Papacharissi, 2004, p. 262).
3 For a more complete overview of the effects of incivility on political discussions see our Appendix S1.
4 Previous studies have shown that this is the case in other online platforms too. Davis (2009) argued that mockery and derogatory comments are so common on political blogs, that incivility is almost the default condition in such discussion forums (also Sobieraj & Berry, 2011).
5 Following Giebler and Wessels (2010), we classify candidates as "safe", "doubtful", and "unpromising" based on the candidate's list position relative to the potential number of seats predicted to be won by his or her party. We compute uncertainty about the outcome of the election as the standard deviation between the seats won by each party, and the electoral predictions published by Hix et al. (2014), based on TNS pre-election surveys. Candidates with a list position below the predicted seats minus one standard deviation are classified as "safe." Candidates with a list position above the predicted seats plus one standard deviation are classified as "unpromising." All other candidates were classified as "doubtful." In the case of party lists that are not national (all parties in the United Kingdom, and CDU/CSU in Germany), we divided the predicted seats across districts based on their size relative to the total number seats per country.
6 The only exception is our "morality" classifier, which has low recall (many tweets that are not related to morality or democracy are still classified as such). This is perhaps not surprising given that this concept has a more complex meaning than the other two variables we consider.
7 We also find levels of accuracy similar to those reported in other studies that applied machine learning methods to the measurement of impoliteness in online settings. For example, Danescu-Niculescu-Mizil, Sudhof, Jurafsky, Leskovec, and Potts (2013), report a maximum of 84% accuracy in coding of impoliteness in conversations on Wikipedia, only slightly below 86% agreement using human coding.
8 To be clear, we include not only tweets addressed directly to each candidate, but also those that mention them in any way, under the assumption that the candidate will receive a notification every time their name is mentioned, and can thus read what others are saying about them.
9 We multiply both variables by 100 to facilitate the interpretation of the regression coefficients.
10 We find substantively similar results if we estimate fractional logit models, which account for the nature of our dependent variables (proportions). However, to facilitate the interpretation of our results, here we report coefficients from OLS regressions.
11 We used estimates provided by Barberá, Popa, and Schmitt (2015), which were computed by applying a method similar to latent network modeling to the Twitter networks of individuals who follow each of these politicians. In the supplementary material we offer summary statistics for these variables.
12 Given the similar results for both variables, in the remaining analyses in this paper we focus on impoliteness, which is estimated here with a lower degree of measurement error.
13 We exclude from the analysis the tweets after the end of the campaign, since as we report in Appendix S1, they tend to increase in all countries, potentially as a result of factors unrelated to social media activity. In splitting the tweets, we take into account the fact that

the EP elections in the United Kingdom took place on 22 May 2014, but on 25 May 2014 in the other three countries.

14 Note that we only consider weeks in which the candidate sent at least two tweets, in order to reduce measurement error.

15 Direct responses are recorded as such in the metadata that accompanies each tweet as it is captured directly from the Twitter firehose, which allows us to unequivocally determine if a tweet is responding to another tweet or not. The average tweet by a candidate received 0.20 responses, and 90% of tweets receive 0 responses.

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Supporting Information

Additional supporting information may be found in the online version of this article:

Appendix S1. Extended overview of the literature on the effects of incivility on political discussions.

Supplementary Materials

A Bad Workman Blames his Tweets: The Consequences of Citizens' Uncivil Twitter Use when Interacting with Party Candidates

Supplementary Material A: *Extended overview of the literature on the effects of incivility on political discussions*

Racist, homophobic, shaming or ridiculing remarks are hardly inspiring conversation starters and, as research has shown, may have strong negative consequences even for those simply observing an online discussion (Anderson, Brossard, Scheufele, Xenos, & Ladwig, 2013; Gervais, 2015; Lyons & Veenstra, 2016). Indeed, individuals respond negatively to incivility directed at them or their views, and it may even influence the formation of negative attitudes about the issue at hand (Hwang, Borah, Namkoong, & Veenstra, 2008). Moreover, incivility in online exchanges makes participants perceive uncivil statements as less fair, informative and credible (Brooks & Geer, 2007; Ng & Detenberg, 2005) (but see the study by Thorson et al (2010) who, however, operationalize incivility as derogatory comments). More broadly, and importantly from a democratic point of view, previous research has found that impolite, and especially uncivil, discourse can have a widespread poisonous and polarising effect on discussions (Anderson et al., 2013; Lyons & Veenstra, 2016), even to those simply reading, but not participating, in online conversations (known also as "lurkers"), thus providing a disincentive for engaging in dialogue. This is further corroborated in studies showing that exposure to uncivil political talk induces feelings of anger and aversion, which in turn reduces satisfaction with the message board discourse (Gervais, 2015). Similarly, Lyons and Veenstra (2016, p.14) found that, if a politician's message on Twitter is viewed unsympathetically, and presumably commented upon in an uncivil manner so as to reflect this, the entire discussion surrounding it might collapse.

We believe that these effects may be visible on discussions with politicians, a topic which to our knowledge has not been investigated before. Existing research on journalists' involvement in comment sections on Facebook has shown that engagement from reporters in discussions turned uncivil tends to sooth uncivil discussion, leading to less incivility. Yet, we argue that due to the anonymous nature of Twitter (as opposed to the largely eponymous nature of Facebook), the more complex and subtle way in which discussions by multiple people appear on Twitter (as opposed to the structured discussion threads on Facebook) and, crucially, the largely disliked, distrusted and even despised, personae of politicians (as opposed to the mostly credible journalists), means that engagement from them will tend to induce, rather than soothe, impoliteness and

incivility[1].

Given this line of thinking politicians' and strategists' decisions may not be as straightforward when it comes to adopting an engaging style on Twitter. As Stromer-Galley notes in her work on controlled interactivity, giving up some communication control in order to benefit from the affordances of social media involves trade-offs, and in this case the trade-off is engaging with the risk of being trolled. Given the clear benefits of directly addressing people on Twitter, however, some candidates may be willing to take that risk to engage the public. Furthermore, it is plausible that structural constraints apply too and that, for example, candidates in countries where political elites and institutions enjoy high levels of citizen trust may be less likely to be harassed online and thus more comfortable in frequently engaging the public. Previous research has shown that there is variation among incumbents and challengers when it comes to Twitter adoption and frequency of using the platform, while studies have also identified a geographical divide between active Northern European politicians and less active Southern European (Vergeer & Hermans, 2013, p. 142). Other studies have shown that candidates lagging behind in the polls are more likely to experiment in involving the public and supporters online than candidates leading the polls (Stromer-Galley, 2014, p. 34).

[1] We note here that given the generalised impact of incivility on political discussions, in this study we perceive uncivil conduct as a broadly poisonous attitude - not only as something which has negative effects on those towards whom is directed.

Supplementary Material B: *Country specific Twitter presence statistics*

For each specific country, we report the total number of MEP candidates for large or special parties (generally small, but EP election relevant parties in terms of pronounced pro- or anti-EU issue focus), with remaining numbers collapsed into "Other". Depending on the country, the data collection started with checking whether candidates had a social media profile, but for small/fringe parties only select candidates were checked. If a candidate was not checked for a Twitter account, we treat it here as "not having an account". Top of the list refers to the first 33% on the electoral lists (for each party), Middle of the list is 33-66% in terms of position, and Bottom of the list is last 33% of each list (above 66th percentile).

The average percentage of MEP candidates with a presence on Twitter is 16% across all 28 EU countries. This proportion is much lower than the one reported by Lorenzo-Rodriguez and Madariaga (2015): 42.69% of MEP candidates had Twitter accounts. However, their dataset included only candidates running in parties with existing representation in the European Parliament, which excludes new parties such as Podemos in Spain. Their analysis shows that candidates who make an active use of this platform are incumbents and members of large national parties, although gender does not correlate with Twitter presence and use. As detailed in the supplementary material C when restricting our data using similar filters, our MEP candidate Twitter presence is in line with those reported previously in the literature. For example, 40% of the MEP candidates from the German SDP had a Twitter presence, or 87 % of the British Labour candidates for comparison. Furthermore, we also find that those higher up on the party electoral lists are more likely to have an active Twitter presence. Hence, the lower Twitter presence averages reflect the plethora of parties and candidates (almost all) covered by our data collection rather than any systematic difference. That said, even if there was some systematic difference, this is not a problem for our analysis, since here we are only interested in the population of candidates with a Twitter account, but our results may vary in the future as more candidates start adopting this platform.

Germany:

946 total candidates, 723 candidates checked, 173 candidates on Twitter (12 inactive/private profiles, 48 identified only at later stage), and 25 different parties/lists

Detailed statistics for parties (8 parties above 2% of the party list vote in the 2013 Federal elections, 5 in the Bundestag)

Party	N (total)	% on Twitter			
		All	Top of list	Middle of list	Bottom of list
1. CDU/CSU	206	23	42	19	12
2. SPD	96	40	69	27	18
3. FDP	102	31	45	31	14
4. Grune	26	73	100	67	50
5. Die Linke	20	45	71	14	50
6. Piraten	12	92	100	100	75
7. AfD	28	21	40	10	12
8. Other	456	2			

Note: For the remaining parties we only checked if the top 15 candidates on the list had a Twitter account. It is worth mentioning that with the exception of the Free Voters, which had a vote share of 1.5%, all the aforementioned parties got less than 1% of the total votes and their total vote share sums to 7.4%.

Greece:

544 total candidates, 121 candidates on Twitter (22 identified only at later stage), and 14 different parties/lists

Detailed statistics for parties (8 parties)

Party	N (total)	% on Twitter			
		All	Top of list	Middle of list	Bottom of list
1. CRL	40	52	54	54	50
2. ND	42	57	43	50	79
3. Elia	41	56	50	62	57
4. ToPot	42	26	21	36	21
5. IG	42	26	29	29	21
6. GEC	32	12	20	9	9
7. G	42	19	36	7	14
8. DL	40	30	23	15	50
9. Other	223	3			

Spain:

2105 total candidates, 648 checked candidates, 404 candidates on Twitter (4 inactive/private profiles, 25 identified only at later stage), and 39 different parties/lists

Detailed statistics for parties (11 parties)

Party	N	% on Twitter			
		All	Top of list	Middle of list	Bottom of list
1. CS	54	50	100	53	0
2. PP	54	76	100	84	44
3. Vox	54	18	59	0	0
4. EPDD	54	48	94	53	0
5. CEU	54	50	100	53	0
6. LPD	54	57	100	63	11
7. PE	54	72	100	74	44
8. PSOE/PSC	54	100	100	100	100
9. UPyD	54	100	100	100	100
10. PODEMOS	54	70	100	74	39
11. IP	54	100	100	100	100
12. Other	1511	0.2			

Note: We did not check if the candidates of the other 27 parties and lists had Twitter accounts. It is worth mentioning that none of the 27 parties received more than 1% of the vote and their total vote share sums to 8%.

UK:

751 total candidates, 568 candidates checked, 360 candidates on Twitter (18 inactive/private profiles, 46 identified only at later stage), and 46 different parties/lists

Detailed statistics for parties (7 main parties)

Party	N (total)	% on Twitter			
		All	Top of list	Middle of list	Bottom of list
1. Labour	70	87	95	89	76
2. Conservatives	71	72	77	75	62
3. Liberal Democrats	70	93	100	89	90
4. Plaid Cymru	4	100	100	100	100
5. UKIP	70	74	86	78	57
6. SNP	6	100	100	100	100
7. BNP	70	11	32	4	0
8. NI parties	9	89			
9. Other	381	28			

Note: For 28 parties and lists we only checked if the top 3 candidates in each constituency had a Twitter. All these parties received less than 1.1% of the vote and their total vote share sums to 5.1%

Supplementary Material C: *Summary of coding, machine learning classification, and variable statistics*

After compiling the codebook, the coding process proceeded as follows. First, we recruited six coders that would each code 7000 tweets. Our goal was to have around 7000 tweets coded in the main language of each of the four countries –3,500 tweets by the candidates and 3,500 tweets mentioning the candidate, in order to have a balanced sample. Of these 7,000, approximately half of the tweets were coded by two coders so that we can assess inter-coder reliability. As described below, due to duplicate Tweets, language discrepancy, and empty or spam Tweets containing no relevant text (only handles for example), the final number of Tweets coded was lower, but reflects roughly equal amount of candidate vs public Tweets, with half of them coded by two coders.

The coding process started with a training session in which the coders were introduced to the coding scheme, the software used for coding (i.e. CrowdFlower) and went through a number of short exercises (coding around 40 English language tweets). After the training session all coders were assigned the same 160 English language tweets as a follow-up exercise. This was used to evaluate the overall reliability across all six coders, offer feedback to the coders, and for minor adjustment of the codebook. Given that for the coding of the respective tweets the average reliability was satisfactory across all categories, we went further with assigning the country-specific tweets. As a first step the coders were asked to analyse 1000 tweets. After this stage was finalized, the reliability across all countries was re-assessed and in the cases where the reliability indicators were not satisfactory the coders received detailed feedback. At this point we also introduced the language sub-category to the filter question as we noted that in the case of Spain there were a number of tweets in Catalan and Basque, and also in the case of Germany the presence of two least leading candidates among the EP candidates (i.e. Martin Schulz for the Social Democrats groups and Ska Keller for the Greens) meant that a large proportion of the tweets addressed to them were not in German. Following this clarification, the coders received the last batch of 6000 Tweets in early April. This was subsequently

supplemented with 2000 tweets for Germany and 1000 tweets for Spain in order to compensate for the language issue mentioned above.

Table C1: Inter-coder reliability statistics

		Germany	Greece	Spain	UK
Summary	Coded by 1/ by 2	2947/2819	2787/2955	3490/1952	3189/3296
	Total coded	5766	5742	5442	6485
Communication	Broadcasting	2755	2883	1771	1557
	Engaging	3011	2859	3671	4928
% Agreement/Krippendorf/Maxwell		79/0.58/0.59	85/0.70/0.70	84/0.66/0.69	85/0.62/0.70
Tone	Impolite	399	1050	121	328
	Polite	5367	4692	5321	6157
% Agreement/Krippendorf/Maxwell		92/0.30/0.85	80/0.26/0.60	93/0.17/0.87	95/0.54/0.90
Morality	Moral	265	204	437	531
	Other	5501	5538	5005	5954
% Agreement/Krippendorf/Maxwell		95/0.50/0.91	97/0.53/0.93	96/0.41/0.92	90/0.39/0.81

Notes: the total number of valid tweets is less than 7,000 because here we exclude tweets we classified as "spam" or in other languages. As measures of inter-coder reliability, we report the percent agreement between the coders for those tweets coded by two coders, Krippendorff's alpha, and also Maxwell score as we consider it most appropriate measure of ICR because it is specifically designed for dichotomous variables.

The machine learning classification task consisted on the following steps. First, we processed the text of the labeled tweets by removing stopwords in each of the four languages, converting to lowercase, transliterating all characters to ASCII (e.g. replaced *á* by *a*) to avoid problems with accentuation differences, stemming all the words to convert them into tokens, and splitting the text into unigrams (tokens) and bigrams (sets of two tokens). We kept all hashtags as they were published, but we substituted all Twitter handles by just an @ sign to avoid overfitting.[1] To further remove extremely rare and extremely frequent n-grams, which are likely to add noise to our classifier, we only consider n-grams that appear in two or more tweets, and in less than 90% of all tweets.

The second step in our analysis is to estimate the parameters of our classifiers. In particular, we use a regularized logistic regression with L2 penalty (ridge regression) that regresses a binary variable indicating whether the tweet corresponds to one or another category on a vector of n-gram counts that indicates the number of times each of the n-

[1] Since we are aggregating tweets at the candidate level, if tweets mentioning the name of a particular candidate are more likely to contain impolite content, then his or her name would be a good predictor of impoliteness, which would induce bias in our analysis.

grams we consider is mentioned in that tweet.[2] We use regularization in order to deal with the sparseness in our feature matrix (each tweet only contains a few words, and the rest of word counts is zero) and because we have more variables than observations in our dataset. Since tweets in our dataset are written in different languages, we run a different model for each country and variable. We estimated these machine learning classifiers using the python library *scikit-learn* (Pedregosa et al, 2011).

In Table C2 we report different measures of performance for our classifiers in each country. To compute these measures, we use 5-fold cross-validation: we split each dataset randomly into 5 sets ("folds") with 20% of the observations each; we train the classifier with the remaining 80% of the data, predict the labels for the remaining 20%, and compare with their true values; this procedure is repeated 5 times, each time using a different 20% "fold."

Table C2: Classifier performance

		UK	Spain	Greece	Germany
Communication Style	Accuracy	0.821	0.775	0.863	0.806
	Precision	0.837	0.795	0.838	0.818
	Recall	0.946	0.890	0.894	0.832
	Baseline	0.752	0.662	0.509	0.549
Polite vs. impolite	Accuracy	0.954	0.976	0.821	0.935
	Precision	0.955	0.977	0.849	0.938
	Recall	0.998	1.000	0.953	0.997
	Baseline	0.949	0.976	0.825	0.937
Morality	Accuracy	0.895	0.913	0.957	0.922
	Precision	0.734	0.665	0.851	0.770
	Recall	0.206	0.166	0.080	0.061
	Baseline	0.879	0.906	0.954	0.919

Notes: *accuracy* is the % of tweets correctly classifier; *precision* is the % of tweets with predicted value of 1 (engaging; polite; related to morality) correctly classified; *recall* is the % of tweets with predicted value of 0 (broadcasting; impolite; not related to morality) correctly

[2] Note that in the classifier we exclude tweets marked as spam by our coders.

classified; *baseline* is the proportion of tweets in the modal category for each variable (engaging; polite; not related to morality)

To ensure that the predicted values we are estimating correspond to our constructs of interest, we also extracted the top predictive n-grams for each category, that is, the n-grams that correspond to the variables with the highest and lowest coefficients in the regularized logistic regression. In Table C3 we report the top 25 n-grams for the three categories of interest in the UK, to illustrate our results.

Table C3: Top predictive stemmed n-grams for classifiers

	Communication style
Broadcasting	just, hack, #votegreen2014, :, and, @ ', tonight, candid, up, tonbridg, vote @, im @, follow ukip, ukip @, #telleurop, angri, #ep2014, password, stori, #vote2014, team, #labourdoorstep, crimin, bbc news
Engaging	@ thank, @ ye, you'r, @ it', @ mani, @ pleas, u, @ hi, @ congratul, :), index, vote # skip, @ good, fear, cheer, haven't, lol, @ i'v, you'v, @ that', choice, @ wa, @ who, @ hope
	Politeness
Impolite	cunt, fuck, twat, stupid, shit, dick, tit, wanker, scumbag, moron, cock, foot, racist, fascist, sicken, fart, @ fuck, ars, suck, nigga, nigga ?, smug, idiot, @arsehol, arsehol
Polite	@ thank, eu, #ep2014, thank, know, candid, veri, politician, today, way, differ, europ, democraci, interview, time, tonight, @ think, news, european, sorri, con- gratul, good, :, democrat, seat
	Morality and democracy
Others	@ ha, 2, snp, nice, tell, eu, congratul, campaign, leav, alreadi, wonder, vote @, ;), hust, nh, brit, tori, deliv, bad, immigr, #ukip, live, count, got, roma
Moral/Dem.	democraci, polic, freedom, media, racist, gay, peac, fraud, discrimin, homosexu, muslim, equal, right, crime, law, violenc, constitut, faith, bbc, christian, marriag, god, cp, racism, sexist

Summary statistics: Germany

Variable	Mean	Std. Dev.	Min.	Max.	N
% engaging tweets sent	0.26	0.17	0.01	0.92	92
% impolite tweets received	0.06	0.03	0	0.2	90
% tweets about morality/democ.	0.09	0.1	0.01	0.88	90
Incumbent candidate (dummy)	0.3	0.46	0	1	117
Electability: doubtful	0.09	0.29	0	1	117
Electability: safe	0.3	0.46	0	1	117
Electability: unpromising	0.61	0.49	0	1	117
Candidate is male (dummy)	0.67	0.47	0	1	117
Tweets sent by candidate	114.75	205.19	0	979	117
Tweets received by candidate	576.58	3228.09	0	33452	117
Number of followers	3386.46	15456.86	1	155193	104
Ideology of candidate	4.77	1.27	-0.03	6.26	66
EU position of candidate	6.48	0.84	4.48	7.45	66
National vote share	15.23	12.29	1	34.1	117
National incumbent party (dummy)	0.41	0.49	0	1	117

Summary statistics: Spain

Variable	Mean	Std. Dev.	Min.	Max.	N
% engaging tweets sent	0.45	0.11	0.22	0.84	212
% impolite tweets received	0.04	0.04	0	0.28	211
% tweets about morality/democ.	0.1	0.06	0	0.43	211
Incumbent candidate (dummy)	0.07	0.26	0	1	225
Electability: doubtful	0.15	0.36	0	1	225
Electability: safe	0.1	0.3	0	1	225
Electability: unpromising	0.75	0.43	0	1	225
Candidate is male (dummy)	0.6	0.49	0	1	225
Tweets sent by candidate	269.55	385.45	0	2647	225
Tweets received by candidate	1717.86	8339.83	0	99294	225
Number of followers	8452.71	61523.6	10	866563	205
Ideology of candidate	4.57	1.19	1.6	6.52	175
EU position of candidate	6.01	0.24	5.46	6.41	175
National vote share	8.4	11.84	0	41.9	225
National incumbent party (dummy)	0.05	0.22	0	1	225

Summary statistics: Greece

Variable	Mean	Std. Dev.	Min.	Max.	N
% engaging tweets sent	0.19	0.11	0.03	0.58	79
% impolite tweets received	0.18	0.11	0	0.52	70
% tweets about morality/democ.	0.04	0.04	0	0.28	70
Incumbent candidate (dummy)	0.08	0.27	0	1	99
Electability: doubtful	0.02	0.14	0	1	99
Electability: safe	0.07	0.26	0	1	99
Electability: unpromising	0.91	0.29	0	1	99
Candidate is male (dummy)	0.66	0.48	0	1	99
Tweets sent by candidate	58.62	110.8	0	839	99
Tweets received by candidate	93.44	260.77	0	1692	99
Number of followers	2056.33	4797.74	3	37314	90
Ideology of candidate	4.63	1.91	-0.29	6.9	53
EU position of candidate	6.66	0.05	6.49	6.74	53
National vote share	15.18	11.04	0	29.7	99
National incumbent party (dummy)	0.4	0.49	0	1	99

Summary statistics: UK

Variable	Mean	Std. Dev.	Min.	Max.	N
% engaging tweets sent	0.53	0.14	0.04	0.92	271
% impolite tweets received	0.05	0.03	0	0.2	266
% tweets about morality/democ.	0.06	0.04	0	0.25	266
Incumbent candidate (dummy)	0.16	0.37	0	1	303
Electability: doubtful	0.04	0.2	0	1	304
Electability: safe	0.12	0.32	0	1	304
Electability: unpromising	0.84	0.37	0	1	304
Candidate is male (dummy)					0
Tweets sent by candidate	169.42	330.06	0	3720	304
Tweets received by candidate	656.84	3077.93	0	48781	304
Number of followers	3119.31	13093.55	0	191616	264
Ideology of candidate	5.19	1.04	4.24	8.18	176
EU position of candidate	5.18	0.58	3.75	6.14	176
National vote share	15.61	14.33	0	36.1	304
National incumbent party (dummy)	0.32	0.47	0	1	304

Supplementary Material D: *Coding instructions*

Social Media and 2014 EU Election Project

In this job, you will be presented with tweets about the 2014 European elections. You will need to classify each tweet into the following series of categories:

1. Polite Vs. Impolite

- **Polite** (a tweet that adheres to politeness standards, i.e. it is written in a well-mannered and non-offensive way) – *@paulmasonews why doesnt #EU take a longer term view? Doesnt #Germany remember their 1940s bailout allowing recovery & growth? #Greece*

- **Impolite** (an ill-mannered, disrespectful tweet that may contains offensive language. This includes: threatening one's rights (freedom to speak, life preferences), assigning stereotypes or hate speech ("nigger", "faggot"), name-calling ("weirdo", "traitor", "idiot"), aspersion ("liar", "traitor"), pejorative speak or vulgarity, sarcasm, ALL CAPS, incendiary, obscene, humiliating.

  – *@Nigel_Farage How's your dirty European non British dirty bitch of a wife? Is she ok? Can't imagine what it's like for you.*

  – *@SLATUKIP – "@DavidCoburnUKip Oh shut up David. You're a bore. @marley68xx"*

2. Communication Style

- **Broadcasting** (a statement or an expression of opinion)

  – @PaulBrannenNE – "Labour's freepost election address dropping through letter boxes across the North East this week."

- **Engaging: directed to someone else/another user** (a direct response)

  – @GreenJeanMEP – "@klebudd Thank you Katie. We aimed for a positive campaign #Vote- Green2014"

3. Political content (other categories omitted)

• **Morality and democracy** (tweets that make reference to one of the following topics: freedom and human right, traditional morality, law and order, social harmony, freedom and human rights, democracy, constitutionalism)

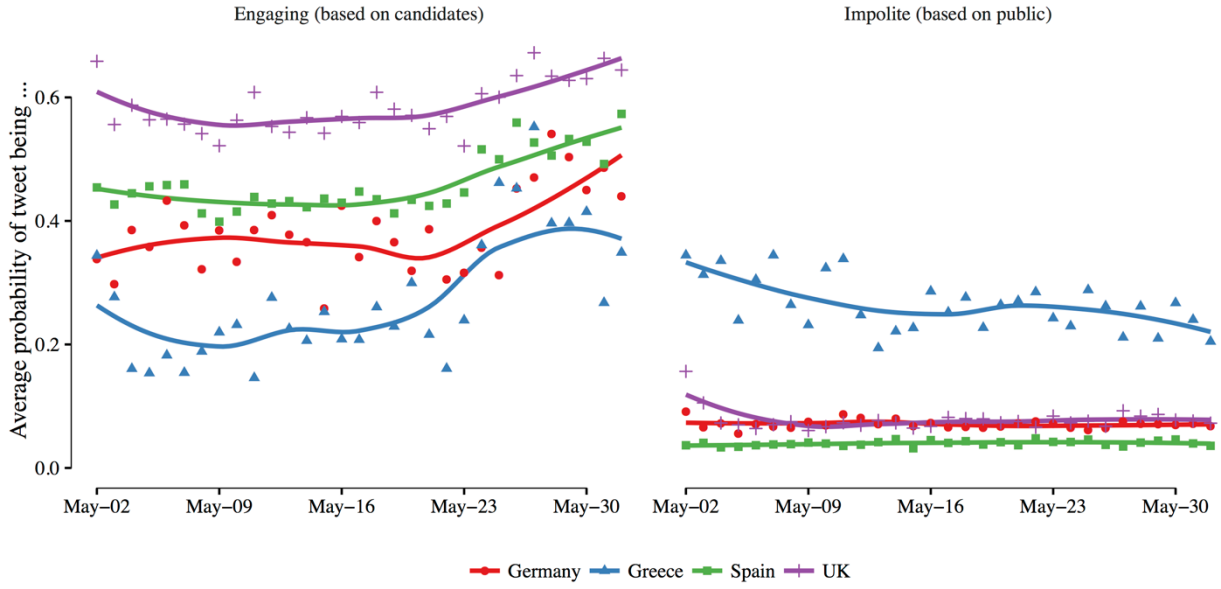
– *@NATOWales but what about the defense of democracy and freedom of speech???*

– *@Magee__ That was dropped. He was then arrested for the content of the speech.*

Supplementary Material E: *Additional Results*

The following Figure complements the analysis in the Results section of the paper by demonstrating that the differences we identified across countries are stable over time. The left panel displays the average probability that the tweets sent by candidates in each country and day are classified as engaging. The less smooth line overlaid on top reveals a monotonic increase in candidates' outreach to voters through social media as the campaign progresses, and in particular after the election day, in many cases to thank voters for their support. On the contrary, the proportion of impolite tweets received by candidates during the campaign remained relatively stable during this period, as we show in the right panel. The only exception to this general pattern is Greece, where we see a gradual decline during the campaign.

Figure E1: Average proportion of engaging tweets sent and impolite tweets received, by day and country



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