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DOI
10.1080/19331681.2021.1927928

Publication date
2022

Document Version
Final published version

Published in
Journal of Information Technology & Politics

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JOURNAL OF INFORMATION TECHNOLOGY & POLITICS
2022, VOL. 19, NO. 1, 98–117
https://doi.org/10.1080/19331681.2021.1927928

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Taylor & Francis Group

Comparing user-content interactivity and audience diversity across news and satire: differences in online engagement between satire, regular news and partisan news

Mark Boukes, Xiaotong Chu, M. F. Abdulqadir Noon, Rufei Liu, Theo Araujo, and Anne C. Kroon

ABSTRACT

Normative theory on the functioning of the public sphere requires citizens to actively engage with the information that is provided to them. For a long time, however, the possibilities of user-content interactivity have been limited due to the one-directionality of the traditional mass media. Moreover, a re-occurring question is to what extent less-versus-more entertaining forms of news evoke audience engagement. This study analyzes the user-content engagement on *online* platforms in response to journalistic content and infotainment; more concretely, we compare whether the satire genre is more likely to evoke user-content interactivity than regular news and partisan news shows. To test our hypotheses, a large-scale data analysis of social media posts by a wide variety of American TV shows on *Facebook, YouTube*, and *Twitter* has been conducted. Results demonstrate satire's potential to encourage user-content interactivity: Satire videos generated (a) more likes and (b) more comments than the clips of regular news. However, we also find that (c) satire videos are related to *less* controversy, which arguably indicates that satire hampers the exchange of diverse ideas. Compared to partisan news – which shares many features of satire, but often lacks the humor component – satire elicits more likes but less commentary and less controversy.

KEYWORDS

User-content engagement; satire; news; social media; likes; commenting; diversity

Online platforms have made it possible for private citizens to *interact* with media content in a way that the mass media have for a long time been unable to offer. Interactivity comes about through the conversations between citizens in response to media content (Ksiazek, 2018), but also in the process of making sense of and using media output (Dahlgren, 2005). Ksiazek, Peer, and Lessard (2016, p. 505) identified this as a specific type of media engagement: user-content interactivity, which "involves a user interacting with content and producers, such as posting an initial comment to a video thread. This represents a basic form of feedback for the content creator." People do not only demonstrate their engagement through interactions with other users, but their engagement may also display through liking and ranking (i.e., clicking rather than typing, see Ksiazek et al., 2016).

Such interactivity may be deemed normatively positive from the perspective of democratic theory (e.g., Cunningham, 2002). After all, in most models of how democracy would ideally function, more is expected of citizens than passively being informed about political matters. Instead, citizens are expected to actively take part in the public sphere (Ferree, Gamson, Gerhards, & Rucht, 2002). In the current study, we explore which media genres are better suited to encourage this kind of citizen participation, and thereby distinguish between basic-level (i.e., clicking) and high-level (i.e., commenting) forms of interactive engagement (Ksiazek et al., 2016) and additionally propose controversy scores as a measure of audience diversity. Notably, online forms of engagement often correlate strongly with off-line participation in civic and political life (Boulianne & Theocharis, 2020); thus, looking at online engagement potentially informs us about the media genres that inspire relatively more civic participation.

Concretely, this study compares whether the satire genre is more likely to evoke user-content engagement than regular news shows: Satire has been argued by some to make viewers apathic and suppress intentions to actively participate (Hart & Hartelius, 2007), but others emphasize its potential of being a resource for citizenship and civic

CONTACT Mark Boukes markboukes@gmail.com Amsterdam School of Communication Research, University of Amsterdam, Nieuwe Achtergracht 166, Amsterdam 1018 WV, The Netherlands

engagement (Jones & Baym, 2010). We investigate differences between genres regarding elicited user-content engagement with a large-scale data collection in which the social media posts of the most popular American satire shows and news programs are collected. While doing so, we distinguish between regular news and partisan news. Although frequently understood as news, partisan news arguably shares many entertainment elements with political satire (see Boukes et al. , 2014); especially message clarity and a lack of objectivity (see Landreville, 2015). Accordingly, partisan news has also been labeled as "confrontainment" (Hutchby, 2017, p. 102). By comparing satire, news and partisan news, we test inferences whether it is possibly the *lack of objectivity* (setting regular news apart from satire and partisan news) or the presence of *humor* in satire alone that may affect user engagement. Additionally, we distinguish between satire shows and parody shows to explore whether the combination of humor and *explicit* opinion (in satire) makes it more impactful compared to the less explicit and more ambiguous humor in parody. Because we do not have data about exact content features, future (experimental) research with precisely manipulated stimuli will be needed to verify that it is indeed the lack of objectivity, humor presence, and message ambiguity which are responsible for the revealed effects.

Altogether, this study hopes to contribute to the literature by combining theory on two timely topics – satire and online public sphere. Whereas previous studies explored the characteristics of online public sphere on one platform (Camaj & Santana, 2015; Coe, Kenski, & Rains, 2014; Papacharissi, 2004) or how this differed between online platforms (Halpern & Gibbs, 2013; Rowe, 2015), we take a next step and investigate the differences in user-content interactivity as the outcome of genre characteristics. We collect data from three platforms (*Facebook, YouTube, Twitter*) because the specific features and platform architecture as well as the distinct audiences that are present may influence the quality of interactivity (see, e.g., Boukes, 2019b).

Dimensions of user-content interactivity

Interactive features on webpages allow the audience to engage with news (Deuze, 2003). Although engagement is a broad concept – ranging from simple exposure to the co-creation of content – interactivity requires a multi-directional flow of information between user and producer or their content (Ksiazek et al., 2016): The user not only receives information but also gives a certain kind of feedback.

Not all interactivity requires a similar level of engagement. Ksiazek et al. (2016, p. 505) theorized "a continuum of engagement" ranging from exposure (minimal) via popularity indices (basic-level) to actual commenting (high-level) on the media product. Accordingly, we distinguish two kinds of interactive engagement. First, basic-level interactive engagement through the rating, ranking, favoriting, and liking of posts (Ksiazek et al., 2016). Although this indeed requires some action of the user (Deuze, 2003), this can be simply accomplished by clicking a button on the webpage. Second, we investigate high-level interactive engagement through the commenting on videos (Ksiazek et al., 2016). This requires a deeper engagement because people actually have to think about and type a message regarding what they have seen, which therefore can be considered a participatory activity (Hujanen & Pietikäinen, 2004) and may even influence the viewing experiences of later audiences (Möller & Boukes, 2021). We do not test the effects of genre on the number of views of a certain video (i.e., the basic measure of popularity, see Chatzopoulou, Sheng, & Faloutsos, 2010), because of itself this is a strong predictor of likes and comments: With more views, it is likely that a video receives more likes and comments (Ksiazek et al., 2016). Therefore, we treat the number of views as a control variable in the analyses – or if this is not possible, the popularity of a certain source/channel.

Besides liking (basic-level interactivity) and commenting (high-level interactivity), the current study introduces an alternative outcome that reflects a third aspect of a vital public sphere (Ferree et al., 2002; Habermas, 1989): Plurality of views or interpretations. User-content interactions can be used to construct a measurement of audience diversity: The balance between people who enjoy/agree versus those who dislike/disagree with the content of a video can be deduced from the number of likes and dislikes (*YouTube*) or positive

and negative emojis (*Facebook*). The (im)balance between the two provides an appropriate estimation of how diverse the responses of viewers are. Especially when comparing genres if one genre has less balance (more likes than dislikes or vice versa) than the other genre (equally many likes as dislikes), this indicates a more homogeneous audience.

Influence of news genre on user-content interactivity

Although some worried about satire potentially making the audience cynical and apathetic (Hart & Hartelius, 2007), previous studies found that satire may actually contribute positively to certain types of engagement. Studies within the realm of inoculation theory have shown that satire encourages subsequent thinking about political issues and motivates political discussion (for an overview, see Compton, 2018). Satire, for example, has inspired people to attend a rally for the first time (Reilly & Boler, 2014), to make donations (Day, 2013) or to actively share its content (Baym & Shah, 2011). Moreover, different underlying mechanisms have been identified through which satire may cause engagement – potentially also in the form of user-content interactivity: Satire might stimulate this via an affective path by evoking negative emotions (Chen, Gan, & Sun, 2017; Lee & Kwak, 2014) as well as via a cognitive path due to an increased sense of efficacy (Hoffman & Thomson, 2009; Hoffman & Young, 2011). Moreover, satire has the ability to make topics be perceived as relatively important (Becker & Bode, 2018; Boukes, 2019a) and, thereby, stimulate participation through relatively undemanding acts of the citizenry (Bode & Becker, 2018). Both the evoked laugh as well as the narrative engagement caused by a piece of satire (Nabi, Moyer-Gusé, & Byrne, 2007) may eventually motivate its audience to "reward" its producers with a like or comment and the willingness to share it within their social networks (Yang & Jiang, 2015).

Regular news, by contrast, traditionally leans on "objectivity as strategic ritual" (Tuchman, 1972). By emphasizing the news factor of facticity, there is not much to like or dislike about news – it simply presents "reality" – which may negatively affect any kind of interactivity (Weber, 2014) compared to the satire genre that entertains but also challenges the audience's thoughts (Meddaugh, 2010). Moreover, news coverage is often rather abstract and overly general, which often leaves viewers with a sense of powerlessness (Woodstock, 2014).

Accordingly, satire could be likely to spark more enthusiasm and motivation to "like" a post or to type a comment than regular news coverage. It is important to separately investigate both these types of responses because one-click reactions (i.e., dislikes/likes) are less demanding and less indicative of serious engagement than the act of writing a comment (Burke & Kraut, 2016). Altogether, we expect the following:

H_1: *Satire evokes more user-content interactivity in the form of* (a) *likes and* (b) *comments than regular news.*

Diversity of citizen input still seems the least investigated dimension of a well-functioning and deliberative online public sphere. To allow a real exchange of ideas, however, the audience composition requires a certain level of heterogeneity (Papacharissi, 2004). Inter-ideological interactivity will benefit the quality of debate from a deliberative perspective compared to a situation in which one group dominates (Janssen & Kies, 2005). Citizens can only form their opinions with input from various standpoints under these circumstances – where people are also exposed to heterogenous ideas that challenge the opinions that they initially held.

However, citizens are not always eager to consume cross-cutting content. The "hostile media phenomenon" predicts that people perceive bias in objective news coverage depending on their own political views (Hansen & Kim, 2011; Vallone, Ross, & Lepper, 1985). In the current polarized political climate, this is even more likely (Borah, Thorson, & Hwang, 2015) and will encourage selective exposure (Stroud, 2010) because people perceive their own opinions as the "neutral" benchmark.

Especially in the politically polarized context of the United States, political satire shows might be perceived as being even more biased than news outlets (Coe et al., 2008) and also more than

partisan news outlets, such as *FoxNews* (Arpan, Bae, Chen, & Greene, 2011). Satire shows, after all, do not pretend to be objective (Borden & Tew, 2007). In contrast, satirists call-out politicians for their rhetoric (Richmond & Porpora, 2019) and may take a clear stance against specific political actors (Boukes & Hameleers, 2020). As satire allegedly attracts a liberal audience in the U.S. context (Young, 2020) and is increasingly biased against Republican politicians – with more jokes about conservative than liberal politicians, and this gap has consistently been growing since 1992 (Lichter & Farnsworth, 2018) – this may lead to a more homogenous viewership than regular news shows. Moreover, when cross-cutting exposure through satire shows occurs (e.g., Stroud & Muddiman, 2013), this may reduce political efficacy (Becker, 2014) and thus evoke a spiral-of-silence process (Lee, 2012) through which user-content interactivity becomes less likely among those who disagree with the message. Following the reasoning above, we test this hypothesis:

H_2: *Satire attracts a more homogenous audience response (i.e., lower controversy) compared to regular news.*

Satire vs. partisan news

Besides comparing satire and regular forms of news – at the core of our study – we also explore the differences between satire and partisan news shows. Although partisan news is generally perceived as "news" and is often hold against the same journalistic standards, it is actually a distinct sub-genre of news – just like satire news – with its own set of rules. Partisan news – also called "confrontainment" (Hutchby, 2017, p. 102) – does not follow journalistic guidelines of balance, objectivity or neutrality, whilst it obviously chooses the side of one political party, actor, or ideology (Brock & Rabin-Havt, 2012; Meyers, 2020). Partisan news shares these characteristics with satire shows (Boukes et al., 2014), which obviously also do not feel the *need* to be a neutral journalistic outlet (Borden & Tew, 2007; Ödmark, 2018) and uses this freedom to create an alternative form of journalism (Baym, 2005). Also in terms of its rhetoric, satire and partisan news are relatively similar (Boukes et al., 2014) and clearly distinguishable from regular news (Brugman, Burgers, Beukeboom, & Konijn, 2021).

Yet, partisan news lacks the humor component that characterizes political satire. When comparing satire and partisan news, thus, effects on user-content interactivity could go either direction: The humor in satire in itself may encourage liking and commenting (Young, 2008), but the strong views and clear subjectivity – which it shares with partisan news – might also encourage its viewers to act and not nuance the importance of the message (Boukes, 2019aa). Thus, the question is what the alleged absence (partisan news) or presence (satire) of humor might do for the engaging potential of nonobjective news messages (i.e., partisan news). Without a clear theoretical expectation, we therefore compare these two genres and shed light on the question whether it is the combination with humor or just the opinionated lines of reasoning in satire that make it more engaging than news (prediction in H_1). We therefore ask:

RQ_1: *Do satire videos evoke more or less user-content interactivity in the form of (a) likes and (b) comments than partisan news videos?*

Regarding controversy, however, a clear difference between satire and partisan news is expected. Although both may "preach to their own choir," cross-ideological exposure will always happen to a certain extent as selective exposure patterns are not as strong as often assumed (Dubois & Blank, 2018). When cross-ideological exposure occurs, satire arguably leads to a less diverse audience *reaction* than partisan news. First, the satirical narrative may require too many cognitive resources (Young, 2008) and too strongly absorb its audience in the story (Nabi et al., 2007) to actually disagree with the message. Moreover, humor has the potential to relieve tension through laughter (Paletz, 1990): This helps citizens of opposing ideological sides to more respectively listen to each other and to not immediately perceive "the other" as their enemy (Jones & Baym, 2010). Accordingly, it is less likely for citizens to dislike counter-ideological satirical content and to express negative opinions about this than for ideologically incongruent partisan news,

which may evoke more negative reactions. Thus, we expect:

H_3: *Satire attracts a more homogeneous audience response (i.e., lower controversy) compared to partisan news.*

Method

Data collection took place in the fall of 2019. With the help of multiple experts, we identified the most prominent satire shows and news programs (see Appendix A) that maintain official social media channels through which they publish audiovisual content – thereby, allowing the public to respond and comment on each other. Subsequently, we used publicly accessible APIs in sync with a set of developed scrapers to collect the data required for testing the hypotheses.

Previous research found that specific platform features (e.g., anonymity, synchrony, moderation) influence the quality of interactivity (Friess & Eilders, 2015; Janssen & Kies, 2005). Therefore, we do not examine one platform but the three largest social networks in terms of news usage (Shearer & Grieco, 2019): *Facebook, YouTube*, and *Twitter*. Comparing the differences across these platforms also allows verifying the generalizability of the genre effects. All code was written in *Python* and a *MySQL* database was used for data storage.

For every platform, we either collected all the available posts or, if that was not allowed by the platform, the most recent ones. The reason is that this avoids sampling on the dependent variable: Previous research sometimes collected the most popular posts, but arguably this is inherently related to the outcome variables that we are interested in (i.e., engagement variables will be intrinsically related to popularity). We collected the maximum number of posts that were published by every show on the respective social media channels. To maximize comparability, data analysis is limited to posts that contained a video clip (or carried a link to *YouTube*) because our theoretical rationale deals with the genre of videos and not with the broader base of messages that may revolve around certain TV programs. This also increases comparability with experimental research that exposed participants to news and satire videos.

Data collection

We first collected the maximum number of posts that were published by every show on the respective social media channels. Specifically, data were collected and stored including the exact text that was posted, but also additional details, such as the number of likes and number of comments evoked by it, the date of posting, and whether it contained a video. Unfortunately, data about how often videos were shared by user could not be automatically scraped for Facebook and YouTube, which is why "sharing" is not included as an alternative indicator of user-content interactivity in this paper. In the paragraphs below, we specify how data were collected for every platform. Appendix A describes the numbers of posts and comments that are collected for every show on the different platforms. Appendix B gives further technical details about the data collection process.

Facebook

The collection of *Facebook* posts started in August 2019 and lasted for 3 days. Data were collected with a self-developed crawler using the *fbcrawl* library.[1] It collected data from the mobile version of *Facebook*. For every post of the shows, we saved the date/time, text, number of comments, and a count of six different types of reactions (i.e., like, love, haha, wow, sad and angry). For every item, it was determined whether or not it contains a video.

YouTube

The *YouTube Data API* (v3) was employed to access the relevant information of *YouTube* videos. Due to the strict quota limits, the collection of data lasted several weeks. First, video IDs of all relevant shows (i.e., *YouTube* channels or playlists) were collected. Subsequently, the information about these videos was stored (e.g., title, views, likes and dislikes, number of comments).

Twitter

The dataset of *Twitter* posts and their respective reply tweets were collected through the standard

Twitter API, which allowed the collection of approximately the most recent 3,200 tweets from a single user.[2] Tweets were collected along with all the variables and metadata available, including hashtags, the number of retweets and likes, available media URLs, and any publicly available geolocation data.

Measurements: dependent variables

We focus on three dependent variables in the analysis: (1) The number of likes on each post as well as (2) the number of comments under it. These two dependent variables were directly scraped with the process described above.

Additionally, we constructed a measurement of (3) audience diversity by calculating the controversy that was sparked by a video. We measure this as the relative balance between the number of explicitly positive and negative responses (i.e., likes *versus* sad and angry on *Facebook*) or likes and dislikes (i.e., *YouTube*). In case, there is more domination by a group of users who enjoy the video compared to users who dislike the video, or vice versa, one could imagine the audience to be relatively less diverse than a video of which the number of likes and dislikes are more balanced. To calculate this controversy, we rely on the formula below (inspired by the online platform *Reddit*):

$$Controversy = (total\ votes) / (max[|upvotes - downvotes|, 1])$$

Controversy is calculated by diving the total number of votes (likes, dislikes) by the absolute (i.e., non-negative) value of the difference when subtracting downvotes from upvotes. Hence, higher scores are calculated for a more balanced audience response (i.e., more diverse/less homogenous) in terms of likes and dislikes. If the value of this calculation is equal to 0 (similar number of likes and dislikes), it will take 1 (the ",1" part of the formula) as it is the maximum between 0 and 1, thus resulting in the highest possible score of controversy depending on the total number of votes.

Independent variables: genre

In the analysis, we distinguish four genres: regular news, partisan news, political satire, and parody shows. The latter category (i.e., parody) is not part of our hypotheses, but is included to function as a control to compare the effects of satire versus more general comedy-oriented programs that also often carry social-political issues regularly; although in less explicit, more ambiguous ways (e.g., parody or cartoons).

Nine news programs were included in the analysis: *CBS Evening News, The 11th Hour, PBS NewsHour, World News Tonight, ABC Nightline, Face the Nation, 60 Minutes, NBC News*, and *Meet the Press*. These programs represent the traditional journalistic news format.

Five partisan news shows were included in the analysis with either a conservative or liberal bias: *Anderson Cooper 360* (CNN), *Hannity* (FoxNews), *Tucker Carlson Tonight* (FoxNews), *Hardball with Chris Matthews* (MSNBC), and *The Rachel Maddow Show* (MSNBC).

The data included seven satire shows: *The Daily Show, Last Week Tonight, Patriot Act with Hasan Minhaj, Late Show with Colbert, Real Time with Bill Maher, Full Frontal with Samantha Bee, Late Night with Seth Meyers*. These are satire shows in the currently most popular format: With a host directly talking to the audience – often sitting behind a desk, which evokes the impression of a news-like program (Baym, 2005) – intermixing current affairs information with humorous jokes.

Finally, we included three parody-oriented programs that often deal with political matters but do this in more ambiguous ways, which could be perceived as more complex and lower message-certainty by the audience (e.g., Landreville, 2015): *Saturday Night Live*, videos by *The Onion*, and *South Park*.

Controls

To make sure that it is the genre that causes the effect and not simply the popularity of certain shows or of specific video clips – which could obviously be related to the genre – the statistical analyses control for three factors. First, we include an estimate of a show's popularity (i.e., the number of *YouTube*-channel subscriptions, *Twitter* followers, or *Facebook* page likes). This provides a general indication of how many people are exposed to the video posts of the specific shows. For *YouTube*, secondly, the analyses could also control for the precise number of views a video had. Third, the analyses control for time on a daily level (i.e., the number of days that passed since a video was uploaded). This time effect could potentially work two ways: with more time

(older posts), people have more time to view and engage with a post; but for more recent posts, the number of people present on online platforms could also be higher.

Robustness

First, analysis will be presented of the full dataset. However, it is possible that certain genres are more likely to pay attention to certain topics. And it might be that these topics, rather than the genre itself, correlate with user-engagement. To hold the topic constant, we verify our findings in three additional sets of analyses on subsets of the data, which each deal with one specific well-represented topic.

The selection of these issues was the result of a thorough process of topic-modeling (see Appendix C for an extensive description). First, using Latent Dirichlet Allocation (LDA) topic models, we discovered the most present topics in our database. Second, we selected the ones that were well represented on each of the social media platforms and in all the hypothesized genres (news, partisan news, and satire). Third, this resulted in three omnipresent topics, which were (a) the Mueller/Comey investigation, (b) the conflicts in the Middle East, and (c) the economy. Fourth, using keywords searches (see Appendix C), we selected the videos that dealt with these specific topics and then re-conducted the analyses for the three specific topics separately.

Results

User-content interactivity that was evoked by the respective genres has been operationalized on three aspects: number of likes/upvotes, number of comments, and controversy score. In the following three sections, we analyze the effects of video genre on these outcomes variables.

Liking: user-content interactivity

In line with Hypothesis 1_a, we find that posts made by satire shows generally received more likes or upvotes than those of the news programs (see Table 1). Controlling for the number of people that like a page as well as the date on which a post was made (and for *YouTube* also the number of views), we find a significant effect of the satire genre compared to the reference category (i.e., regular news shows). This pattern is confirmed for *Facebook* and *YouTube* ($p < .001$). For *Twitter*, it was also positive but insignificant ($p = .111$).

The robustness of these findings is compared in additional models that hold the topic constant (respectively, Mueller/Comey investigation, Middle East, and Economy): Appendix D shows the exact findings of these models and Table 2 highlights the (significant) findings for the respective platform-topic combinations. Verifying the result that satire is overall more likely to elicit likes than regular news, this effect is confirmed by 7 of the 9 models (see Table 2). Notably, this was the case for all comparisons in the *YouTube* and *Facebook* data, but only once for the *Twitter* posts. We further elaborate on such platform differences in the Discussion. Overall, we find rather robust evidence in line with Hypothesis 1_a: Satire is more likely to yield user-content interactivity in the form of likes than regular news.

Similar as satire, we also find that videos of partisan news shows tend to receive more likes than regular news. Comparing these two genres (in another regression model, where satire is the reference category), we generally find that satire elicits more engagement in the form of likes than partisan

Table 1. Estimated number of likes per post on different platforms.

	Facebook			YouTube			Twitter		
	b	*(SE)*	*p*	*b*	*(SE)*	*p*	*b*	*(SE)*	*p*
Intercept	−3299.21	(461.32)	< .001	1234.81	(136.96)	< .001	−258.10	(154.68)	.095
Partisan news	2444.20	(336.96)	< .001	205.71	(145.13)	.156	763.23	(285.99)	.008
Parody	3194.36	(505.12)	< .001	635.89	(115.41)	< .001	5948.79	(412.25)	< .001
Satire	6161.33	(308.21)	< .001	2213.29	(94.59)	< .001	399.28	(250.84)	.111
Show popularity	0.00	(0.00)	< .001	0.00	(0.00)	.117	0.00	(0.00)	< .001
Date (old to new)	1.04	(0.12)	< .001	−0.48	(0.05)	< .001	0.92	(0.37)	.012
Number of views				0.01	(0.00)	< .001			
R^2	.07			.72			.02		
N	10,916			73,495			19,019		

Table 2. Estimated number of likes, comments and controversy scores per post on different platforms and for three different topics.

	Overall	Mueller/Comey	Middle East	Economy
Likes				
		Facebook		
	(n = 10,916)	(n = 123)	(n = 158)	(n = 205)
Partisan news	+	+	+	+
Parody	+	+	+ (p = .058)	n.s.
H_{1a}: Satire	+	+	+	+
RQ_{1a}: Partisan vs. Satire	+	n.s.	+	n.s.
		YouTube		
	(n = 73,495)	(n = 1,537)	(n = 2,559)	(n = 2,444)
Partisan news	n.s.	+	n.s.	n.s.
Parody	+	-	+	+
H_{1a}: Satire	+	+	+	+
RQ_{1a}: Partisan vs. Satire	+	+	+	+
		Twitter		
	(n = 19,019)	(n = 282)	(n = 708)	(n = 429)
Partisan news	+	n.s.	n.s.	+
Parody	+	+	n.a	+
H_{1a}: Satire	n.s.	n.s.	+	n.s.
RQ_{1a}: Partisan vs. Satire	n.s.	n.s.	+	-
Comments				
	Overall	Mueller/Comey	Middle East	Economy
		Facebook		
	(n = 10,916)	(n = 123)	(n = 158)	(n = 205)
Partisan news	+	n.s.	+	+
Parody	n.s.	n.s.	n.s.	n.s.
H_{1b}: Satire	+	n.s.	+	n.s.
RQ_{1b}: Partisan vs. Satire	-	-	n.s.	-
		YouTube		
	(n = 73,495)	(n = 1,537)	(n = 2,559)	(n = 2444)
Partisan news	+	+	+	+
Parody	-	-	-	n.s.
H_{1b}: Satire	+	-	+	+
RQ_{1b}: Partisan vs. Satire	-	-	-	-
Controversy				
	Overall	Mueller/Comey	Middle East	Economy
		Facebook		
	(n = 10,916)	(n = 123)	(n = 158)	(n = 205)
Partisan news	+ (p = .050)	-	+	n.s.
Parody	n.s.	-	n.s.	n.s.
H_2: Satire	n.s.	-	n.s.	n.s.
Partisan vs. Satire	-	n.s.	n.s.	n.s.
		YouTube		
	(n = 73,495)	(n = 1,537)	(n = 2,559)	(n = 2,444)
Partisan news	+	n.s.	n.s.	n.s.
Parody	-	n.s.	n.s.	-
H_2: Satire	-	-	n.s.	- (p = .055)
Partisan vs. Satire	-	- (p = .053)	n.s.	n.s.

Cells indicate positive (+), negative (-), or non-significant effects (n.s.) compared to the reference category (regular news). Shaded cells are findings that confirm hypothesis. Full models are reported in Appendix D.

news shows (for *Facebook:* $p < .001$; *YouTube*, $p < .001$; no difference was found for *Twitter*, $p = .179$). The finding that satire is more engaging than partisan news to elicit user-likes is also confirmed in 5 of the 9 additional models in which the topic is held constant – three comparisons were insignificant and one pointed in a negative direction (*Twitter*, about economy). Generally, we thus find evidence that satire elicits more likes than partisan news, but this was mostly the case on *YouTube*.

Commenting: evoking online debate

The number of comments can be used as a general indicator of how much conversation is evoked by the respective genres (*note*: number of comments on a post was not accessible through the *Twitter* API). Table 3 shows the regression analyses predicting the amount of comments evoked by the different genres. We find that the social media posts of satire programs triggered more comments than the posts of regular news shows (i.e., reference

Table 3. Estimated number of comments per post on different platforms.

	Facebook			YouTube		
	b	*(SE)*	*p*	*b*	*(SE)*	*p*
Intercept	296.56	(99.88)	.003	−339.21	(26.04)	< .001
Partisan news	558.80	(72.96)	< .001	1105.48	(27.59)	< .001
Parody	92.72	(109.37)	.397	−497.35	(21.94)	< .001
Satire	168.58	(66.73)	.012	243.94	(17.98)	< .001
Show popularity	0.00	(0.00)	< .001	0.00	(0.00)	< .001
Date (old to new)	−0.03	(0.03)	.334	0.15	(0.01)	< .001
Number of views				0.00	(0.00)	< .001
R^2	.02			.43		
N	10,916			73,495		

category). This difference was considerable and significant for both *Facebook* (p = .012) and *YouTube* (p < .001). The finding was confirmed in 3 of the 6 models that held the topic constant (see Table 2); the effect was not found for videos about the FBI investigation on the Russian collusion nor for economic items on *Facebook*. So, although the evidence mostly supports Hypothesis 1_b, it is not generalizable across all topics.

Interestingly, we find that for both the platforms, partisan news evoked an even higher number of comments than satire shows (both for *Facebook* and *YouTube,* p < .001). This finding is also confirmed in the analyses of the subtopics: In 5 of the 6 models, this effect is significant and in the same direction. Thus, although satire evokes more comments than regular news, partisan news is still more likely to elicit comments than satire.

Controversy: audience diversity

To test the second hypothesis, we compare the controversy scores of videos of the different genres (see Table 4). Results show that satire evokes a more homogenous audience responses (i.e., lower controversy) than the news programs: This effect is only significant in the case of *YouTube* (p < .001); a negative, but insignificant effect is found for *Facebook* (p = .260). So, partial evidence is found in line with Hypothesis 2. This is also replicated in the analyses of the sub-topics (see Table 2). Whereas the satire genre does not evoke more or less controversy for videos about the Middle East, it decreased controversy scores for posts about the Mueller/Comey investigation – and for videos with an economic topic on *YouTube*. Moreover, satire never led to *more* diversity in the audience response than regular news.

When comparing the controversy evoked by satire with that of partisan news, clear differences emerge in the full sample: As Table 4 shows, partisan news generally increases controversy compared to regular news, whereas satire decreases it. The differences between both genres, hence, are indeed significant (p < .001): Partisan news causes more controversy than satire. This finding, however, is not convincingly confirmed in the analyses that hold the topic of the videos constant. A marginally significant difference is only found for the *YouTube* videos about the FBI investigation on a Russian collusion. So, only partial evidence is found in support of Hypothesis 3.

Table 4. Estimated controversy score per post on different platforms.

	Facebook			YouTube		
	b	*(SE)*	*p*	*b*	*(SE)*	*p*
Intercept	1.83	(2.17)	.400	1.09	(0.13)	< .001
Partisan news	3.11	(1.59)	.050	0.43	(0.14)	.002
Parody	−2.74	(2.38)	.250	−1.34	(0.11)	< .001
Satire	−1.63	(1.45)	.260	−0.92	(0.09)	< .001
Show popularity	0.00	(0.00)	.957	0.00	(0.00)	.280
Date (old to new)	0.00	(0.00)	.455	0.00	(0.00)	< .001
Number of views				0.00	(0.00)	.280
R^2	.00			.01		
N	10,916			73,495		

Discussion

Although not per se living up to the highest criteria of deliberative democracy, user-content interactivity is another, relatively undemanding, way to be engaged with media content. This study investigated how the satire genre may evoke user-content interactivity compared to regular and partisan forms of news. To test the formulated hypotheses, a large-scale data collection of social media posts by a variety of TV shows has been conducted

to analyze how genres differ in their elicited user-content interactivity (i.e., likes, comments and controversy).

Videos posted by satire shows, generally, generated more likes than those of regular news. Additional models that hold the topic of these videos constant by-and-large replicate these findings. Regarding the amount of elicited comments, we also find that political satire evokes more comments than regular news. These are two indications that the playful satire genre with its common language and humor is better able to encourage user-content interactivity than objective and often abstract news coverage (Tuchman, 1972; Woodstock, 2014).

Thus, satire seems more suitable to encourage user-content interactivity in the form of likes and comments than regular news. The genre difference that this study, moreover, tested was between satire and partisan news. As argued above, both formats share several features (i.e., lack of objectivity, clear-cut opinions expressed by the show hosts) and are comparable in terms of their discourse (Brugman et al., 2021). Yet, what clearly delineates them is the relative presence of humor, which obviously is a more prominent ingredient of satire, but at times can also be found in partisan news. This humor component may, thus, partly explain the differences between both genres in terms of their effects on user-content interactivity. Yet, our empirical approach cannot rule out other differences in content that potentially confound this relationship. And, neither can our aggregate-level approach confirm that people actually perceived the satire or parody shows as humorous; some people may actually miss the humorous intent of satire and perceive a sincere political expression rather than irony or humor (LaMarre, Landreville, & Beam, 2009; Mohammed, 2014). Yet, studies findings that some viewers do not recognize the irony of satire mostly focused on *The Colbert Report*, which was not part of our sample (i.e., was not broadcasted anymore when we collected the data).

Although both satire and partisan news elicit more likes and more comments than regular news – demonstrating that subjectivity in itself has an engaging effect – it is satire that receives most likes, whereas partisan news evokes most commentary. Accordingly, humor may especially encourage people to engage in less demanding forms of participation (i.e., basic-level, Ksiazek et al., 2016). The presence of humor, however, may theoretically explain why satire simultaneously decreases the urgency to take up more demanding (high-level forms) forms of interactivity, such as writing comments (Burke & Kraut, 2016). This finding corresponds with previous research finding that political comedy motivates viewers to engage in small behaviors, but is less likely to activate more demanding political behaviors (Bode & Becker, 2018). It could be that humor causes a relatively lower perceived importance that may prevent high-level user-content interactivity (but see Boukes, 2019aa). Alternatively, satire may require too many cognitive resources to still allow deliberative user responses (Young, 2008). Individual-level research – with precisely manipulated stimuli – on the mediating mechanisms of this effect is necessary to understand why satire is more engaging than regular news but less than partisan news – at least, in terms of the tendency to write comments.

Regarding controversy, we find that political satire evokes the most homogenous audience responses – even compared to regular news that was received with more controversy. The explanation for this could be two-fold. First, satire could be particularly likely to attract a like-minded audience (Arpan et al., 2011; Stroud & Muddiman, 2013); however, the same could be expected for partisan news, which instead elicits most controversy. Accordingly, a second explanation seems more plausible: Viewers of political satire may be less likely to actively disagree with its content for reasons that have already been demonstrated in the literature. The humor in satire could release some of the tension that exists regarding political issues (Paletz, 1990) and, accordingly, may avoid a "us-versus-them" response. To fully understand and enjoy satire, moreover, viewers might be less critical about its arguments (Young, 2008), consider it as "just a joke" (Nabi et al., 2007), and therefore are less likely to express their dissatisfaction. Altogether, this would lead to a more homogenous response toward satire compared to news. The findings regarding controversy were mostly yielded in models with *YouTube* data. The evidence found

in the case of *Facebook* was less strong. Although speculative, one could argue that the validity of our controversy measurement might have been weakened by the more complex way in which people expressed their agreement or dissatisfaction with videos on *Facebook*. Whereas for *YouTube* this simply happened by means of thumbs-up and thumbs-down, on *Facebook* this occurs less straightforwardly via a range of positive and negative emoticons that potentially are open for interpretation by individual users.

Thus, findings are somewhat conditional upon the platform that is analyzed, which confirms the assumption that the specific platform affordances and gratifications sought on social media might cause differences (see Boukes, 2019b). In particular, differences regarding the number of likes that were elicited emerged between *YouTube* and *Facebook* on the one hand and *Twitter* on the other hand. Whereas satire caused more likes on the first two platforms, on *Twitter* this genre effect was not found. Compared to the other two platforms, *Twitter*'s infrastructure is particularly suitable to quickly follow the news (Kwak, Lee, Park, & Moon, 2010; Lee & Oh, 2013). Moreover, *Twitter* users have a particular interest in information purposes (Hughes, Rowe, Batey, & Lee, 2012), and may thus particularly appreciate posts of regular news media compared to the users of the other platforms. In contrast, *YouTube* users are particularly entertainment-oriented (Khan, 2017), which explains the higher level of interactivity that satire yields there – also compared to partisan news and for the three specific topics (see Table 2). The similarity in findings between *YouTube* and *Facebook*, accordingly, may also be explained because they attract a relatively similar audience (see report by Hootsuite, 2020).

No specific hypotheses were formulated about the difference between political satire and parody-oriented forms of political humor. Examples of the latter were included to get an insight in the effects of more ambiguous forms of political comedy, which are often perceived as carrying a less certain and more complex message (e.g., Landreville, 2015). Additional analyses with satire as the reference category find mixed results (see Table 5). As Table 2 already showed, satire and parody follow a similar pattern regarding the number of likes:

Table 5. The effects of parody vs. satire on user-content interactivity.

	Parody vs. Satire			
	Overall	Mueller/Comey	Middle East	Economy
Facebook:				
Likes	+	-	n.s.	+
Comments	n.s.	n.s.	n.s.	n.s.
Controversy	n.s.	n.s.	n.s.	n.s.
YouTube:				
Likes	+	+	+	+
Comments	+	+	+	+
Controversy	+	n.s.	n.s.	n.s.
Twitter:				
Likes	-	-	+	-

Cells indicate positive (+), negative (-), or non-significant effects (n.s.) of parody (0) versus satire (1) while controlling for the same factors as in Tables 1, 3 and 4.

Zooming in on the platforms, though, satire receives especially many likes on *YouTube*, whereas more likes are given to parody instead on *Twitter*. Political satire, however, is clearly more likely to evoke commentary – although this is only found on *YouTube* and not on *Facebook*. No evident differences emerge between both genres for controversy. So, whereas humor in general seems to increase the tendency to elicit likes (compared to news), it is the combination of humor and a partisan view in satire that encourages citizens' expression through user-comments. This confirms the earlier discussed difference between satire and partisan news, and suggests that higher levels of outspokenness and relatively lower levels of humorous ambiguity increase the likelihood of high-level user-content interactivity (i.e., writing comments).

Altogether, the current study introduces a novel way to study the differences in evoked user-content interactivity between genres of more and less entertaining forms of news. Although findings are often conditional upon the social network that is studied as well as the specific topic under investigation, results generally demonstrate that political satire evokes more engagement than regular forms of news when comparing the effects on basic-level (i.e., liking) and high-level (i.e., commenting) user-content interactivity. However, satire sparked less controversy than news – which indicates a relatively more homogenous audience interaction. By comparing the interactivity that is yielded by satire versus partisan news and parody-oriented programs, we confirm our presumption that the *humorous* elements of satire encourage favoriting and

liking of posts, whereas it is the *subjectivity* and *outspokenness* in the satire genre (and in partisan news) that motivates the audience to engage in commentary. Future research that analyzes (or manipulates) the exact content features of these genres is necessary to further support this conclusion.

Notes

1. https://github.com/rugantio/fbcrawl
2. Python library "Twython" was leveraged for this purpose: https://github.com/ryanmcgrath/twython

Funding

This work was supported by the Netherlands Organisation for Scientific Research (NWO) with a VENI grant under project number: 016.Veni.195.123 (awarded to Mark Boukes).

Notes on contributors

Dr. ***Mark Boukes*** (PhD, 2015, at Universiteit van Amsterdam) is an Assistant Professor in the department of Communication Science at the Amsterdam School of Communication Research (ASCoR), University of Amsterdam. Twitter-handle: @markboukes; ORCiD: https://orcid.org/0000-0002-3377-6281; E-mail: markboukes@gmail.com

Xiaotong Chu (MA, 2020, at University of Amsterdam) is a PhD candidate in the department of Communication Science at the Amsterdam School of Communication Research (ASCoR), University of Amsterdam. ORCiD: 0000-0003-0480-0526. Twitter-handle: @XiaotongChu; E-mail: x.chu@uva.nl

M. F. Abdulqadir Noon is a PhD candidate in the department of Communication Science at the Amsterdam School of Communication Research (ASCoR), University of Amsterdam. ORCiD: 0000-0002-6243-9241. Twitter-handle: @NoonAbdulqadir; E-mail: n.m.i.a.fatahelrahmanabdulqadir@uva.nl

Rufei Liu (MA, 2021, at University of Amsterdam) is a graduate student in the department of Communication Science at the Graduate School of Communication, University of Amsterdam. E-mail: meoclelrf@163.com

Dr. ***Theo Araujo*** (PhD, 2015, at Universiteit van Amsterdam) is an Associate Professor in the department of Communication Science at the Amsterdam School of Communication Research (ASCoR), University of Amsterdam. Twitter-handle: @theoaraujo; ORCiD: https://orcid.org/0000-0002-4633-9339; E-mail: T.B.Araujo@uva.nl

Dr. ***Anne C. Kroon*** (PhD, 2017, at Universiteit van Amsterdam) is an Assistant Professor in the department of Communication Science at the Amsterdam School of Communication Research (ASCoR), University of Amsterdam. Twitter-handle: @annekroon; ORCiD: https://orcid.org/0000-0001-7600-7979; E-mail: A.C.Kroon@uva.nl

ORCID

Mark Boukes http://orcid.org/0000-0002-3377-6281
Xiaotong Chu http://orcid.org/0000-0003-0480-0526
M. F. Abdulqadir Noon http://orcid.org/0000-0002-6243-9241
Theo Araujo http://orcid.org/0000-0002-4633-9339
Anne C. Kroon http://orcid.org/0000-0001-7600-7979

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Appendix A. Data Overview

Table A1. Overview of shows and collected data.

		Facebook			YouTube			Twitter		
Genre	**Show**	**Posts**	**Oldest**	**Newest**	**Posts**	**Oldest**	**Newest**	**Posts**	**Oldest**	**Newest**
News	*CBS Evening News*	795	1–13–2012	8–20-2019	16,421	6–19–2013	9–12–2019	2422	8–13–2019	11–16–2019
News	*The 11th Hour*	240	6–13-2017	8–20-2019	1282	9–15–2016	9–13-2019	608	9–26-2018	11–15–2019
News	*PBS NewsHour*	508	11–25-2008	8–20-2019	108	2–25-2016	9–19–2019	409	9-9-2019	11–16-2019
News	*World News Tonight*	779	10-2-2013	8–20-2019	1101	5-29–2018	9–21–2019	1729	9-5-2019	11–16-2019
News	*ABC Nightline*	718	11–11-2013	8–20-2019	130	4-5-2011	9–21-2019	201	8–15-2019	11–15-2019
News	*Face the Nation*	390	11-4-2014	8–18–2019	3735	9-5-2012	9–23-2019	1855	1-4-2019	11–15-2019
News	*60 Minutes*	536	11–21-2013	8–11-2019	1086	9–24–2010	9–22–2019	1658	11-8-2017	11–15-2019
News	*NBC News*	437	9–11-2013	8–20-2019	17,766	10–04-2010	9–24-2019	179	10-9-2019	11–16-2019
News	*Meet the Press*	562	12–29-2013	8–21-2019	830	12-3-2011	9-22–2019	1212	8–16-2019	11–16-2019
Partisan	*Anderson Cooper 360*	703	8–15-2008	8–20-2019	277	4-5-2012	8–23-2019	2283	1-1-2018	11–16-2019
Partisan	*Hannity*	n/a	n/a	n/a	274	12–12-2018	9–12-2019	n/a	n/a	n/a
Partisan	*Tucker Carlson Tonight*	459	11–15-2016	8–30-2019	970	12–22–2017	9–12-2019	283	11–15-2016	8-8-2019
Partisan	*Hardball with Chris Matthews*	340	2–17–2015	8–16-2019	986	1-5-2016	9–12-2019	263	8–13-2019	11–16-2019
Partisan	*The Rachel Maddow Show*	303	11–20-2014	8–20-2019	3	10–14-2010	4-23-2011	n/a	n/a	n/a
Satire	*Daily Show*	574	10–16-2014	8–19-2019	1677	9-29-2015	9-7-2019	1470	12–31-2018	11–15-2019
Satire	*Last Week Tonight*	146	3-26-2014	5–16-2019	282	3-21-2014	8–19-2019	14	1–18–2017	8–12-2019
Satire	*Patriot Act with Hasan Minhaj*	174	8-9-2018	10–29-2019	86	10–28-2018	10–28-2019	357	8-9-2018	11–15-2019
Satire	*Late Show with Colbert*	598	9-8-2015	8-20-2019	5700	6-29-2015	9-7-2019	694	2-20-2019	11–16-2019
Satire	*Real Time with Bill Maher*	595	1–14-2013	8–17-2019	1616	11-8-2010	9-7-2019	562	4-1-2017	11–16-2019
Satire	*Full Frontal with Samantha Bee*	494	11–23-2015	8–19-2019	1005	11–23-2015	9-2-2019	875	7-26-2017	11–15-2019
Satire	*Late Night with Seth Meyers*	485	2-21-2014	8–17-2019	2917	2-21-2014	9–12-2019	923	2-9-2018	11–16-2019
Parody	*Saturday Night Live*	425	9-24-2014	8–17-2019	6875	8-6-2013	9-7-2019	860	1-28-2018	11–15-2019
Parody	*The Onion*	365	2-27-2008	8-2-2019	1387	1–17-2008	6–19-2019	72	5-29-2019	11–14-2019
Parody	*South Park*	290	10–21-2009	7–31-2019	353	6-4-2012	8-21-2019	90	11-1-2018	11–15-2019

Appendix B. Technical Details of Data Collection

Facebook

Our crawler was written in Python 3 and allows crawling public Facebook pages using *Scrapy*, which is a web crawling framework that allows extracting, processing, and storing data from websites. Considering that the desktop version of *Facebook* includes dynamic contents that only show up on mouse hover, the crawler navigates to the mobile version of *Facebook* (https://mbasic.facebook.com) because that version's contents are displayed in plain HTML. Within *Scrapy*, *XPath Selectors* was employed to extract the specific content features of posts and the accompanying user responses: post ID, post URL, show name, source, datetime, post text, total reaction count, count of six different types of reactions (i.e., like, love, haha, wow, sad and angry), and comment count. Tailored to our specific research focus, an extra item was added to the crawler "whether or not the post contains a video."

YouTube

The YouTube Data API (v3) was employed to access the relevant information of *YouTube* videos. The *YouTube Data API* has a default quota allocation of 10,000 units per day, and each API request incurs at least one unit quota (quota cost is determined by the request type). Due to the quota limit, the collection of data lasted several weeks.

The scraper was written in *Python 3*. Three functions were coded in order to gather the data. First, video IDs of all the channels and playlists were collected using channels.list and playlistItems.list methods with the part parameter set to "id." The maximum number of items per page was set to 50. Second, with the video IDs fetched from the first step, video

information (i.e., the title, description, datetime, view count, like and dislike count, and comment count) was collected using videos.list method with the part parameter set to "id," "snippet," and "statistics."

In the end, a while loop was created, within which all the three functions were called. As a result, two separate Pandas DataFrames (video_ids, video_info) were generated and stored to the SQL database. A sleep time of 24 hours was also included at the end of the while loop; so, every time the scraper hit the quota limit, it stopped calling the API for a day and refetched the API on the next day.

Twitter

The dataset of *Twitter* posts and their respective reply tweets were collected through the standard *Twitter* API with access granted on academic research grounds. The API allows the collection of approximately the most recent 3,200 tweets from a single user and an equal number of corresponding replies to the tweets. The *Python* library "Twython" was leveraged to collect tweets via the "get_user_timeline"-function with the "tweet_mode"-parameter set to "extended" and "count" set to the maximum of 200 per request. To reach the 3,200-tweet-limit, however, a while statement was used with the "get_user_timeline"-function set to have a "max_id"-value of the last tweet collected. The tweets were collected along with all the variables and metadata available including the hashtags used within the tweets, the number of retweets and likes, available media URLs, and any publicly available geo-location data. The data was saved in a Pandas DataFrame and later stored at an external SQL server as advised by Oussalah, Bhat, Challis, and Schnier (2013).

The reply tweets (i.e., user comments) were collected via the "search"-function set to search any tweets that were directed at the targeted pages' *Twitter* handle. Further code was added to filter out the majority of replies tweets that were not direct replies to our sample of collected tweets. A maximum of 3,200 replies were acquired per post with a "while"-statement with similar parameters to the one described above. The "tweet_mode"-parameter was set to "extended" and the "count"-parameter was set to the per-request maximum of 100. Retweets were not included in the collected tweets nor the replies and both datasets were cleared of any duplicates. Similar to the tweets, all the available variables found in the replies' json-file were collected and stored safely at an external server before they were uploaded to the SQL-file.

Appendix C. Procedure of Topic Modeling

To gain insight in topic prevalence within our data, we employed the unsupervised machine learning approach. Two topic models were adopted for our analysis, namely the Latent Dirichlet Allocation Topic Model (LDA) and the Author-Topic Model (ATM). The analyses were run on the data consisting of video titles from YouTube posts, which we had already collected (see Appendix B). Specifically, we employed the *LatentDirichletAllocation* module from the scikit-learn package and the *AuthorTopicModel* module from the Natural Language Toolkit (NLTK) package. The topic modeling was conducted on the full *YouTube* dataset as well as on four sub-datasets containing information from the four predefined genres (news, partisan news, satire, parody). We used YouTube data because it contains relatively complete information about the shows and is the largest dataset compared to datasets of the other three platforms, which suggests that this *YouTube* dataset might be most representative and indicative of topic coverage of the different genres.

Table C1. Overview of parameters that have been tuned.

	Number of topics/components predicted	Learning decay	Chunksize	k-fold cross validation
LDA	10,15,20	.5, .7, .9	NA	5, 10
ATM	10, 15, 20	NA	1000, 2000	NA

Three major steps were taken in this topic modeling process. To start, we have tuned several parameters of the topic models. For the LDA model, we have mainly used the grid search method to optimized parameters of number of topics and learning decay. Besides, we specified the number of maximal iterations and random state. Cross-validation was also employed in training the LDA model. Similarly, we tuned parameters of number of topics of the ATM model and specified parameters of maximal iteration, random state, and chunksize. A specification of the aforementioned parameters is available in Table C1.

As for evaluating the LDA model, scores of model perplexity was employed as an important measure. A lower perplexity score indicates better generalizability of the topic model (Blei, Ng, Jordan, & Lafferty, 2003). In our case, we compared the perplexity scores of the LDA models with different numbers of maximal iteration, random state and chunk sizes to decide the optimal LDA model. Since we did not find proper perplexity measures for the ATM models, we decided to use model coherence score as an evaluation metric instead (Röder, Both, & Hinneburg, 2015). Besides such intrinsic evaluative measures, we also based our model selection on the actual interpretability of the resulting topics (i.e., human judgment).

The second step concerned preprocessing the dataset. Irrelevant information contained in the original dataset was removed iteratively. In this iterative process, we first ran the topic models for several rounds. In each round, we noted down the most-frequently occurred noisy information present in the predicted topics. This preliminary topic modeling gradually resulted in a list of irrelevant keywords, mainly including irrelevant general information about the different *YouTube* shows and programs, name of show hosts, as well as information regarding commercial advertising. Also, we have standardized information, which referred to the same politicians and/or celebrities to reduce the occurrence of repetitive keywords in the predicted topics. For instance, words, such as "president Trump" and "Trump," were replaced with "Donald Trump." On top of the aforementioned practices, we have tokenized each word from the dataset, excluded words in accordance with NLTK's list of stop words (English version), and filtered out extremes (i.e., words with maximal occurrence

of 50% times and minimal occurrence of 20 times in the dataset). Using the cleaned dataset, we then created bi-gram representations of the data.

Although through the first two steps we had obtained certain meaningful results, most of the predicted topics contained the keyword "Donald Trump," indicating that this specific keyword might have created a bias in our results. Therefore, as a third step, we decided to further create a dataset which excluded information related to Donald Trump. Then, we compared the results predicted from both the "Trump-included" dataset and the "Trump-excluded" dataset.

In the end, the LDA models in general generated more meaningful and variant topics than the ATM model did. Also, we found that the predicted topics from the "Trump-included" dataset were more interpretable than those from the "Trump-excluded" dataset, even though there were no significant differences in terms of interpretability (i.e., human judgment) of results and the latter model scored slightly lower on model perplexity. Thus, we decided to use the LDA model to predict topics based on the "Trump-included" dataset. Details of the parameters of the selected LDA model are available in Table C2. Perplexity scores of the model are available in Table C3.

Results

By running the selected LDA model, a total of 50 topics (with 10 keywords per topic) was produced for the full dataset as well as for the four sub-datasets of different genres. Overall, the majority of the predicted topics showed economic relevance. Most of them also contained keywords that indicated certain political events (i.e., political campaign), which took place in the USA. For example, topics related to the past U.S. elections and candidacy were covered by all genres. Moreover, topics concerning domestic politics, such as Supreme Court nomination of Brett Kavanaugh and the Russia investigation, and also topics related to foreign politics (e.g., North Korea) were mainly covered by news shows, partisan shows, and satire shows. As for social issues, topics such as immigration affairs and school shootings were mostly mentioned by news shows and partisan shows only.

However, the genres differed in terms of coverage about some specific topics. News shows seemed to put an emphasis on reporting about ISIS and affairs in countries (e.g., Iran, Syria, Iraq, and Afghanistan) in the Middle East, as well as in the Central-South Asia. For satire shows, the topic of climate change was detected as a uniquely prominent topic. To make a fair comparison between the four different genres, we had to select topics that were well represented in at least the news, partisan news, and satire shows – in the YouTube dataset, but also in the datasets of Facebook and Twitter. Table C4 gives an overview of the topics that were consistently yielded in different versions of the topic models, and how often these topics were found in four different genres for the three social media platforms.

Accordingly, we selected three topics to replicate the analyses. First, the Mueller/Comey investigation, which was an FBI investigation of Russian interference in the 2016 United States elections. Second, we chose the ongoing armed conflicts in the Middle East as a topic of foreign news. And third, economy was selected as a more general theme that was well represented in the different subsets of the data. The search terms that were used to detect these topics in our full database can be found in Table C5.

Appendix D. Regression Models Predicting Likes, Comments and Controversy on Specific Topics (Mueller/Comey investigation; Conflicts in the Middle East; Economy)

Dependent Variable 1: Liking

Table C2. Overview of parameters of the LDA model.

Number of topics/components predicted	Learning decay	Maximal iterations	Random state	Evaluate every (frequency to evaluate model perplexity)	k-fold cross validation
10	.5	100	42	1	5

Table C3. Overview of evaluations scores of the LDA model.

	Full dataset	News shows	Partisan shows	Satire shows	Parody shows
Number of posts	100,102	74,182	4,017	13,285	8,618
Model perplexity	6820.93	5958.58	104.08	381.55	104.99

Table C4. Topics yielded with topic-modeling and their frequency of occurrence in the platform datasets.

Topics	YouTube (*n* =)				Facebook (*n* =)				Twitter (*n* =)			
	News	Partisan	Satire	Parody	News	Partisan	Satire	Parody	News	Partisan	Satire	Parody
Political Campaign:												
Trump vs. Hillary Clinton	657	12	61	8	24	23	9	2	0	0	0	0
Trump vs. Bernie Sanders	277	3	16	5	7	4	2	1	0	0	0	0
Obama vs. Romney	130	0	0	3	18	5	0	1	0	1	0	0
Domestic politics												
Supreme court (Gorsuch and Kavanaugh)	393	43	31	5	13	5	6	1	28	12	7	0
Mueller/Comey investigation	*1458*	*422*	*180*	*21*	*54*	*96*	*25*	*6*	*283*	*232*	*83*	*7*
Trump and Ukraine	28	1	1	0	0	1	0	0	636	158	48	10
Foreign politics												
ISIS	2308	44	97	11	69	50	33	2	692	77	123	7
North-Korea and Kim Jong-un	1100	88	114	5	62	23	13	0	171	78	48	0
Trump and Putin	321	45	48	6	10	16	3	3	61	48	23	0
Conflicts Middle East (Afghanistan, Iraq, Iran, Syria)	*4337*	*77*	*108*	*66*	*243*	*67*	*32*	*8*	*1595*	*149*	*92*	*32*
Other topics:												
Pope Francis	318	1	22	3	9	2	1	0	24	1	6	8
Immigration	1265	122	69	4	98	43	31	2	189	90	43	1
Economy	*4573*	*113*	*140*	*248*	*305*	*113*	*77*	*17*	*848*	*212*	*161*	*50*
Climate change/Global warming	529	24	89	9	41	19	18	5	239	20	85	15
School shootings	527	38	13	2	19	15	1	0	115	50	4	3
Roy Moore	123	10	32	5	6	5	2	2	1	1	8	1
All items	74,182	4017	13,285	8618	9943	3786	4919	3539	31,431	8076	16,389	5628

Table C5. Lists of search terms to detect the sub-topics in the full database.

Topics	Keywords and/or keyword combinations (all in lowercases)
The Mueller Probe topic	(("mueller" OR "comey") AND ("probe" OR "russia" OR "putin" OR "investigation" OR "trump" OR "cohen" OR "sessions")) OR ("trump" AND "collusion") OR ("Russia" AND "collusion")
Middle East conflicts	names of countries in Middle-East and Central-South Asian: "afghanistan" OR "iraq" OR "iran" OR "syria"
Economy (list based on Authors, XXXX)	("economy" OR "economic" OR "economics" OR "finance" OR "financial" OR "monetary" OR "labor force" OR "central bank" OR "export" OR "import" OR "national income" OR "gross national product" OR "public spending" OR "government spending" OR "government cuts" OR "government budget cuts" OR "labor participation" OR "recession" OR "savings" OR "vacancies" OR "job openings" OR "jobs" OR "interest on savings" OR "mortgage interest" OR "employment" OR "unemploy" OR "housing market" OR "house prices" OR "TTIP" OR "inflation" OR "deflation" OR "consumer spending" OR "consumer expenditure") OR ("dismissed" OR "fired" OR "sacked" OR "discharged") OR ("employee" OR "staff member" OR "jobs")

Table D1. Estimated number of likes/favorites/upvotes per post on different platforms (topic: Mueller/Comey investigation).

	Facebook			YouTube			Twitter		
	b	*(SE)*	*p*	*b*	*(SE)*	*p*	*b*	*(SE)*	*p*
Intercept	2320.49	917.06	.013	694.17	186.66	< .001	−80.44	218.64	.713
Partisan news	2390.16	636.22	< .001	450.70	168.61	.008	−241.93	253.60	.341
Parody	5577.09	1782.83	.002	−3280.03	629.15	< .001	2706.58	576.34	< .001
Satire	2043.84	878.59	.022	2269.04	286.36	< .001	21.34	289.33	.941
Show popularity	0.00	0.00	.012	0.00	0.00	.999	0.00	0.00	.033
Date (old to new)	−0.90	0.28	.002	−0.34	0.07	< .001	1.10	.51	.031
Number of views				0.01	0.00	< .001			
R^2	.35			.93			.16		
n	123			1537			282		

Table D2. Estimated number of likes/favorites/upvotes per post on different platforms (topic: Conflicts in the Middle East).

	Facebook			YouTube			Twitter		
	b	*(SE)*	*p*	*b*	*(SE)*	*p*	*b*	*(SE)*	*p*
Intercept	−2678.92	1437.90	.064	812.76	315.13	.010	−79.97	70.86	.259
Partisan news	2473.39	619.47	< .001	351.58	409.98	.391	42.24	202.83	.835
Parody	4146.46	2174.91	.058	1865.40	426.01	< .001	n/a	n/a	n/a
Satire	7003.37	871.09	< .001	4170.18	351.98	< .001	840.47	256.95	.001
Show popularity	0.00	0.00	.719	0.00	0.00	.007	0.00	0.00	< .001
Date (old to new)	0.86	0.40	.032	−0.40	0.12	.001	0.63	0.23	.007
Number of views				0.01	0.00	< .001			
R^2	.34			.83			.09		
n	158			2559			708		

Table D3. Estimated number of likes/favorites/upvotes per post on different platforms (topic: Economy).

	Facebook			YouTube			Twitter		
	b	*(SE)*	*p*	*b*	*(SE)*	*p*	*b*	*(SE)*	*p*
Intercept	−1252.48	1034.05	.227	2095.13	640.24	.001	−198.30	162.10	.222
Partisan news	4291.63	683.78	< .001	665.71	690.10	.335	1148.62	274.11	< .001
Parody	−1118.25	1882.08	.553	4066.61	597.49	< .001	2917.85	1077.21	.007
Satire	4859.00	796.04	< .001	5792.98	521.69	< .001	412.11	309.14	.183
Show popularity	0.00	0.00	.067	0.00	0.00	< .001	0.00	0.00	.001
Date (old to new)	0.37	0.28	.190	−0.57	0.21	.007	0.57	0.38	.130
Number of views				0.01	0.00	< .001			
R^2	.27			.78			.14		
n	205			2444			429		

Table D4. Estimated number of comments per post on different platforms (topic: Mueller/Comey investigation).

	Facebook			YouTube		
	b	*(SE)*	*p*	*b*	*(SE)*	*p*
Intercept	504.47	192.26	.010	116.15	71.86	0.106
Partisan news	157.69	133.38	.239	425.16	64.91	< .001
Parody	−199.92	373.76	.594	−2116.55	242.23	< .001
Satire	−228.01	184.19	.218	−993.66	110.24	< .001
Show popularity	0.00	0.00	.006	0.00	0.00	< .001
Date (old to new)	−0.11	0.06	.064	−0.02	0.03	0.521
Number of views				0.00	0.00	< .001
R^2	.12			.55		
n	123			1537		

Table D5. Estimated number of comments per post on different platforms (topic: Conflicts in the Middle East).

	Facebook			YouTube		
	b	*(SE)*	*p*	*b*	*(SE)*	*p*
Intercept	65.74	165.14	.691	−132.38	58.16	.023
Partisan news	407.07	71.15	< .001	1141.68	75.67	< .001
Parody	293.70	249.79	.242	−319.20	78.63	< .001
Satire	364.07	100.04	< .001	505.47	65.00	< .001
Show popularity	0.00	0.00	.657	0.00	0.00	< .001
Date (old to new)	0.01	0.05	.835	0.07	0.02	.002
Number of views				0.00	0.00	< .001
R^2	.22			.51		
n	158			2559		

Table D6. Estimated number of comments per post on different platforms (topic: Economy).

	Facebook			YouTube		
	b	*(SE)*	*p*	*b*	*(SE)*	*p*
Intercept	511.06	215.40	.019	−230.95	169.85	.174
Partisan news	615.91	142.44	< .001	1068.22	183.08	< .001
Parody	−504.17	392.05	.200	−225.00	158.51	.156
Satire	−157.69	165.82	.343	451.08	138.40	.001
Show popularity	0.00	0.00	.016	0.00	0.00	.057
Date (old to new)	−0.10	0.06	.094	0.12	0.06	.027
Number of views				0.00	0.00	< .001
R^2	.14			.58		
n	205			2444		

Table D7. Estimated controversy score per post on different platforms (topic: Mueller/Comey investigation).

	Facebook			YouTube		
	b	*(SE)*	*p*	*b*	*(SE)*	*p*
Intercept	2.37	1.50	.118	0.59	0.40	.141
Partisan news	−2.56	1.04	.015	−0.66	0.36	.067
Parody	−6.04	2.92	.041	−2.45	1.35	.070
Satire	−3.38	1.44	.020	−1.76	0.62	.004
Show popularity	0.00	0.00	.407	0.00	0.00	.462
Date (old to new)	0.00	0.00	.200	0.00	0.00	< .001
Number of views				0.00	0.00	.991
R^2	.10			.08		
n	123			1537		

Table D8. Estimated controversy score per post on different platforms (topic: Conflicts in the Middle East).

	Facebook			YouTube		
	b	*(SE)*	*p*	*b*	*(SE)*	*p*
Intercept	1.34	2.08	.518	1.16	1.53	.449
Partisan news	2.03	0.90	.025	1.11	1.99	.578
Parody	−0.91	3.14	.773	−2.60	2.07	.210
Satire	−0.87	1.26	.490	−1.81	1.71	.291
Show popularity	0.00	0.00	.819	0.00	0.00	.859
Date (old to new)	0.00	0.00	.666	0.00	0.00	.105
Number of views				0.00	0.00	.788
R^2	.05			.00		
n	158			2559		

Table D9. Estimated controversy score per post on different platforms (topic: Economy).

	Facebook			YouTube		
	b	*(SE)*	*p*	*b*	*(SE)*	*p*
Intercept	1.18	6.13	.847	1.45	0.68	.033
Partisan news	5.63	4.05	.166	−0.49	0.73	.502
Parody	−5.28	11.16	.636	−1.70	0.63	.007
Satire	−2.39	4.72	.613	−1.06	0.55	.055
Show popularity	0.00	0.00	.868	0.00	0.00	.700
Date (old to new)	0.00	0.00	.591	0.00	0.00	.071
Number of views				0.00	0.00	.767
R^2	.02			.01		
n	205			2444		