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Andreas Jungherr 

ABSTRACT

Twitter has become a pervasive tool in election campaigns. Candidates, parties, journalists, and a steadily increasing share of the public are using Twitter to comment on, interact around, and research public reactions to politics. These uses have met with growing scholarly attention. As of now, this research is fragmented, lacks a common body of evidence, and shared approaches to data collection and selection. This article presents the results of a systematic literature review of 127 studies addressing the use of Twitter in election campaigns. In this systematic review, I will discuss the available research with regard to findings on the use of Twitter by parties, candidates, and publics during election campaigns and during mediated campaign events. Also, I will address prominent research designs and approaches to data collection and selection.

KEYWORDS

Election campaigns;
Internet; literature review;
political communication;
social media; Twitter

Researching uses of Twitter in election campaigns

The growing use of Twitter in campaigns by candidates, parties, and the public has led to a steadily growing body of research on this topic. Researchers from many different fields—such as political scientists, communication scholars, or computer scientists—are addressing questions related to Twitter's role in election campaigns. These researchers approach the topic from different perspectives with widely diverging methods and publish their results in venues of their various fields. This leads to a fragmentation of research focusing on the uses of Twitter in election campaigns, with studies seldom addressing most of the available evidence. As of now, there is no coherent account of the existing literature and common findings. This systematic literature review presents such an account, offering researchers a collection of robust findings, enabling them to offer supporting or contrasting evidence. This step is necessary for research on political uses of Twitter in campaigns to progress from its current state of mostly isolated case studies to a more mature stage, with researchers explicitly anchoring their findings in the context of an established body of evidence.

The diversity of research into uses of Twitter during election campaigns has also led to the emergence of various methodological approaches and a great variety of approaches for data

collection and data selection on Twitter. This is another area where research on political uses of Twitter has to mature. As of now, there is little awareness of potential biases connected with various approaches to data collection and selection. Here, I offer an overview and critical discussion of variations in the approaches found in the literature, thereby enabling prospective researchers to base their research designs more systematically in the context of known benefits or drawbacks of various research approaches.

This article will present dominant findings across 127 studies addressing the use of Twitter in election campaigns followed by a discussion of variations in research design, modes of data collection, and selection. The first part of this review will thus focus on the content and findings of the available literature while the second part will focus on discussing various approaches to research design.

Scope

The literature on various uses of Twitter in politics has become too numerous to cover all areas in one review. Here, I will focus on studies published in peer-reviewed journals or in peer-reviewed conference proceedings, written in English, addressing the use of Twitter by parties, candidates, and publics during election campaigns and during campaign-

related high-profile mediated events—such as political talk shows or televised leaders’ debates. The focus on peer-reviewed journal articles and conference proceedings, while providing an extensive collection of relevant studies, leads to neglecting potentially relevant findings on the uses of Twitter in election campaigns presented in books (e.g., Gainous and Wagner, 2014; Jungherr, 2015; Parmelee & Bichard, 2012), book chapters, technical reports (for example, those published by the Pew Research Center), or articles published in languages other than English. One should be careful, therefore, not to take this as an account of all available research on the use of Twitter during election campaigns but one limited to the criteria listed below. Although limiting, this choice seems sensible because it establishes systematic search criteria for the identification of relevant studies, which, in turn, allows the replication or extension of the findings presented here.

As a consequence of the topical focus of the review, I excluded many studies addressing the use of Twitter in other areas of politics—such as studies on the use of Twitter by political elites outside election seasons, activists, during protests, in the discussion of political issues, in government communication, and political journalism. Also, I did not include studies attempting to link election results to various Twitter-based metrics (for a recent review see Gayo-Avello, 2013) and studies testing software applications or algorithms on data collected during political events.

In this systematic literature review, I followed best practices for literature reviews as provided by Fink (2014). First, I performed a keyword-based search in three dedicated scientific databases and on Google Scholar to identify studies addressing the use of Twitter in election campaigns. Second, I checked the content of the resulting studies for their topical relevance and correspondence with the review’s formal criteria. In a final step, I added an element of nonsystematic search to identify relevant studies not found through the systematic search criteria, by performing a snowball search for relevant literature in the texts cited by articles identified by the systematic search. The cutoff point for this review was June 13, 2015.¹

For the identification of relevant studies, I searched three dedicated databases: Social Science Citation Index (SSCI) to capture relevant literature

published in peer-reviewed social science journals and IEEE Xplore Digital Library (IEEE) and ACM Digital Library (ACM) to systematically cover peer-reviewed conference proceedings and journals in computer science. In all three databases, I performed Boolean searches for the term “Twitter” in combination with one of the following three word stems “politic*,” “elect*,” “campaign*,” and “candidat*” covering their use in papers’ titles, abstracts, or keywords.

The focus on research available in scientific databases is generally very promising for identifying high-quality research but might neglect research published in venues of lesser scientific prominence. Because research on the use of Twitter in election campaigns is still an emerging topic, it is sensible to assume that relevant findings might be published in venues not covered by the databases used above. To account for this, I also searched Google Scholar for relevant papers. Because Google Scholar at the time of this writing does not support searches for word stems, I performed a Boolean search for papers published between 2008 and 2015 for the following term: Twitter AND (politics OR politician OR politicians OR election OR elections OR campaign OR campaigns OR candidate OR candidates).

Because simple keyword searches tend to overestimate the relevant literature significantly, I checked the resulting studies for their correspondence with the topical focus of this review. In the case of SSCI, IEEE and ACM, I checked all identified papers for correspondence. In the case of Google Scholar, I focused on the first 1,000 hits ordered based on relevance. Following the selection criteria described above, I identified 107 relevant articles.

Finally, as a check for relevant literature missed by my systematic search, I performed a snowball search for articles in the literature cited by the papers identified in the previous search steps. This step provided me with an additional 20 studies. Following this procedure, I identified in total 127 studies. These studies covered elections in 26 countries from 2008 through 2014.

After identifying the studies relevant to the review, I coded them according to their contributions to the use of Twitter by candidates, parties,

and publics during election campaigns and campaign-related mediated events, the countries and election years of reference, methodological approach, and modes of data collection and selection.

Research topics and findings: Parties and candidates, publics, and events

In this review, I grouped the findings of studies analyzing the uses of Twitter in political campaigns into three categories, referring to three key areas of campaigns: the use of Twitter by parties and candidates, the use of Twitter by politically vocal publics, and the use of Twitter during and in reaction to mediated events. Table 1 shows a list of the studies included in this review grouped by the topics addressed and the countries examined.

The table shows that the United States is the country focused on by most studies on the use of Twitter during campaigns written in English and published in peer-reviewed journals or peer-reviewed conference proceedings. Still, as the table shows, there is a wealth of information on the use of Twitter in campaigns in other countries.

Parties and candidates

In reviewing the literature on the use of Twitter by parties and candidates, three different topics emerged: first, studies examining the influence of various variables on the propensity for a party or candidate to adopt Twitter; second, analyses focusing on how candidates and parties use Twitter, either by the analysis of the use of technical features—the use of @messages, retweets, or links—or by manual coding of functions and contents of messages; third, analyses of effects of Twitter messages posted by parties or candidates on users who follow them, be it through surveys, by the analysis of the messages posted by them, by interviews, or by experiments. Table 2 lists studies grouped by these topics.

Patterns in the adoption of Twitter by parties and candidates during campaigns are one focus of the literature of the use of Twitter during election campaigns. This literature is related to studies focusing on the adoption of other digital tools in the campaign repertoires of politicians. The

findings are surprisingly congruent across various countries and election cycles. In general, parties and candidates in opposition appear to be more likely to use Twitter than members of governing parties (Ahmed & Skoric, 2014; Hemphill, Otterbacher, & Shapiro, 2013; Jaidka & Ahmed, 2015; Lassen & Brown, 2011; Peterson, 2012; Plotkowiak & Stanoevska-Slabeva, 2013; Shogan, 2010; Vergeer & Hermans, 2013; Vergeer, Hermans, & Sams, 2011). Still, this does not necessarily make Twitter a tool heavily used by nontraditional parties. Candidates of well-established major parties (Amirullah, Komp, & Nurhadryani, 2013; Evans, Cordova, & Sipole, 2014; Gilmore, 2012; Raynauld & Greenberg, 2014; Vergeer & Hermans, 2013; Vergeer et al., 2011), incumbents (Evans et al., 2014; Gilmore, 2012), and those with high campaign budgets (Gilmore, 2012; Peterson, 2012) appear to be more likely to use Twitter than others. Twitter is thus not a tool predominantly used in resource-strapped campaign contexts.

Young politicians appear to be more likely to use Twitter than old (Jackson & Lilleker, 2011; Lassen & Brown, 2011; Peterson, 2012; Straus, Glassman, Shogan, & Navarro Smelcer, 2013; Vergeer & Hermans, 2013), and politicians with urban constituencies appear to be more likely to use Twitter than those with rural ones (Straus et al., 2013). No clear pattern emerges with regard to the impact of gender on the use of Twitter, with some studies finding male candidates to be more likely to use Twitter (Gilmore, 2012; Hemphill et al., 2013) while others identifying females as more likely users (Evans et al., 2014; Jackson & Lilleker, 2011; Larsson & Kalsnes, 2014). Also, Twitter use seems to correspond in many cases with the intensity of electoral competition (Evans et al., 2014; Vergeer & Hermans, 2013), former success with Twitter by members of the same party (Chi & Yang, 2011), and strong ideological positions (Peterson, 2012; Straus et al., 2013).

No clear picture emerges with regard to the connection between Twitter use, public attention on Twitter, and popularity or electoral chances. Some studies identify a link between Twitter use and electoral wins (LaMarre & Suzuki-Lambrech, 2013) while others do not (Vergeer et al., 2011). In the same vein, some studies find links between the mentions political candidates or parties received

Table 1. Studies on political uses of Twitter in campaigns.

Countries	Parties/Candidates	Publics	Events
Australia	Bruns & Highfield, 2013; Grant et al., 2010; Macnamara, 2011	Burgess & Bruns, 2012; Grant et al., 2010	
Belgium	D'heer & Verdegem, 2014		
Brazil	Gilmore, 2012		
Canada	Raynauld & Greenberg, 2014; Small, 2010	Raynauld & Greenberg, 2014; Small, 2011	Elmer, 2013
Denmark		Larsson & Moe, 2013; Moe & Larsson, 2013	
France		Nooralahzadeh, Arunachalam, & Chiru, 2013	Hanna et al., 2013
Germany	Lietz et al., 2014; Plotkowiak & Stanoevska-Slabeva, 2013	Dang-Xuan et al., 2013; Feller et al., 2011; Jungherr, 2013, 2014; Jürgens & Jungherr, 2015; Jürgens et al., 2011; Stieglitz & Dang-Xuan, 2012	Trilling, 2014
India	Jaidka & Ahmed, 2015		
Indonesia	Amirullah et al., 2013		
Iran		Sanjari & Khazraee, 2014	
Ireland	Suiter, 2015		
Israel	Aharony, 2012		
Italy	Vaccari & Valeriani, 2013	Bentivegna, 2014; Vaccari et al., 2013, 2015	
Japan	Kobayashi & Ichifuji, 2015		
Netherlands	Broersma & Graham, 2012; Graham et al., 2014; Hosch-Dayican et al., 2014; Kruikemeier, 2014; Vergeer & Hermans, 2013; Vergeer et al., 2011, 2013; Verweij, 2012	Hosch-Dayican et al., 2014	
Norway	Enli & Skogerbø, 2013	Larsson & Kalsnes, 2014; Moe & Larsson, 2013	Kalsnes et al., 2014
Pakistan	Ahmed & Skoric, 2014		
Philippines		Pablo, Oco, Roldan, Cheng, & Roxas, 2014	
Singapore		Sreekumar & Vadrevu, 2013	
South Korea	Hsu & Park, 2012; Lee, 2013; Lee & Jang, 2013; Lee & Oh, 2012, 2013; Lee & Shin, 2014; Park, 2014	Song, Kim, & Jeong, 2014	
Spain	Aragón et al., 2013	Barberá & Rivero, 2014; Borondo et al., 2014	
Sweden	Grussel & Nord, 2012; Larsson & Kalsnes, 2014; Nilsson & Carlsson, 2014	Dimitrova et al., 2014; Larsson & Moe, 2012; Moe & Larsson, 2013	
Switzerland	Klinger, 2013		
Turkey	İkiz et al., 2014		
United Kingdom	Adi et al., 2014; Aharony, 2012; Baxter & Marcella, 2012, 2013; Broersma & Graham, 2012; Graham et al., 2014; Graham et al., 2013; Jackson & Lilleker, 2011; Margaretten & Gaber, 2014	Anstead & O'Loughlin, 2014	Ampofo et al., 2011; Anstead & O'Loughlin, 2011; Chadwick, 2011
USA	Adams & McCorkindale, 2013; Aharony, 2012; Chi & Yang, 2011; Christensen, 2013; Conway et al., 2015, 2013; Evans et al., 2014; Golbeck et al., 2010; Hemphill et al., 2013; Hong, 2013; Hong & Nadler, 2011, 2012; Kreiss, 2014; Kreiss et al., 2014; LaMarre & Suzuki-Lambrecht, 2013; Lassen & Brown, 2011; Livne et al., 2011; Mirer & Bode, 2013; Parmelee, 2014; Peterson, 2012; Shogan, 2010; Straus et al., 2013; Zhang et al., 2013	Bekafigo & McBride, 2013; Bode et al., 2015; Bode & Dalrymple, 2014; Conover et al., 2012, 2011; DiGrazia et al., 2013; Groshek & Al-Rawi, 2013; Hanna et al., 2011; Hawthorne et al., 2013; Himelboim, Hansen, & Bowser, 2013; Himelboim, McCreery, & Smith; Himelboim et al., 2014; Hoang, Cohen, Lim, Pierce, & Redlawsk, 2013; Lawrence, Molyneux, Coddington, & Holton, 2014; McKelvey, DiGrazia and Rojas, 2014; Mejova et al., 2013; Murthy & Petto, 2014; Mustafaraj et al., 2011; Nooralahzadeh et al., 2013; Park, 2013; Vargo et al., 2014)	Cameron & Geidner, 2014; Coddington et al., 2014; Diakopoulos & Shamma, 2010; Freelon & Karpf, 2015; Hanna et al., 2013; Lin et al., 2014; Mascaro et al., 2012; McKinney et al., 2014; Shah et al., 2015; Shamma et al., 2009

Note. Because some studies addressed more than one of the listed topics or analyzed Twitter use in more than one country, the total count of these studies does not add up to 127.

on Twitter and their election results (DiGrazia, McKelvey, Bollen, & Rojas, 2013; Gilmore, 2012; Kruikemeier, 2014; McKelvey, DiGrazia, & Rojas, 2014) while others do not (Jungherr, 2013; Mejova, Srinivasan, & Boynton, 2013; Murthy & Petto, 2014). Thus, if there is a relationship between

Table 2. The use of Twitter by parties and candidates during campaigns.

Topic	Studies
Which kind of parties and candidates tend to adopt Twitter?	Chi & Yang, 2011; Evans et al., 2014; Gilmore, 2012; Jackson & Lilleker, 2011; Larsson & Kalsnes, 2014; Lassen & Brown, 2011; Peterson, 2012; Shogan, 2010; Straus et al., 2013; Vergeer & Hermans, 2013; Vergeer et al., 2011, 2013
How do parties and candidates tend to use Twitter?	Adams & McCorkindale, 2013; Adi et al., 2014; Aharony, 2012; Ahmed & Skoric, 2014; Amirullah et al., 2013; Aragón et al., 2013; Baxter & Marcella, 2012, 2013; Broersma & Graham, 2012; Bruns & Highfield, 2013; Christensen, 2013; Conway et al., 2013; D'heer & Verdegem, 2014; DiGrazia et al., 2013; Enli & Skogerbø, 2013; Evans et al., 2014; Golbeck et al., 2010; Graham et al., 2014; Graham et al., 2013; Grant et al., 2010; Grussel & Nord, 2012; Hemphill et al., 2013; Hosch-Dayican et al., 2014; Hsu & Park, 2012; İkiz et al., 2014; Jackson & Lilleker, 2011; Jaidka & Ahmed, 2015; Klinger, 2013; Kreiss, 2014; Kreiss et al., 2014; Kruikemeier, 2014; LaMarre & Suzuki-Lambrecht, 2013; Lietz et al., 2014; Livne et al., 2011; Macnamara, 2011; Margaretten & Gaber, 2014; Mirer & Bode, 2013; Nilsson & Carlsson, 2014; Plotkowiak & Stanoevska-Slabeva, 2013; Raynauld & Greenberg, 2014; Small, 2010; Suiter, 2015; Vaccari & Valeriani, 2013
What are the functions and effects of Twitter use by parties and candidates?	Conway et al., 2015; Hong, 2013; Hong & Nadler, 2011, 2012; Kobayashi & Ichifuji, 2015; Lee, 2013; Lee & Jang, 2013; Lee & Oh, 2012, 2013; Lee & Shin, 2014; Parmelee, 2014; Verweij, 2012; Zhang et al., 2013

Twitter use and electoral success, this seems to be an indirect one, highly dependent on the respective electoral context.

Other studies focus on how parties and candidates use Twitter. Most studies do so by content analyses of Twitter messages posted by parties or candidates, by interviews, or by the quantitative analysis of the use of features—such as @messages, retweets, or links—included in messages. Again, the findings of studies across various countries and election cycles show similar patterns. Parties and candidates tended to use Twitter predominantly to post information on their campaign activities, and links to their own Web sites (Evans et al., 2014; Graham, Broersma, Hazelhoff, & van't Haar, 2013; Graham, Jackson, & Broersma, 2014; Hosch-Dayican, Amrit, Aarts, & Dassen, 2014; Macnamara, 2011; Small, 2010). In general, mentions or discussion of policy appear to be only minor topics (Graham et al., 2013, 2014). Explicit calls for action to their supporters—such as get-out-the-vote mobilizing or fund-raising requests—were also comparatively rarely seen (Ahmed & Skoric, 2014; Evans et al., 2014; Golbeck, Grimes, & Rogers, 2010; Hemphill et al., 2013; İkiz, Sobaci, Yavuz, & Karkin, 2014; Jaidka & Ahmed, 2015; Klinger, 2013). Some studies also found candidates to be using Twitter predominantly to post messages with personal content (Evans et al., 2014; Kruikemeier, 2014). Interactions with other users on Twitter appear to be infrequent with candidates apparently tending to adopt a “broadcasting” style

to Twitter use (Adams & McCorkindale, 2013; Aharony, 2012; Ahmed & Skoric, 2014; Aragón, Kappler, Kaltenbrunner, Laniado, & Volkovich, 2013; Baxter & Marcella, 2012, 2013; Enli & Skogerbø, 2013; Evans et al., 2014; Golbeck et al., 2010; Graham et al., 2013, 2014; Grant, Moon, & Grant, 2010; Grussel & Nord, 2012; Hemphill et al., 2013; İkiz et al., 2014; Jackson & Lilleker, 2011; Jaidka & Ahmed, 2015; Klinger, 2013; Kruikemeier, 2014; Macnamara, 2011; Shogan, 2010; Small, 2010; Suiter, 2015). This is especially true for candidates of governing parties, with candidates of opposition parties and challengers tending to use Twitter somewhat more interactively (Ahmed & Skoric, 2014; Bruns & Highfield, 2013; Jackson & Lilleker, 2011; Larsson & Kalsnes, 2014). Studies analyzing the public interactions of candidates on Twitter found that these interactions were directed mostly toward other politicians or journalists (Ahmed & Skoric, 2014; D'heer & Verdegem, 2014; Verweij, 2012). Of these, interactions between politicians seem to occur predominantly between candidates of the same party (Hsu & Park, 2012; Livne, Simmons, Adar, & Adamic, 2011; Plotkowiak & Stanoevska-Slabeva, 2013). Thus, there is very little evidence of Twitter being an enabling device for dialogue between candidates and normal citizens. This being said, most studies emphasized that the use of Twitter varied strongly between users (Adi, Erickson, & Lilleker, 2014; Ahmed & Skoric, 2014; Aragón et al., 2013; Baxter & Marcella, 2012, 2013; Bruns

& Highfield, 2013; Conway, Kenski, & Wang, 2013; Enli & Skogerbø, 2013; Graham et al., 2013; Grant et al., 2010; Jackson & Lilleker, 2011; Jaidka & Ahmed, 2015; Macnamara, 2011; Margaretten & Gaber, 2014; Raynauld & Greenberg, 2014; Small, 2010; Vaccari & Valeriani, 2013; Vergeer, Hermans, & Sams, 2013). So, while the findings reported above appear to be true for the average candidate using Twitter, some candidates used Twitter to interact intensively with normal users (Graham et al., 2013, 2014). With regard to strategic coordination of political Twitter use, the evidence appears to be split, with some authors finding little evidence of such a coordination in parties (Adi et al., 2014; Grussel & Nord, 2012) while others do—for example with U.S. Republicans and the Tea Party (Bode, Hanna, Yang, & Shah, 2015; Livne et al., 2011).

The effects of the use of Twitter by candidates are not really well understood. The studies contributing to this question examined different forms of effects by candidates' tweets through experiments, surveys, interviews, and qualitative case studies. It seems candidates can use Twitter successfully to get information out to their supporters; this appears to be especial powerful for insurgency campaigns (Bentivegna, 2014; Christensen, 2013; Jackson & Lilleker, 2011; Jungherr, 2013; Jürgens & Jungherr, 2015; Larsson & Kalsnes, 2014). Also, candidates seem to often talk about their Twitter use in terms of the cyber-rhetoric of trying to increase transparency and interaction with other users, without showing corresponding patterns in their usage practices of Twitter (Enli & Skogerbø, 2013; Grussel & Nord, 2012; Nilsson & Carlsson, 2014). This can be taken as a sign that candidates and parties use Twitter consciously as a symbol of being in step with the times and being approachable. In a series of experiments in South Korea, it could be shown that Twitter use was connected with specific patterns of political learning. Exposure to a candidate's tweets would lead to higher feelings of connectedness and social presence than being exposed to them on TV or in newspapers (Lee, 2013; Lee & Jang, 2013; Lee & Shin, 2014). Especially personalized messages by candidates had strong effects on recognition, recall, feelings of social presence, and imagined intimacy (Lee & Oh, 2012). These effects tended

to be moderated by the levels of political interest in users, with users with low levels of interests or support experiencing weaker or even opposite effects (Lee & Oh, 2013). In Japan, it could be shown that followers of a prominent candidate's Twitter feed overall showed increased positive attitudes toward said candidate but exhibited no changes in voting intentions (Kobayashi & Ichifuji, 2015). For Sweden, it could be shown that following candidates on Twitter was connected with little increase in political learning but positive effects on political participation (Dimitrova, Shehata, Strömbäck, & Nord, 2014). Also, candidates use Twitter messages to influence the coverage of political topics in the media (Chadwick, 2011; Kreiss, 2014). This is enabled by journalists following candidates' Twitter feeds and increasingly referencing their tweets in stories (Broersma & Graham, 2012; Chadwick, 2011; Parmelee, 2014; Verweij, 2012). Also, there is evidence that Twitter messages help candidates to increase their out-of-district fund-raising (Hong, 2013).

Publics

The second group of studies addresses the political uses of Twitter by normal users during campaigns—Twitter publics (e.g. McKelvey et al., 2014). The term publics refers to the fragmentation of the mass media audience into many interest-based publics. The increasing popularity of Internet services through which people can connect based on their online profiles and interests has led to the rise of the term networked publics (e.g., Papacharissi & de Fatima Oliveira, 2012). Here, publics can be understood as all users who posted messages with politically relevant hashtags or keywords or those users who followed the accounts of candidates or parties. Thus, this term encompasses the activities of all politically vocal Twitter users.

Studies show that politically vocal Twitter users tend not to be representative of a population as a whole (Barberá & Rivero, 2014; Bode & Dalrymple, 2014; Vaccari et al., 2013). For one, they tend to be younger, having a higher propensity of being male and students (Vaccari et al., 2013). They also tend to be strongly interested in politics (Bode & Dalrymple, 2014; McKinney,

Houston, & Hawthorne, 2014; Vaccari et al., 2013), partisan in their political leanings (Barberá & Rivero, 2014; Bekafigo & McBride, 2013), and to participate politically in other ways (Bode & Dalrymple, 2014; Park, 2013; Vaccari et al., 2015, 2013; Zhang, Seltzer, & Bichard, 2013). Also, supporters of governing parties appear to use Twitter less intensively than those from opposition parties (Conover, Gonçalves, Flammini, & Menczer, 2012; Straus et al., 2013; Vaccari et al., 2013). Additionally, there appear to be further differences between Twitter users posting many messages referring to politics and those who post only a few (Mustafaraj et al., 2011). This finding gains relevance once we take into account that apparently only a minority of Twitter users posts many political messages during the run of a campaign while most post only few (Barberá & Rivero, 2014; Bruns & Highfield, 2013; Grant et al., 2010; Jürgens & Jungherr, 2015; Mascaro, Black, & Goggins, 2012; Mejova et al., 2013; Mustafaraj et al., 2011) and that central actors in the interaction networks on Twitter are highly important for the distribution or filtering of information contained in messages (Jürgens, Jungherr, & Schoen, 2011). Given these findings, the tendency to look toward Twitter to gain insights into public opinion would create results skewed toward the opinions of a small, nonrepresentative, politically interested, and partisan subgroup of a population. Still, the perceived potential of Twitter data to provide insights into public opinion has led to concerted efforts to address these biases (cf. Klačnja, Barberá, Beauchamp, Nagler, & Tucker, 2016).

Various studies, based on different countries, show that the volume of political messages fluctuates strongly on a daily basis. In general, the volume of messages referring to politics tends to rise toward the end of a campaign (Ahmed & Skoric, 2014; Aragón et al., 2013; Bentivegna, 2014; Bruns & Burgess, 2011; Bruns & Highfield, 2013; Graham et al., 2013, 2014; Hanna et al., 2013; Jungherr, 2013, 2014; Jürgens & Jungherr, 2015; Larsson & Moe, 2012, 2013; Lietz, Wagner, Bleier, & Strohmaier, 2014; Lin, Keegan, Margolin, & Lazer, 2014; Shah, Hanna, Bucy, Wells, & Quevedo, 2015; Vergeer et al., 2013). Also, important campaign-related events seem to create spikes in the volume of Twitter messages (Sanjari & Khazraee, 2014). This is especially true for mediated

campaign events (Bentivegna, 2014; Bruns & Burgess, 2011; Bruns & Highfield, 2013; Graham et al., 2013, 2014; Hanna et al., 2013; Jungherr, 2013, 2014; Jürgens & Jungherr, 2015; Larsson & Moe, 2012, 2013; Lietz et al., 2014; Lin et al., 2014; Vergeer et al., 2013). It also appears as if the volume of Twitter messages referring to specific political actors follows closely—but not deterministically—their presence in traditional media (Conway, Kenski, & Wang, 2015; Jungherr, 2014; Larsson & Moe, 2012; Vargo, Guo, McCombs, & Shaw, 2014). Here, Twitter mentions seem to mirror the intensity and not necessarily the sentiment of political media (Murthy & Petto, 2014). Also, the prominence of traditional media as sources for retweets (Bentivegna, 2014; Borondo, Morales, Benito, & Losada, 2014; Sanjari & Khazraee, 2014) or contextual links (Himmelboim, Hansen, & Bowser, 2013) shows the high interconnectedness between traditional media and political Twitter activity.

The content of messages contributed by political publics is less well understood than content posted by candidates. There are indicators that messages referring to politics are mainly commentary containing information and little conversation between users (Small, 2011). The focus of message content appears to lie more strongly on political candidates and campaign strategy than on policies, with the issues focused on not necessarily conforming to topics prominent in the larger political debate (Brunns & Burgess, 2011). Comments on the horse race between candidates are very prominent (Groshek & Al-Rawi, 2013; Jungherr, 2014), as well as humor, irony, and satire (Freelon & Karpf, 2015; Mejova et al., 2013; Sreekumar & Vadrevu, 2013; Trilling, 2014). Most of the commentary on candidates and parties tends to be negative in tone (Dang-Xuan, Stieglitz, Wladarsch, & Neuberger, 2013; Diakopoulos & Shamma, 2010; Hosch-Dayican et al., 2014; Jungherr, 2013; Mejova et al., 2013; Trilling, 2014). Given these findings, it seems more plausible to conceptualize Twitter as a communication environment for phatic statements in reaction to political events than as a deliberative space for the exchange and debate of political arguments (e.g., Papacharissi, 2014).

Another question addressed in many studies is the question of the emergence of political

influence through Twitter. As of now, there is no consensus as to what influence on Twitter really means (e.g., Dubois & Gaffney, 2014). Focusing on the volume of politically relevant messages as a metric of influence produces contradicting findings, some studies showing that traditional political actors tend to dominate the discourse (Larsson & Moe, 2012) while others finding nontraditional actors dominating (Larsson & Moe, 2013; Mascaro et al., 2012; Small, 2011). Focusing instead on the volume of interactions received by other users, nontraditional actors appear to have very strong presence in political publics on Twitter (Bentivegna, 2014; Dang-Xuan et al., 2013; Freelon & Karpf, 2015; Jürgens & Jungherr, 2015; Sanjari & Khazraee, 2014; Sreekumar & Vadrevu, 2013; Stieglitz & Dang-Xuan, 2012). This and the increasing tendency of politicians and journalists to look at the public exchanges referring to politics on Twitter as indicators of public opinion could be taken to mean that Twitter indeed enables nontraditional actors to influence the larger political discourse. This might not be a universal trend, however. For Spain, Borondo et al. (2014) show politicians to be very much at the center of public interactions on Twitter.

Another prominent strand in the literature on political publics on Twitter is whether their interactions show patterns of political homophily—users predominantly interacting with other users of the same political conviction—or intra-partisan exchanges. Also on this topic, the evidence appears to be mixed and to depend at least somewhat on the chosen metric of analysis. It appears that people indeed tend to follow other users of the same political conviction (Feller, Kuhnert, Sprenger, & Welp, 2011; Himelboim, McCreery, & Smith, 2013; Himelboim et al., 2014) and to retweet messages more frequently from users who share their political convictions (Conover et al., 2012, 2011; Himelboim et al., 2013; Mustafaraj et al., 2011). Still, users appear to interact frequently across party lines through public @messages (Bruns & Highfield, 2013; Conover et al., 2012, 2011). Albeit, Himelboim et al. (2013) find also homogenous patterns in @message-networks. Additionally, there are findings that supporters of different parties tend to cluster around different hashtags, thereby creating politically separated

communication spaces (Bode et al., 2015; Hanna, Sayre, Bode, Yang, & Shah, 2011, 2013; Lietz et al., 2014). Still, Bode et al. (2015) showed that political supporters also tactically used hashtags prominently used by supporters of the opposition to enter their discourse.

Mediated events

The third group of studies addresses the use of Twitter to comment on mediated campaign events, such as televised candidate debates, party conventions, election day coverage, or high-profile news or discussion programs. Research examining Twitter messages posted during mediated campaign events shows remarkably similar patterns. As already shown, the volume of politics-related Twitter messages rises strongly in reaction to mediated events (Bentivegna, 2014; Bruns & Burgess, 2011; Bruns & Highfield, 2013; Graham et al., 2013, 2014; Hanna et al., 2013; Jungherr, 2013, 2014; Jürgens & Jungherr, 2015; Larsson & Moe, 2012, 2013; Lietz et al., 2014; Lin et al., 2014; Shah et al., 2015; Vergeer et al., 2013). Thus, people react to political broadcasts by commenting on Twitter. Going further, when analyzing messages posted during mediated events, various studies found spikes in volume to correspond with important stages of the event (Anstead & O'Loughlin, 2011; Diakopoulos & Shamma, 2010; Elmer, 2013; Hanna et al., 2013; Kalsnes, Krumsvik, & Storsul, 2014; Shamma, Kennedy, & Churchill, 2009). Likewise, the opinions of users of the events and the performance of featured politicians seem to be reflected in their tweets (Cameron & Geidner, 2014). Thus, Twitter messages appear to hold at least some potential for the automated detection of significant stages of mediated campaign events and perhaps even the automated analysis of public reactions to the debate. Other research indicates that users might react more reliably to nonverbal cues of candidates than to verbal statements (Shah et al., 2015), thereby potentially challenging the suspected potential for automated analyses of mediated political events.

Journalists and candidates seem to use Twitter to assess their performance in mediated campaign events. This happens either through

quantitative analyses of Twitter messages or through less systematic personal impressions of the opinion climate on Twitter (Anstead & O'Loughlin, 2014; Chadwick, 2011). This is highly relevant because, although research increasingly shows Twitter metrics not to be representative for public opinion at large (e.g., Barberá & Rivero, 2014; Bode & Dalrymple, 2014; Vaccari et al., 2013), for political elites, Twitter seems to become an informal barometer of public opinion. Twitter might offer no true picture of reality but instead one mediated by the attention, interests, and motives of politically vocal Twitter users (cf. Jungherr, 2015; Jungherr, Schoen, & Jürgens, 2016). An indicator for this mediation process is the focus of Twitter comments during mediated events on only a selection of topics, a selection not necessarily representative of their importance to the larger political discourse (Trilling, 2014).

When analyzing the behavior of users commenting on mediated campaign events on Twitter, researchers found that people tended to interact less during the run of the program and instead commented more on the events as they were watching them (Lin et al., 2014). In their tweets users tended to offer factual context to the events on screen, for example, by linking to other content on the Web, often contesting the statements and positions put forward by the politicians featured in the events (Ampofo, Anstead, & O'Loughlin, 2011; Anstead & O'Loughlin, 2011; Chadwick, 2011; Elmer, 2013; Jungherr, 2014; Kalsnes et al., 2014; Kreiss, Meadows, & Remensperger, 2014). Journalists also seem to comment on political media events by indexing candidates' statements and offering personal assessments. They appear to use Twitter seldom for formal fact-checking (Coddington, Molyneux, & Lawrence, 2014). Humor, irony, and satire were also very prominent in tweets posted during mediated events (Freelon & Karpf, 2015; Trilling, 2014). In their exchanges, vocal political Twitter users contributed to a collective negotiation of meaning of the commented-on events (Kreiss et al., 2014). There are also indications that during mediated events, the attention of Twitter users focuses on a smaller number of hashtags and actors than

during other times (Freelon & Karpf, 2015; Lin et al., 2014). On the question of who profits from this focus, the evidence indicates that traditional political actors, such as politicians or journalists, become the center of attention (Hawthorne, Houston, & McKinney, 2013; Lin et al., 2014).

Research designs, data collection, and selection

Research designs

Grouping the studies included in this review by their research design results in five categories: studies using surveys ($n = 7$), experiments ($n = 10$), interviews ($n = 7$), case studies ($n = 2$), and digital trace data ($n = 104$).² The dominant approach to the analysis of uses of Twitter during campaigns relies on the analysis of digital trace data. Digital trace data document the activities of users on digital services. They document each interaction of users with the service. Digital trace data are found data. Analyses based on this data type are thus in clear contrast to research in which data was explicitly collected to measure and control for specific phenomena—such as surveys or experiments (cf. Howison, Wiggins, & Crowston, 2011).

The use of digital trace data comes in many shapes and forms, be it simply the manual transcription of the number of messages and followers of politicians' Twitter accounts (e.g. Peterson, 2012), collecting of messages posted by users on their Twitter feeds (e.g., Small, 2010), or the extensive collection of data through Twitter's application programming interface (API) (e.g., Lin et al., 2014). In principle, every interaction of users with Twitter is documented and, within limits of their specific API access, accessible to researchers. This opens up interesting potentials for researchers interested in the use of digital tools, the effects of exposure to certain types of messages, and the flow of information through networks constructed through manifest interactions between Twitter users. Twitter offers access to a data type that is representative for data collected by other online services such as Google or Facebook. In contrast to these services, Twitter allows researchers comparably comprehensive access to its data. Thus, research using digital trace data on political behavior

on Twitter might not only speak to Twitter, but also offer room for the development of methods of research with digital trace data in general (e.g., Jungherr, 2015; Lazer et al., 2009). Digital trace data have been used to infer off-line phenomena—such as political leanings of Twitter users (e.g., Barberá & Rivero, 2014), stages in politically mediated events (e.g., Shamma et al., 2009), or election results (e.g., DiGrazia et al., 2013). They have also served as the basis of network (e.g., Conover et al., 2012; Lietz et al., 2014) and sentiment analyses (e.g., Dang-Xuan et al., 2013; Murthy & Petto, 2014). Through the wealth of data available in the analyses of political communication on Twitter, the service has become increasingly popular among scientists working at the intersection between social and computer science.

Traditional approaches to data collection in the social sciences are also used in the analyses of the use of Twitter in election campaigns. Various studies have used surveys to determine aspects of political uses of Twitter, be it for assessments of how many people were using Twitter politically or be it for the identification of characteristic variables showing a statistical relationship with political Twitter use (Bekafigo & McBride, 2013; Bode & Dalrymple, 2014; Dimitrova et al., 2014; Park, 2013; Vaccari et al., 2015, 2013; Zhang et al., 2013). Studies based on surveys allow researchers to compare their findings on political Twitter use with established research on political participation. This potentially allows the identification of elements that political Twitter use shares with the use of other technologies for political participation and elements that are solely characteristic for the political use of Twitter. Still, surveys face specific challenges with regard to Twitter. Because Twitter is still used by comparatively small sections of the general population (see for the United States, e.g., Duggan, Ellison, Lampe, Lenhart, & Madden, 2015), a true sample of a population would have to include a large number of respondents to allow for any meaningful discussion of political uses of Twitter. Studies sometimes try to address this by selecting Twitter users based on their use of political hashtags and their following of political actors. Once identified, the researchers invite this politically active population through Twitter messages to participate in a survey (e.g., Bekafigo & McBride,

2013; Vaccari et al., 2013). Although this might give some indication of who political active users on Twitter are, this practice depends on self-selection of the respondents and might thus be biased.

A growing number of studies are using controlled experiments to measure effects on recipients following the exposure to Twitter feeds containing political information (Cameron & Geidner, 2014; Kobayashi & Ichifuji, 2015; Lee, 2013; Lee & Jang, 2013; Lee & Oh, 2012, 2013; Lee & Shin, 2014; McKinney et al., 2014). This research is very valuable in identifying effects of political communication on Twitter and mechanisms that political uses of Twitter share with political uses of other media.

Also, qualitative research approaches have done a lot to advance the understanding of the bigger picture of Twitter's effects on politics. Detailed case studies with rich description of Twitter's use in politics (Chadwick, 2011; Kreiss et al., 2014), interviews with political actors and journalists on their use of Twitter and their assessment of its effect on politics (Anstead & O'Loughlin, 2014; Kreiss, 2014; Parmelee, 2014), and content analyses of the content of Twitter messages (Graham et al., 2013; Lilleker & Jackson, 2010) have repeatedly proven to broaden the discussion of political uses and effects of Twitter by anchoring specific Twitter usage patterns in larger political contexts.

Data collection on Twitter

With regard to the automated collection of data through Twitter, we can distinguish between two approaches: one, relying on scripts developed by researchers querying Twitter's API or scraping Twitter's Web site, the other, using third-party software for data collection on Twitter. As the first section in Table 3 shows, a large number of studies included in this review did not specify their mode of data collection. This shows that the field still has far to go in developing a common standard of reporting how data was collected on Twitter. As of now, researchers and reviewers appear to be largely indifferent to how data was collected. This is unfortunate, since, as of now, we understand little about how different modes of data collection might lead to the collection of incomplete or biased data sets, which in turn

might negatively influence the inferences drawn based on the data (cf. Ruths & Pfeffer, 2014).

Twitter provides developers with limited access to its databases through its API. Twitter offers two different APIs, the REST API and the Streaming API. Both allow for different levels of data access. Through the REST API developers query Twitter's databases for data corresponding to specific parameters, such as tweets containing specific keywords or hashtags, or tweets posted by specific users. In contrast, the Streaming API delivers either a sample stream of all Twitter messages in real time or streams of messages corresponding to specific characteristics. Research shows that at least the Streaming API delivers a non-representative sample of all messages posted on Twitter (Morstatter, Pfeffer, & Liu, 2014; Morstatter, Pfeffer, Liu, & Carley, 2013). The consequences of this skewed sample for research on the uses of Twitter in campaigns have not yet been examined. Still, this should serve as an indicator that the mode of access chosen to Twitter data might result in somewhat different data sets and, therefore, also potentially in divergent findings.

Another set of studies used a wide variety of third-party software. The use of some of these tools—such as NodeXL and Twapper Keeper—has been extensively discussed (Bruns & Liang, 2012; Hansen, Shneiderman, & Smith, 2010). Still, as of now there is no systematic comparison between data sets collected through various API accesses and various third-party software solutions. This makes it difficult to assess the compatibility of research using these different approaches.

Selection criteria

The studies included in this review can also be grouped by their approach to the selection of relevant data on Twitter. The second section in Table 3 provides an overview over these selection criteria. A number of studies collected all messages using one or more topically relevant hashtags and analyzed the resulting universe of messages (Bruns & Burgess, 2011; Larsson & Moe, 2012; Shamma et al., 2009). Other studies collected all messages using one or more topically relevant keywords and analyzed the resulting messages (Hanna et al., 2013; Lin et al., 2014; Mustafaraj et al., 2011).

Table 3. Approaches to data collection on Twitter.

	No. of Studies
Mode of Data Collection on Twitter	
IFTTT, Script	1
Software (Archivist)	1
Software (DataSift)	1
Software (Discover Text)	1
Software (Meltwater Buzz)	1
Software (NodeXL)	4
Software (PolitiekOnline)	1
Software (ScraperWiki)	1
Software (streamR)	1
Software (Topsy)	1
Software (Twapper Keeper)	9
Software (twitterR)	1
Software (Twitter Database Server/Twitter Collectors)	1
Software (TwitterZombie)	1
Software (The Washington Post's @MentionMachine)	1
Twitter API (REST)	11
Twitter API (Streaming)	20
Twitter API (Not specified)	14
Twitter Search	1
Not Specified	3
Selection Criteria	
@Mentions of politicians	3
Hashtags	34
Keywords	26
Users (accounts followed)	5
Users (hashtags used)	4
Users (official function)	60

Note. The counts of studies associated with specific modes of data collection do not add up to 127 because some studies did not use software to collect data from Twitter. Likewise, the counts of studies included in the table under selection criteria do not add up to 127 because various studies used a combination of these selection criteria.

Both approaches use hashtags or keywords as an indicator that a user contributed with her messages to a given topic. Including all messages thus identified in the analysis seems sensible. Still, there are differences between the two approaches. For one, we might assume that hashtags are predominantly used by users who are well acquainted with Twitter and the service's usage conventions (e.g., McKelvey et al., 2014). Relying only on messages of these Twitter-savvy users might bias a data set. In contrast, using keywords as identifiers for potentially relevant messages might lead to a dilution of the data set with a large number of false positives—messages using the keyword without referring to the examined topic. Also, for both approaches researchers have to identify a set of relevant hashtags or keywords before they start with their data collection. This might not be problematic for research on

preplanned campaign events—such as televised debates—that provide researchers with a set of predetermined hashtags or keywords; for the tracking of a complex multithreaded social event such as an election campaign, this task is much more difficult. As of now, there is no systematic comparison between the results provided by these two modes of data selection. This makes it difficult to assess whether the different criteria—hashtag-based selection and keyword-based selection—lead to significantly different data sets.

Another approach is the collection of all messages posted by a preselected set of users. The criteria for the selection of relevant users vary. Some studies collect all messages by users identified by their official function—for example, parties, candidates, or journalists (e.g., Bruns & Highfield, 2013). Other studies collect all messages by users who followed or mentioned specific accounts (e.g., Bode & Dalrymple, 2014; Hanna et al., 2011; Vaccari et al., 2013) or who used specific hashtags or keywords (e.g., Jürgens & Jungherr, 2015). These selection decisions are accompanied by similar trade-offs as those discussed above with regard to the approach to data collection. As before, no systematic analysis is available if different selection criteria lead to data sets producing different research results. It is of obvious relevance for research using Twitter data to address the potential effects of these data selection criteria.

Discussion and perspectives for further research

This review has shown that although research on the use of Twitter in election campaigns is still in an early phase, there are a number of findings that appear to be stable across various election cycles and countries. Table 4 lists some of the key findings.

The image of Twitter's uses in political campaigns diverges somewhat from the popular account of Twitter as a tool for leveling political discourse by enabling resource-strapped actors to compete with traditional parties and as a frivolous tool fit for clicktivists. Instead, we see Twitter becoming increasingly incorporated in campaign repertoires of traditional parties and candidates

(e.g., Peterson, 2012; Vergeer & Hermans, 2013) in an attempt to “broadcast” their message (e.g., Graham et al., 2013; Jackson & Lilleker, 2011) or to influence the coverage of campaigns by traditional media (e.g., Kreiss, 2014). In turn, users who tweet about politics tend not to be representative of underlying populations (e.g., Barberá & Rivero, 2014; Bode & Dalrymple, 2014; Vaccari et al., 2013). Instead, they are more likely to be politically interested (e.g., Bode & Dalrymple, 2014; McKinney et al., 2014; Vaccari et al., 2013), politically partisan (e.g., Barberá & Rivero, 2014; Bekafigo & McBride, 2013), and to participate politically in other ways (e.g., Vaccari et al., 2015). Their posts contain humor and parody (e.g., Freelon & Karpf, 2015; Trilling, 2014), comments, and links to political information sometimes contesting, sometimes supporting the statements of political elites or journalists (e.g., Ampofo et al., 2011; Anstead & O'Loughlin, 2011). Thereby, Twitter users contribute to a collective negotiation of meaning between political elites, journalists, and other Twitter users during the course of a campaign. This becomes especially apparent during mediated political events of high public attention—such as televised leaders' debates or televised party conventions (e.g., Chadwick, 2011; Kreiss et al., 2014). This is clearly enabled by an increasing trend among journalists to incorporate tweets or aggregated tweet sentiment in their coverage of political events (e.g., Anstead & O'Loughlin, 2014). Although political tweets might not look like substantive contributions to the political discourse (Trilling, 2014), they are far from frivolous or fleeting. Instead, they appear to become an increasingly integrated element of political communication in a “hybrid media system” (Chadwick, 2013).

Further opportunities for research on the uses of Twitter during political campaigns are easy to see. For one, researchers have to address the body of the available literature more systematically in their own research. As sketched above, the body of available research is substantive. These findings have to be consolidated and systematically tested in future work.

The second obvious case for consolidation has to focus on approaches to data collection on Twitter and the selection of data. As shown

Table 4. Key findings.

Category	Findings
Parties/Candidates	Parties and campaigns in opposition appear more likely to use Twitter than those in government. Twitter is not very likely to be used by resource-strapped campaigns, therefore, unlikely to significantly change power-relationship between parties or candidates. Candidates primarily use Twitter as a broadcast medium to post their campaign activities and links to Web site, not to address policy. Candidates predominantly do not use Twitter to enable interactive dialogue between candidates and citizens or increase transparency. Still they actively use cyber-rhetoric to describe their motives for Twitter use. Candidates use Twitter to influence media coverage, for example, by publicly interacting with journalists or by publishing sound bites. Candidates view Twitter as an informal barometer for public opinion. There is strong variation in Twitter use, with many candidates following patterns described above but some, mostly insurgents, deviate quite strongly. Twitter use is related to electoral success, if at all, indirectly. The stability of this relationship seems to depend upon the electoral context.
Publics	Politically vocal Twitter users represent a small, nonrepresentative, politically interested, and partisan subgroup of the public. Strong variation in intensity of users' contributions to political communication space, with most contributing only very little and few contributing very heavily. In general, the volume of messages referring to politics follows the dramaturgy of campaigns, with message volume increasing strongly toward the end of the campaign and showing volume spikes on days of high public attention on politics. Political Twitter activity is highly interconnected with political coverage in traditional media, although not following it deterministically. Users tend to publicly interact with other users through @mentions irrespective of their political conviction but appear to be more likely to retweet messages of users sharing their political conviction. Messages referring to politics often are negative toward candidates or parties and contain humor or irony.
Mediated campaign events	Mediated campaign events, such as televised leaders' debates or election night coverage, create strong reactions on Twitter. Volume shifts in messages posted during mediated events tend to signify key moments during the events. Comments on mediated events are part of a public negotiation of meaning of the event and the performances of candidates. Increasingly journalists incorporate public commentary on Twitter in their coverage of mediated campaign events.

above, researchers collect data on Twitter through a wide variety of approaches. They query Twitter's various APIs for data, they use a variety of third-party tools, or they manually copy information on tweets and Twitter feeds from Twitter's website. Although all of these approaches might lead to comparable and stable results, there are only a few studies systematically testing whether these approaches indeed produce identical data sets (e.g., Morstatter et al., 2013). Also, studies vary significantly with regard to the criteria their authors use to select data. It is reasonable to assume that studies using hashtags, keywords, or users to select data will include vastly different bodies of messages. Although this might be the case, it is not clear if these different data sets will also lead to different results or which of the approaches might be more appropriate for different research questions. For example, the analysis of message content or time series in the daily volume of politically relevant messages might be more robust toward random missing data than the

analysis of interaction networks between Twitter users. As of now, the impact of specific research designs on the resulting data sets and the respective findings is simply not understood.

The easily available data through Twitter's API has led researchers to focus on the empirical riches of digital trace data (e.g., Conover et al., 2011; Hanna et al., 2013; Lietz et al., 2014; Lin et al., 2014). This focus has led researchers to pay somewhat less attention to how traditional approaches to quantitative research, such as surveys and experiments, might contribute to our understanding of Twitter's use in politics. This gap in the research is increasingly addressed by studies surveying participants in political publics (e.g., Bekafigo & McBride, 2013; Bode & Dalrymple, 2014; Vaccari et al., 2013). Some obvious problems of surveying politically vocal Twitter users have been discussed above. These problems need to be addressed, but there is also strong research potential in combining survey answers with the analysis of digital trace data. Twitter's unique data structure allows researchers to document the behavior of

Twitter users and to combine these results with their survey answers. This holds opportunities for researchers interested in the potential of political Twitter messages to move their recipients into action. Also, some researchers start to show the potential of experiments to identify mechanisms of political uses of Twitter—such as political learning or candidate and issue evaluations (e.g., Dimitrova et al., 2014; Lee, 2013; Lee & Jang, 2013; Lee & Oh, 2012; Lee & Shin, 2014). Experiments can be used to identify various mechanisms in the political uses of Twitter, which in turn can be used to check the aggregates of Twitter messages for patterns in concordance or conflict with patterns expected to arise from these mechanisms. Thus, the combination of traditional methods of quantitative research with nontraditional methods, which became feasible through the use of digital data traces of human behavior on Twitter, promises considerable research potential. There also appears to be great research potential for qualitative work (e.g., Chadwick, 2011; Kreiss, 2014; Kreiss et al., 2014). The obvious potential for the quantitative analysis of Twitter data appears to somewhat obscure the necessity for qualitative studies. Although quantitative research can detect patterns in data, qualitative work establishes which patterns to look for. Also, qualitative work allows for a discussion of transformations in practices of political actors—such as politicians and journalists—that might remain hidden in large aggregates of data. Content analyses of messages, interviews with political actors and participants in political publics, and participant observation of the use of digital tools in the conduct, performance, and coverage of politics thus hold strong potential for further research.

Also, various studies point at the potential of discussing political uses of Twitter in the context of those of other online services—such as Facebook, blogs, or YouTube (Baxter & Marcella, 2012, 2013; Chadwick, 2011; Dimitrova et al., 2014; Enli & Skogerbø, 2013; Gilmore, 2012; Groshek & Al-Rawi, 2013; Klinger, 2013; Kreiss et al., 2014; Larsson & Kalsnes, 2014; Moe & Larsson, 2013; Nilsson & Carlsson, 2014; Park, 2014; Sreekumar & Vadrevu, 2013; Zhang et al., 2013). Concentrating only on the analysis of Twitter might offer only a limited picture of its role in political campaigns, given that Twitter is

only one part of an increasingly complex media ecology comprising political coverage in traditional media and politics-related interactions on various online channels (Chadwick, 2013). For the same reason, the analysis of influences and interdependencies between political coverage in traditional media and on Twitter also appears promising (Chadwick, 2011; Jungherr, 2014; Kreiss, 2014; Murthy & Petto, 2014; Shah et al., 2015; Trilling, 2014; Vargo et al., 2014).

These early years of research on Twitter in politics have established a rich body of empirical evidence, albeit in only weakly interconnected case studies. For this field to emerge further, the years that follow must show a consolidation of evidence, methods of data collection and selection, and a combination of traditional research methods with methods made newly available through access to digital trace data via Twitter. Through this consolidation, it will be possible to assess new case studies based on their concurrence or divergence from established patterns and thereby increase our understanding of the dependence of these patterns on various contextual factors. Also, the combination of traditional and new research methods will allow for a more extensive discussion of how findings developed based on Twitter data correspond to the established body of research in the social sciences. This integration is necessary to assess the role of Twitter not as an isolated digital tool but as one tool among many, changing the conduct, performance, and coverage of politics.

Notes

1. For a detailed discussion and documentation of the search and selection process, please see the technical appendix of this paper available online at <http://andreasjungherr.net/wp-content/uploads/2015/11/Jungherr-Twitter-Use-in-Election-Campaigns-Technical-Appendix.pdf>.
2. These counts do not add up to 127 because some studies used a mix of the methods listed here.

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References

- Adams, A., & McCorkindale, T. (2013). Dialogue and transparency: A content analysis of how the 2012 presidential candidates used Twitter. *Public Relations Review*, 39(4), 357–359. doi:10.1016/j.pubrev.2013.07.016
- Adi, A., Erickson, K., & Lilleker, D. G. (2014). Elite Tweets: Analyzing the Twitter communication patterns of labour party peers in the House of Lords. *Policy & Internet*, 6(1), 1–27. doi:10.1002/1944-2866.POI350
- Aharony, N. (2012). Twitter use by three political leaders: An exploratory analysis. *Online Information Review*, 36(4), 587–603. doi:10.1108/14684521211254086
- Ahmed, S., & Skoric, M. M. (2014). My name is Khan: The use of Twitter in the campaign for 2013 Pakistan general election. In R. H. Sprague Jr. (Ed.), *HICSS 2014: Proceedings of the 47th Hawaii International Conference on System Science* (pp. 2242–2251). Washington, DC: IEEE Computer Society. doi:10.1109/HICSS.2014.282
- Amirullah, F., Komp, S., & Nurhadryani, Y. (2013). Campaign 2.0: An analysis of the utilization social network sites of political parties in Indonesia. In *ICACSS 2013: International Conference on Advanced Computer Science and Information Systems* (pp. 243–248). Washington, DC: IEEE Computer Society. doi:10.1109/ICACSS.2013.6761583
- Ampofo, L., Anstead, N., & O'Loughlin, B. (2011). Trust, confidence, and credibility: Citizen responses on Twitter to opinion polls during the 2010 UK general election. *Information, Communication & Society*, 14(6), 850–871. doi:10.1080/1369118X.2011.587882
- Anstead, N., & O'Loughlin, B. (2011). The emerging viewertariat and BBC question time: Television debate and real-time commenting online. *The International Journal of Press/Politics*, 16(4), 440–462. doi:10.1177/1940161211415519
- Anstead, N., & O'Loughlin, B. (2014). Social media analysis and public opinion: The 2010 UK general election. *Journal of Computer-Mediated Communication*. Advance online publication. doi:10.1111/jcc4.12102
- Aragón, P., Kappler, K. E., Kaltenbrunner, A., Laniado, D., & Volkovich, Y. (2013). Communication dynamics in Twitter during political campaigns: The case of the 2011 Spanish national election. *Policy & Internet*, 5(2), 183–206. doi:10.1002/1944-2866.POI327
- Barberá, P., & Rivero, G. (2014). Understanding the political representativeness of Twitter users. *Social Science Computer Review*. Advance online publication. doi:10.1177/0894439314558836
- Baxter, G., & Marcella, R. (2012). Does Scotland “like” this? Social media use by political parties and candidates in Scotland during the 2010 UK general election campaign. *Libri*, 62(2), 109–124. doi:10.1515/libri-2012-0008
- Baxter, G., & Marcella, R. (2013). Do online election campaigns sway the vote? A Study of the 2011 Scottish parliamentary election. *Libri*, 63(3), 190–205. doi:10.1515/libri-2013-0015
- Bekafigo, M. A., & McBride, A. (2013). Who tweets about politics?: Political participation of Twitter users during the 2011 Gubernatorial elections. *Social Science Computer Review*, 31(5), 625–643. doi:10.1177/0894439313490405
- Bentivegna, S. (2014). Beppe Grillo's dramatic incursion into the Twittersphere: Talking politics in 140 characters. *Contemporary Italian Politics*, 6(1), 73–88. doi:10.1080/23248823.2014.884377
- Bode, L., & Dalrymple, K. E. (2014). Politics in 140 characters or less: Campaign communication, network interaction, and political participation on Twitter. *Journal of Political Marketing*, 1–22 Advance online publication. doi:10.1080/15377857.2014.959686
- Bode, L., Hanna, A., Yang, J., & Shah, D. V. (2015). Candidate networks, citizen clusters, and political expression: Strategic Hashtag use in the 2010 midterms. *The Annals of the American Academy of Political and Social Science*, 659(1), 149–165. doi:10.1177/0002716214563923
- Borondo, J., Morales, A. J., Benito, R. M., & Losada, J. C. (2014). Mapping the online communication patterns of political conversations. *Physica A: Statistical Mechanics and Its Applications*, 414, 403–413. doi:10.1016/j.physa.2014.06.089
- Broersma, M., & Graham, T. (2012). Social media as beat: Tweets as a news source during the 2010 British and Dutch elections. *Journalism Practice*, 6(3), 403–419. doi:10.1080/17512786.2012.663626
- Bruns, A., & Burgess, J. (2011). #ausvotes: How Twitter covered the 2010 Australian federal election. *Communication, Politics & Culture*, 44(2), 37–56.
- Bruns, A., & Highfield, T. (2013). Political networks on Twitter: Tweeting the Queensland state election. *Information, Communication & Society*, 16(5), 667–691. doi:10.1080/1369118X.2013.782328
- Bruns, A., & Liang, Y. E. (2012). Tools and methods for capturing Twitter data during natural disasters. *First Monday*, 17(4). doi:10.5210/fm
- Burgess, J., & Bruns, A. (2012). (Not) the Twitter election: The dynamics of the #ausvotes conversation in relation to the Australian media ecology. *Journalism Practice*, 6(3), 384–402. doi:10.1080/17512786.2012.663610
- Cameron, J., & Geidner, N. (2014). Something old, something new, something borrowed from something blue: Experiments on dual viewing TV and Twitter. *Journal of*

- Broadcasting & Electronic Media*, 58(3), 400–419. doi:10.1080/08838151.2014.935852
- Chadwick, A. (2011). Britain's first live televised party leaders' debate: From the news cycle to the political information cycle. *Parliamentary Affairs*, 64(1), 24–44. doi:10.1093/pa/gsq045
- Chadwick, A. (2013). *The hybrid media system: Politics and power*. Oxford, UK: Oxford University Press.
- Chi, F., & Yang, N. (2011). Twitter adoption in congress. *Review of Network Economics*, 10(1), Article 3. doi:10.2202/1446-9022.1255
- Christensen, C. (2013). Wave-riding and hashtag-jumping: Twitter, minority "third parties" and the 2012 US elections. *Information, Communication & Society*, 16(5), 646–666. doi:10.1080/1369118X.2013.783609
- Coddington, M., Molyneux, L., & Lawrence, R. G. (2014). Fact checking the campaign: How political reporters use Twitter to set the record straight (or not). *The International Journal of Press/Politics*, 19(4), 391–409. doi:10.1177/1940161214540942
- Conover, M. D., Gonçalves, B., Flammini, A., & Menczer, F. (2012). Partisan asymmetries in online political activity. *EPJ Data Science*, 1(1), 1–19. doi:10.1140/epjds6
- Conover, M. D., Ratkiewicz, J., Francisco, M., Goncalves, B., Flammini, A., & Menczer, F. (2011). Political polarization on Twitter. In N. Nicolov, J. G. Shanahan, L. Adamic, R. Baeza-Yates, & S. Counts (Eds.), *Proceedings of the Fifth International AAAI Conference on Weblogs and Social Media* (pp. 89–96). Menlo Park, CA: The AAAI Press.
- Conway, B. A., Kenski, K., & Wang, D. (2013). Twitter use by presidential primary candidates during the 2012 campaign. *American Behavioral Scientist*, 57(11), 1596–1610. doi:10.1177/0002764213489014
- Conway, B. A., Kenski, K., & Wang, D. (2015). The rise of Twitter in the political campaign: Searching for intermedia agenda-setting effects in the presidential primary. *Journal of Computer-Mediated Communication*, 20, 363–380. Advance online publication. doi:10.1111/jcc4.12124
- Dang-Xuan, L., Stieglitz, S., Wladarsch, J., & Neuberger, C. (2013). An investigation of influentials and the role of sentiment in political communication on Twitter during election periods. *Information, Communication & Society*, 16(5), 795–825. doi:10.1080/1369118X.2013.783608
- D'heer, E., & Verdegem, P. (2014). Conversations about the elections on Twitter: Towards a structural understanding of Twitter's relation with the political and the media field. *European Journal of Communication*, 29(6), 720–734. doi:10.1177/0267323114544866
- Diakopoulos, N. A., & Shamma, D. A. (2010). Characterizing debate performance via aggregated Twitter sentiment. In E. Mynatt, G. Fitzpatrick, S. Hudson, K. Edwards, & T. Rodden (Eds.), *CHI '10: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 1195–1198). New York, NY: ACM. doi:10.1145/1753326.1753504
- DiGrazia, J., McKelvey, K., Bollen, J., & Rojas, F. (2013). More tweets, more votes: Social media as a quantitative indicator of political behavior. *PLoS One*, 8(11), e79449. doi:10.1371/journal.pone.0079449
- Dimitrova, D. V., Shehata, A., Strömbäck, J., & Nord, L. W. (2014). The effects of digital media on political knowledge and participation in election campaigns: Evidence from panel data. *Communication Research*, 41(1), 95–118. doi:10.1177/0093650211426004
- Dubois, E., & Gaffney, D. (2014). The multiple facets of influence: Identifying political influentials and opinion leaders on Twitter. *American Behavioral Scientist*, 58(10), 1260–1277. doi:10.1177/0002764214527088
- Duggan, M., Ellison, N. B., Lampe, C., Lenhart, A., & Madden, M. (2015, January 9). Social media update 2014. *Pew Research Center*. Retrieved from <http://www.pewinternet.org/2015/01/09/social-media-update-2014/>
- Elmer, G. (2013). Live research: Twittering an election debate. *New Media & Society*, 15(1), 18–30. doi:10.1177/1461444812457328
- Enli, G. S., & Skogerbo, E. (2013). Personalized campaigns in party-centered politics: Twitter and Facebook as arenas for political communication. *Information, Communication & Society*, 16(5), 757–774. doi:10.1080/1369118X.2013.782330
- Evans, H. K., Cordova, V., & Sipole, S. (2014). Twitter style: An analysis of how house candidates used Twitter in their 2012 campaigns. *PS: Political Science & Politics*, 47(2), 454–462. doi:10.1017/S1049096514000389
- Feller, A., Kuhnert, M., Sprenger, T. O., & Welp, I. M. (2011). Divided they tweet: The network structure of political microbloggers and discussion topics. In N. Nicolov, J. G. Shanahan, L. Adamic, R. Baeza-Yates, & S. Counts (Eds.), *ICWSM 2011: Proceedings of the 5th International AAAI Conference on Weblogs and Social Media* (pp. 474–477). Menlo Park, CA: Association for the Advancement of Artificial Intelligence (AAAI).
- Fink, A. (2014). *Conducting research literature reviews: From the Internet to paper* (4th ed.). Thousand Oaks, CA: Sage.
- Freelon, D., & Karpf, D. (2015). Of big birds and bayonets: Hybrid Twitter interactivity in the 2012 presidential debates. *Information, Communication & Society*, 18(4), 390–406. doi:10.1080/1369118X.2014.952659
- Gainous, J., & Wagner, K. M. (2014). *Tweeting to power: The social media revolution in American politics*. Oxford, UK: Oxford University Press.
- Gayo-Avello, D. (2013). A meta-analysis of state-of-the-art electoral prediction from Twitter data. *Social Science Computer Review*, 31(6), 649–679. doi:10.1177/0894439313493979
- Gilmore, J. (2012). Ditching the pack: Digital media in the 2010 Brazilian congressional campaigns. *New Media & Society*, 14(4), 617–633. doi:10.1177/1461444811422429
- Golbeck, J., Grimes, J. M., & Rogers, A. (2010). Twitter use by the U.S. Congress. *Journal of the American Society for Information Science and Technology*, 61(8), 1612–1621. doi:10.1002/asi.21344
- Graham, T., Broersma, M., Hazelhoff, K., & van't Haar, G. (2013). Between broadcasting political messages and

- interacting with voters: The use of Twitter during the 2010 UK general election campaign. *Information, Communication & Society*, 16(5), 692–716. doi:10.1080/1369118X.2013.785581
- Graham, T., Jackson, D., & Broersma, M. (2014). New platform, old habits? Candidates' use of Twitter during the 2010 British and Dutch general election campaigns. *New Media & Society*. Advance online publication. doi:10.1177/1461444814546728
- Grant, W. J., Moon, B., & Grant, J. B. (2010). Digital dialogue? Australian politicians' use of the social network tool Twitter. *Australian Journal of Political Science*, 45(4), 579–604. doi:10.1080/10361146.2010.517176
- Groshek, J., & Al-Rawi, A. (2013). Public sentiment and critical framing in social media content during the 2012 U.S. presidential campaign. *Social Science Computer Review*, 31(5), 563–576. doi:10.1177/0894439313490401
- Grussel, M., & Nord, L. (2012). Three attitudes to 140 characters: The use and views of Twitter in political party communications in Sweden. *Public Communication Review*, 2(2), 48–61.
- Hanna, A., Sayre, B., Bode, L., Yang, J. H., & Shah, D. (2011). Mapping the political Twitterverse: Candidates and their followers in the midterms. In N. Nicolov, J. G. Shanahan, L. Adamic, R. Baeza-Yates, & S. Counts (Eds.), *ICWSM 2011: Proceedings of the 5th International AAAI Conference on Weblogs and Social Media* (pp. 510–513). Menlo Park, CA: Association for the Advancement of Artificial Intelligence (AAAI).
- Hanna, A., Wells, C., Maurer, P., Shah, D. V., Friedland, L., & Matthews, J. (2013). Partisan alignments and political polarization online: A computational approach to understanding the French and US presidential elections. In I. Weber, A. M. Popescu, & M. Pennacchiotti (Eds.), *PLEAD 2013: Proceedings of the Politics, Elections, and Data Workshop* (pp. 15–21). New York, NY: ACM.
- Hansen, D., Shneiderman, B., & Smith, M. A. (2010). *Analyzing social media networks with NodeXL: Insights from a connected world*. Burlington, MA: Morgan Kaufmann.
- Hawthorne, J., Houston, J. B., & McKinney, M. S. (2013). Live-tweeting a presidential primary debate: Exploring new political conversations. *Social Science Computer Review*, 31(5), 552–562. doi:10.1177/0894439313490643
- Hemphill, L., Otterbacher, J., & Shapiro, M. A. (2013). What's Congress doing on Twitter? In A. Bruckman, S. Counts, C. Lampe, & L. Terveen (Eds.), *CSCW 2013: Proceedings of the 2013 Conference on Computer Supported Cooperative Work Companion* (pp. 877–886). New York, NY: ACM. doi:10.1145/2441776.2441876
- Himmelboim, I., Hansen, D., & Bowser, A. (2013). Playing in the same Twitter network: Political information seeking in the 2010 US gubernatorial elections. *Information, Communication & Society*, 16(9), 1373–1396. doi:10.1080/1369118X.2012.706316
- Himmelboim, I., McCreery, S., & Smith, M. (2013). Birds of a feather tweet together: Integrating network and content analyses to examine cross-ideology exposure on Twitter. *Journal of Computer-Mediated Communication*, 18(2), 40–60. doi:10.1111/jcc4.12001
- Himmelboim, I., Sweetser, K. D., Tinkham, S. F., Cameron, K., Danelo, M., & West, K. (2014). Valence-based homophily on Twitter: Network analysis of emotions and political talk in the 2012 presidential election. *New Media & Society*. Advance online publication. doi:10.1177/1461444814555096
- Hoang, T.-A., Cohen, W. W., Lim, E.-P., Pierce, D., & Redlawsk, D. P. (2013). Politics, sharing and emotion in microblogs. In J. Pei, F. Silvestri, & J. Tang (Eds.), *ASONAM '13: Proceedings of the 2013 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining* (pp. 282–289). New York, NY: ACM. doi:10.1145/2492517.2492554
- Hong, S. (2013). Who benefits from Twitter? Social media and political competition in the U.S. House of Representatives. *Government Information Quarterly*, 30(4), 464–472. doi:10.1016/j.giq.2013.05.009
- Hong, S., & Nadler, D. (2011). Does the early bird move the polls? The use of the social media tool "Twitter" by U.S. politicians and its impact on public opinion. In *dg.o 2011: Proceedings of the 12th Annual International Conference on Digital Government Research* (pp. 182–186). New York, NY: ACM. doi:10.1145/2037556.2037583
- Hong, S., & Nadler, D. (2012). Which candidates do the public discuss online in an election campaign?: The use of social media by 2012 presidential candidates and its impact on candidate salience. *Government Information Quarterly*, 29(4), 455–461. doi:10.1016/j.giq.2012.06.004
- Hosch-Dayican, B., Amrit, C., Aarts, K., & Dassen, A. (2014). How do online citizens persuade fellow voters? Using Twitter during the 2012 Dutch parliamentary election campaign. *Social Science Computer Review*. Advance online publication. doi:10.1177/0894439314558200
- Howison, J., Wiggins, A., & Crowston, K. (2011). Validity issues in the use of social network analysis with digital trace data. *Journal of the Association for Information Systems*, 12(12), 767–797.
- Hsu, C., & Park, H. W. (2012). Mapping online social networks of Korean politicians. *Government Information Quarterly*, 29(2), 169–181. doi:10.1016/j.giq.2011.09.009
- İkiz, O. O., Sobaci, M. Z., Yavuz, N., & Karkin, N. (2014). Political use of Twitter: The case of metropolitan mayor candidates in 2014 local elections in Turkey. In E. Estevez, M. Janssen, & L. Soares Barbosa (Eds.), *ICEGOV '14: Proceedings of the 8th International Conference on Theory and Practice of Electronic Governance* (pp. 41–50). New York, NY: ACM. doi:10.1145/2691195.2691219
- Jackson, N. A., & Lilleker, D. G. (2011). Microblogging, constituency service and impression management: UK MPs and the use of Twitter. *Journal of Legislative Studies*, 17(1), 86–105. doi:10.1080/13572334.2011.545181
- Jaidka, K., & Ahmed, S. (2015). The 2014 Indian general election on Twitter: An analysis of changing political traditions. In A. Chib, M. Kam, & J. Burrell (Eds.), *ICTD '15:*

- Proceedings of the Seventh International Conference on Information and Communication Technologies and Development* (Number 43). New York, NY: ACM. doi:10.1145/2737856.2737889
- Jungherr, A. (2013). Tweets and votes, a special relationship: The 2009 federal election in Germany. In I. Weber, A. M. Popescu, & M. Pennacchiotti (Eds.), *PLEAD 2013: Proceedings of the Politics, Elections and Data Workshop* (pp. 5–14). New York, NY: ACM. doi:10.1145/2508436.2508437
- Jungherr, A. (2014). The logic of political coverage on Twitter: Temporal dynamics and content. *Journal of Communication*, 64(2), 239–259. doi:10.1111/jcom.12087
- Jungherr, A. (2015). *Analyzing political communication with digital trace data: The role of Twitter messages in social science research*. Heidelberg, Germany: Springer.
- Jungherr, A., Schoen, H., & Jürgens, P. (2016). The mediation of politics through Twitter: An analysis of messages posted during the campaign for the German federal election 2013. *Journal of Computer-Mediated Communication*, 21(1), 50–68. doi:10.1111/jcc4.12143
- Jürgens, P., & Jungherr, A. (2015). The use of Twitter during the 2009 German national election. *German Politics*, 24(4), 469–490. doi:10.1080/09644008.2015.1116522.
- Jürgens, P., Jungherr, A., & Schoen, H. (2011). Small worlds with a difference: New gatekeepers and the filtering of political information on Twitter. In D. De Roure, & S. Poole (Eds.), *WebSci '11 Proceedings of the 3rd international web science conference* (Article No. 21). New York, NY: ACM. doi:10.1145/2527031.2527034
- Kalsnes, B., Krumsvik, A. H., & Storsul, T. (2014). Social media as a political backchannel. *Aslib Journal of Information Management*, 66(3), 313–328. doi:10.1108/AJIM-09-2013-0093
- Klašnja, M., Barberá, P., Beauchamp, N., Nagler, J., & Tucker, J. (2016). Measuring public opinion with social media data. In R. M. Alvarez, & L. Atkeson (Eds.), *Handbook on polling and polling methods* (Forthcoming). Oxford, England: Oxford University Press.
- Klinger, U. (2013). Mastering the art of social media: Swiss parties, the 2011 national election and digital challenges. *Information, Communication & Society*, 16(5), 717–736. doi:10.1080/1369118X.2013.782329
- Kobayashi, T., & Ichifuji, Y. (2015). Tweets that matter: Evidence from a randomized field experiment in Japan. *Political Communication*, 32, 574–593. Advance online publication. doi:10.1080/10584609.2014.986696
- Kreiss, D. (2014). Seizing the moment: The presidential campaigns' use of Twitter during the 2012 electoral cycle. *New Media & Society*. Advance online publication. doi:10.1177/1461444814562445
- Kreiss, D., Meadows, L., & Remensperger, J. (2014). Political performance, boundary spaces, and active spectatorship: Media production at the 2012 Democratic national convention. *Journalism*. Advance online publication. doi:10.1177/1464884914525562
- Kruikemeier, S. (2014). How political candidates use Twitter and the impact on votes. *Computers in Human Behavior*, 34, 131–139. doi:10.1016/j.chb.2014.01.025
- LaMarre, H. L., & Suzuki-Lambrecht, Y. (2013). Tweeting democracy? Examining Twitter as an online public relations strategy for congressional campaigns. *Public Relations Review*, 39(4), 360–368. doi:10.1016/j.pubrev.2013.07.009
- Larsson, A. O., & Kalsnes, B. (2014). "Of course we are on Facebook": Use and non-use of social media among Swedish and Norwegian politicians. *European Journal of Communication*, 29(6), 653–667. doi:10.1177/0267323114531383
- Larsson, A. O., & Moe, H. (2012). Studying political micro-blogging: Twitter users in the 2010 Swedish election campaign. *New Media & Society*, 14(5), 729–747. doi:10.1177/1461444811422894
- Larsson, A. O., & Moe, H. (2013). Representation or participation? Twitter use during the 2011 Danish election campaign. *Javnost—The Public*, 20(1), 71–88. doi:10.1080/13183222.2013.11009109
- Lassen, D. S., & Brown, A. R. (2011). Twitter: The electoral connection? *Social Science Computer Review*, 29(4), 419–436. doi:10.1177/0894439310382749
- Lawrence, R. G., Molyneux, L., Coddington, M., & Holton, A. (2014). Tweeting conventions: Political journalists' use of Twitter to cover the 2012 presidential campaign. *Journalism Studies*, 15(6), 789–806. doi:10.1080/1461670X.2013.836378
- Lazer, D., Pentland, A., Adamic, L., Aral, S., Barabasi, A.-L., Brewer, D., ... Van Alstyne, M. (2009). Computational social science. *Science*, 323(5915), 721–723. doi:10.1126/science.1167742
- Lee, E. J. (2013). Effectiveness of politicians' soft campaign on Twitter versus TV: Cognitive and experiential routes. *Journal of Communication*, 63(5), 953–974. doi:10.1111/jcom.12049
- Lee, E.-J., & Jang, J.-W. (2013). Not so imaginary interpersonal contact with public figures on social network sites: How affiliative tendency moderates its effects. *Communication Research*, 40(1), 27–51. doi:10.1177/0093650211431579
- Lee, E.-J., & Oh, S. Y. (2012). To personalize or depersonalize? When and how politicians' personalized tweets affect the public's reactions. *Journal of Communication*, 62(6), 932–949. doi:10.1111/j.1460-2466.2012.01681.x
- Lee, E.-J., & Oh, S. Y. (2013). Seek and you shall find? How need for orientation moderates knowledge gain from Twitter use. *Journal of Communication*, 63(4), 745–765. doi:10.1111/jcom.12041
- Lee, E.-J., & Shin, S. Y. (2014). When the medium is the message: How transportability moderates the effects of politicians' Twitter communication. *Communication Research*, 41(8), 1088–1110. doi:10.1177/0093650212466407
- Lietz, H., Wagner, C., Bleier, A., & Strohmaier, M. (2014). When politicians talk: Assessing online conversational

- practices of political parties on Twitter. In E. Adar, P. Resnick, M. De Choudhury, & B. Hogan (Eds.), *ICWSM 2014: Proceedings of the 8th International AAAI Conference on Weblogs and Social Media*. Menlo Park, CA: Association for the Advancement of Artificial Intelligence (AAAI).
- Lilleker, D. G., & Jackson, N. A. (2010). Towards a more participatory style of election campaigning: The impact of Web 2.0 on the UK 2010 general election. *Policy & Internet*, 2(3), 67–96. doi:[10.2202/1944-2866.1064](https://doi.org/10.2202/1944-2866.1064)
- Lin, Y. R., Keegan, B., Margolin, D., & Lazer, D. (2014). Rising tides or rising stars?: Dynamics of shared attention on Twitter during media events. *PLoS ONE*, 9(5), e94093. doi:[10.1371/journal.pone.0094093](https://doi.org/10.1371/journal.pone.0094093)
- Livne, A., Simmons, M. P., Adar, E., & Adamic, L. A. (2011). The party is over here: Structure and content in the 2010 election. In N. Nicolov, J. G. Shanahan, L. Adamic, R. Baeza-Yates, & S. Counts (Eds.), *ICWSM 2011: Proceedings of the 5th International AAAI Conference on Weblogs and Social Media* (pp. 201–208). Menlo Park, CA: Association for the Advancement of Artificial Intelligence (AAAI).
- Macnamara, J. (2011). Pre and post-election 2010 online: What happened to the conversation? *Communication, Politics & Culture*, 44(2), 18–36.
- Margaretten, M., & Gaber, I. (2014). The crisis in public communication and the pursuit of authenticity: An analysis of the Twitter feeds of Scottish MPs 2008–2010. *Parliamentary Affairs*, 67(2), 328–350. doi:[10.1093/pa/gss043](https://doi.org/10.1093/pa/gss043)
- Mascaro, C. M., Black, A., & Goggins, S. (2012). Tweet recall: Examining real-time civic discourse on Twitter. In T. A. Finholt, H. Tellioglu, K. Inkpen, & T. Gross (Eds.), *GROUP 2012: Proceedings of the 17th ACM International Conference on Supporting Group Work* (pp. 307–308). New York, NY: ACM. doi:[10.1145/2389176.2389233](https://doi.org/10.1145/2389176.2389233)
- McKelvey, K., DiGrazia, J., & Rojas, F. (2014). Twitter publics: How online political communities signaled electoral outcomes in the 2010 US House election. *Information, Communication & Society*, 17(4), 436–450. doi:[10.1080/1369118X.2014.892149](https://doi.org/10.1080/1369118X.2014.892149)
- McKinney, M. S., Houston, J. B., & Hawthorne, J. (2014). Social watching a 2012 Republican presidential primary debate. *American Behavioral Scientist*, 58(4), 556–573. doi:[10.1177/0002764213506211](https://doi.org/10.1177/0002764213506211)
- Mejova, Y., Srinivasan, P., & Boynton, B. (2013). GOP primary season on Twitter: “Popular” political sentiment in social media. In P. Ferragina, & A. Gionis (Eds.), *WSDM '13: Proceedings of the Sixth ACM International Conference on Web Search and Data Mining* (pp. 517–526). New York, NY: ACM. doi:[10.1145/2433396.2433463](https://doi.org/10.1145/2433396.2433463)
- Mirer, M. L., & Bode, L. (2013). Tweeting in defeat: How candidates concede and claim victory in 140 characters. *New Media & Society*. Advance online publication. doi:[10.1177/1461444813505364](https://doi.org/10.1177/1461444813505364)
- Moe, H., & Larsson, A. O. (2013). Untangling a complex media system: A comparative study of Twitter-linking practices during three Scandinavian election campaigns. *Information, Communication & Society*, 16(5), 775–794. doi:[10.1080/1369118X.2013.783607](https://doi.org/10.1080/1369118X.2013.783607)
- Morstatter, F., Pfeffer, J., & Liu, H. (2014). When is it biased? Assessing the representativeness of Twitter’s streaming API. In C. W. Chung, A. Broder, K. Shim, & T. Suel (Eds.), *WWW 2014: Proceedings of the 23rd International Conference on World Wide Web* (pp. 555–556). New York, NY: ACM. doi:[10.1145/2567948.2576952](https://doi.org/10.1145/2567948.2576952)
- Morstatter, F., Pfeffer, J., Liu, H., & Carley, K. M. (2013). Is the sample good enough? Comparing data from Twitter’s streaming API with Twitter’s firehose. In E. Kiciman, N. B. Ellison, B. Hogan, P. Resnick, & I. Soboroff (Eds.), *ICWSW-13: Proceedings of the 7th International AAAI Conference on Weblogs and Social Media* (pp. 400–408). Menlo Park, CA: AAAI.
- Murthy, D., & Petto, L. R. (2014). Comparing print coverage and tweets in elections: A case study of the 2011–2012 U.S. Republican primaries. *Social Science Computer Review*. Advance online publication. doi:[10.1177/0894439314541925](https://doi.org/10.1177/0894439314541925)
- Mustafaraj, E., Finn, Y., Whitlock, C., & Metaxas, P. T. (2011). Vocal minority versus silent majority: Discovering the opinions of the long tail. In *SocialCom 2011: The 3rd IEEE International Conference on Social Computing* (pp. 103–110). Washington, DC: IEEE.
- Nilsson, B., & Carlsson, E. (2014). Swedish politicians and new media: Democracy, identity and populism in a digital discourse. *New Media & Society*, 16(4), 655–671. doi:[10.1177/1461444813487964](https://doi.org/10.1177/1461444813487964)
- Nooralahzadeh, F., Arunachalam, V., & Chiru, C. G. (2013). 2012 Presidential elections on Twitter: An analysis of how the US and French election were reflected in tweets. In I. Dumitrache, A. M. Florea, & F. Pop (Eds.), *CSCS '13: Proceedings of the 2013 19th International Conference on Control Systems and Computer Science* (pp. 240–246). Washington, DC: IEEE Computer Society. doi:[10.1109/CSCS.2013.72](https://doi.org/10.1109/CSCS.2013.72)
- Pablo, Z. C., Oco, N., Roldan, M. D. G., Cheng, C., & Roxas, R. E. (2014). Toward an enriched understanding of factors influencing Filipino behavior during elections through the analysis of Twitter data. *Philippine Political Science Journal*, 35(2), 203–224. doi:[10.1080/01154451.2014.964794](https://doi.org/10.1080/01154451.2014.964794)
- Papacharissi, Z. A. (2014). *Affective publics: Sentiment, technology, and politics*. Oxford, UK: Oxford University Press.
- Papacharissi, Z. A., & de Fatima Oliveira, M. (2012). Affective news and networked publics: The rhythms of news storytelling on #Egypt. *Journal of Communication*, 62(2), 266–282. doi:[10.1111/j.1460-2466.2012.01630.x](https://doi.org/10.1111/j.1460-2466.2012.01630.x)
- Park, C. S. (2013). Does Twitter motivate involvement in politics? Tweeting, opinion leadership, and political engagement. *Computers in Human Behavior*, 29(4), 1641–1648. doi:[10.1016/j.chb.2013.01.044](https://doi.org/10.1016/j.chb.2013.01.044)
- Park, H. W. (2014). Mapping election campaigns through negative entropy: Triple and quadruple helix approach to South Korea’s 2012 presidential election. *Scientometrics*, 99(1), 187–197. doi:[10.1007/s11192-013-1122-5](https://doi.org/10.1007/s11192-013-1122-5)
- Parmelee, J. H. (2014). The agenda-building function of political tweets. *New Media & Society*, 16(3), 434–450. doi:[10.1177/1461444813487955](https://doi.org/10.1177/1461444813487955)
- Parmelee, J. H., & Bichard, S. L. (2012). *Politics and the Twitter revolution: How tweets influence the relationship*

- between political leaders and the public. Plymouth, UK: Lexington Books.
- Peterson, R. D. (2012). To tweet or not to tweet: Exploring the determinants of early adoption of Twitter by House members in the 111th Congress. *The Social Science Journal*, 49(4), 430–438. doi:10.1016/j.soscij.2012.07.002
- Plotkowiak, T., & Stanoevska-Slabeva, K. (2013). German politicians and their Twitter networks in the Bundestag election 2009. *First Monday*, 18(5). doi:10.5210/fm
- Raynauld, V., & Greenberg, J. (2014). Tweet, click, vote: Twitter and the 2010 Ottawa municipal election. *Journal of Information Technology & Politics*, 11(4), 412–434. doi:10.1080/19331681.2014.935840
- Ruths, D., & Pfeffer, J. (2014). Social media for large studies of behavior. *Science*, 346(6213), 1063–1164. doi:10.1126/science.346.6213.1063
- Sanjari, A., & Khazraee, E. (2014). Information diffusion using Twitter: A case study of Twitter for Iranian presidential election, 2013. In M. Strohmaier, C. Cattuto, & E. Meyer (Eds.), *WebSci '14: Proceedings of the 2014 ACM Conference on Web Science* (pp. 277–278). New York, NY: ACM.
- Shah, D. V., Hanna, A., Bucy, E. P., Wells, C., & Quevedo, V. (2015). The power of television images in a social media age: Linking biobehavioral and computational approaches via the second screen. *The Annals of the American Academy of Political and Social Science*, 659(1), 225–245. doi:10.1177/0002716215569220
- Shamma, D. A., Kennedy, L., & Churchill, E. F. (2009). Tweet the debates: Understanding community annotation of uncollected sources. In S. Boll, S. C. H. Hoi, J. Luo, R. Jin, I. King, & D. Xu (Eds.), *WSM '09: Proceedings of the first ACM SIGMM International Workshop on Social Media* (pp. 3–10). New York, NY: ACM. doi:10.1145/1631144.1631148
- Shogan, C. J. (2010). Blackberries, tweets, and YouTube: Technology and the future of communicating with Congress. *PS: Political Science & Politics*, 43(2), 231–233. doi:10.1017/S1049096510000041
- Small, T. A. (2010). Canadian politics in 140 characters: Party politics in the Twitterverse. *Canadian Parliamentary Review*, 33(3), 39–45.
- Small, T. A. (2011). What the hashtag? A content analysis of Canadian politics on Twitter. *Information, Communication & Society*, 14(6), 872–895. doi:10.1080/1369118X.2011.554572
- Song, M., Kim, M. C., & Jeong, Y. K. (2014). Analyzing the political landscape of 2012 Korean presidential election in Twitter. *IEEE Intelligent Systems*, 29(2), 18–26. doi:10.1109/MIS.2014.20
- Sreekumar, T. T., & Vadrevu, S. (2013). Subpolitics and democracy: The role of new media in the 2011 general elections in Singapore. *Science Technology & Society*, 18(2), 231–249. doi:10.1177/0971721813489458
- Stieglitz, S., & Dang-Xuan, L. (2012). Political communication and influence through microblogging: An empirical analysis of sentiment in Twitter messages and retweet behavior. In R. H. Sprague Jr. (Ed.), *HICSS 2012: Proceedings of the 45th Hawaii International Conference on System Science* (pp. 3500–3509). Washington, DC: IEEE Computer Society. doi:10.1109/HICSS.2012.476
- Straus, J. R., Glassman, M. E., Shogan, C. J., & Navarro Smelcer, S. (2013). Communicating in 140 characters or less: Congressional adoption of Twitter in the 111th Congress. *PS: Political Science & Politics*, 46(1), 60–66. doi:10.1017/S1049096512001242
- Suiter, J. (2015). Political campaigns and social media: A study of #mhe13 in Ireland. *Irish Political Studies*, 30(2), 299–309. doi:10.1080/07907184.2015.1018899
- Trilling, D. (2014). Two different debates? Investigating the relationship between a political debate on TV and simultaneous comments on Twitter. *Social Science Computer Review*. Advance online publication. doi:10.1177/0894439314537886
- Vaccari, C., & Valeriani, A. (2013). Follow the leader! Direct and indirect flows of political communication during the 2013 general election campaign. *New Media & Society*. Advance online publication. doi:10.1177/1461444813511038
- Vaccari, C., Valeriani, A., Barberá, P., Bonneau, R., Jost, J. T., Nagler, J., & Tucker, J. (2013). Social media and political communication: A survey of Twitter users during the 2013 Italian general election. *Rivista Italiana Di Scienza*, 43(3), 325–355. doi:10.1426/75245
- Vaccari, C., Valeriani, A., Barberá, P., Bonneau, R., Jost, J. T., Nagler, J., & Tucker, J. (2015). Political expression and action on social media: Exploring the relationship between lower- and higher-threshold political activities among Twitter users in Italy. *Journal of Computer-Mediated Communication*, 20, 221–239. Advance online publication. doi:10.1111/jcc4.12108
- Vargo, C. J., Guo, L., McCombs, M., & Shaw, D. L. (2014). Network issue agendas on Twitter during the 2012 U.S. presidential election. *Journal of Communication*, 64(2), 296–316. doi:10.1111/jcom.12089
- Vergeer, M., & Hermans, L. (2013). Campaigning on Twitter: Microblogging and online social networking as campaign tools in the 2010 general elections in the Netherlands. *Journal of Computer-Mediated Communication*, 18(4), 399–419. doi:10.1111/jcc4.12023
- Vergeer, M., Hermans, L., & Sams, S. (2011). Is the voter only a tweet away? Micro-blogging during the 2009 European Parliament election campaign in the Netherlands. *First Monday*, 16(8). doi:10.5210/fm.v16i8.3540
- Vergeer, M., Hermans, L., & Sams, S. (2013). Online social networks and micro-blogging in political campaigning: The exploration of a new campaign tool and a new campaign style. *Party Politics*, 19(3), 477–501. doi:10.1177/1354068811407580
- Verweij, P. (2012). Twitter links between politicians and journalists. *Journalism Practice*, 6(5–6), 680–691. doi:10.1080/17512786.2012.667272
- Zhang, W., Seltzer, T., & Bichard, S. L. (2013). Two sides of the coin: Assessing the influence of social network site use during the 2012 U.S. presidential campaign. *Social Science Computer Review*, 31(5), 542–551. doi:10.1177/0894439313489962