Twitter use in election campaigns: A systematic literature review

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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.

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-

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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-Lambrecht, 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 are 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. Klašnja, 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 (Himelboim, 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 (Bruns & 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, & Welpe, 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 (twitteR)	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.

Acknowledgments

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