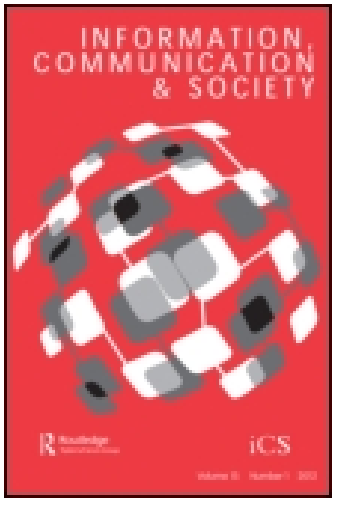

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Social media use and participation: a meta-analysis of current research

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Social media use and participation: a meta-analysis of current research

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Social media has skyrocketed to popularity in the past few years. The Arab Spring in 2011 as well as the 2008 and 2012 Obama campaigns have fueled interest in how social media might affect citizens' participation in civic and political life. In response, researchers have produced 36 studies assessing the relationship between social media use and participation in civic and political life. This manuscript presents the results of a meta-analysis of research on social media use and participation. Overall, the metadata demonstrate a positive relationship between social media use and participation. More than 80% of coefficients are positive. However, questions remain about whether the relationship is causal and transformative. Only half of the coefficients were statistically significant. Studies using panel data are less likely to report positive and statistically significant coefficients between social media use and participation, compared to cross-sectional surveys. The metadata also suggest that social media use has minimal impact on participation in election campaigns.

Keywords: social media; social networking; politics; social movements; research methodology

Introduction

Social networking sites are undeniably popular. Facebook celebrated its tenth birthday with over one billion active users worldwide (Sedghi, 2014). Facebook and YouTube are among the top three websites worldwide with Twitter and LinkedIn creeping up in eighth and thirteenth positions (Alexa, 2014). Social networking sites' popularity is a relatively recent phenomenon. The percentage of American users using any type of social networking site went from 8% in 2005 to 33% in August 2008 (Lenhart, 2009). Focusing on Facebook specifically, Pew Research found that 35% of Internet users used Facebook in 2008, and in 2013 that estimate increased to 72% (Brenner & Smith, 2013; Zickuhr, 2010). Social media use is also very popular in the UK (57%), Sweden (54%) and the Netherlands (65%) (Office for National Statistics, 2013).

The Arab Spring in 2011 as well as the 2008 and 2012 Obama campaigns have fueled interest in how social media might affect citizens' participation in civic and political life. In response, researchers have scrambled to document the effects of social media use on citizens' participation in civic and political life. Research relies on cross-sectional survey data about self-reported social media usage and self-reported participation in civic and political life. This article is a meta-analysis of 36 studies (with 170 effects) assessing the relationship between social media use and participation. A meta-analysis is a valuable contribution to this field of research, because meta-analysis can overcome the limitations of any single study. A meta-analysis can examine

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how the relationship between social media use and participation differs by study feature, including sample type, year of data collection, type of political system, sample size and panel versus cross-sectional design. In addition, a meta-analysis can examine how the relationship differs by specific uses of social media and by the type of civic and political activity, which can advance theories of how social media affects participation.

Social media effects

There are many competing theories about how social media use might affect participation. One theory focuses on social media as a forum for gathering information or news from family, friends or traditional news media organizations (Dimitrova, Shehata, Strömbäck, & Nord, 2014; Gil de Zúñiga, Copeland, & Bimber, 2013; Holt, Shehata, Stromback, & Ljungberg, 2013; Pasek, more, & Romer, 2009; Towner, 2013). Pew Research suggests that approximately half of Facebook users get their news through Facebook, but the overwhelming majority of Facebook users are exposed to the news incidentally through social network ties on Facebook (deSilver, 2014). Because of this incidental news exposure, social media users may be exposed to mobilizing information without having to actively seek it out (Pasek et al., 2009; Tang & Lee, 2013; Xenos, Vromen, & Loader, 2014). Furthermore, this type of news may be more influential on users, because it has been filtered through trusted others, for example, family and friends (Bode, 2012). Social media use is expected to develop citizens' knowledge of political issues, which then facilitates participation in civic and political life. The theory draws heavily from studies of traditional media, which shows that those who use media to learn about current events are more likely to be politically knowledgeable and engaged (McLeod et al., 1996; McLeod, Scheufele, & Moy, 1999).

Another theory focuses on the role of social media in creating social networks ties that can be mobilized. This network research can be divided into three streams: a focus on network size; a focus on social ties to groups, organizations and activists; and a focus on diffusion through peer groups. Some scholars propose that social media enlarges social networks, increasing exposure to mobilizing information (Gil de Zúñiga, Jung, & Valenzuela, 2012; Tang & Lee, 2013). Larger networks may increase exposure to information about how and why a citizen should become active. Larger networks are assumed to contain more weak ties, which facilitate information flow about opportunities to participate and increase the chance of being asked to participate in civic and political life (McPherson, Smith-Lovin, & Brashears, 2006; Musick & Wilson, 2008; Verba, Schlozman, & Brady, 1995). For example, having a large social network may increase the likelihood of seeing an invitation to sign a petition or participate in a boycott. Alternatively, sizable networks may increase the chance of seeing messages about why one should vote for one candidate over another, which may increase the likelihood of voting.

Other research focuses on ties to political or activist organizations (Bode, Vraga, Borah, & Shah, 2014; Tang & Lee, 2013) or the use of social media to form or sustain online groups (Conroy, Feezell, & Guerrero, 2012; Valenzuela, Park, & Kee, 2009). People who belong to more organizations are more likely to volunteer because these memberships increase the chance of being asked to volunteer (Musick & Wilson, 2008; Verba et al., 1995). Being tied to organizations facilitates bloc recruitment, which can be a very effective way to mobilize large numbers of people (Musick & Wilson, 2008).

A final stream of network research examines the extent to which civic and political participation is contagious among members of a social network. For example, does observing your Facebook friends express their political views online affect your own political expression (Vitak et al., 2011)? Does seeing this information affect one's likelihood of voting in the next election? Likewise, does knowing a friend signed a petition or is participating in a boycott affect one's own

participation in these activities? This line of research builds on the burgeoning research about the effects of peer networks on participation in civic and political life (Klofstad, 2011; Pancer, Pratt, Hunsberger, & Alisat, 2007).

Social networks and online news are not the only theories connecting social media use and participation, but these two theories dominate the survey-based studies of social media and its effects on civic and political participation. A meta-analysis can provide insight into which theoretical process has the strongest support. As it stands, the literature discusses multiple theories with little sense of which theoretical process is the most appropriate for understanding the relationship between social media use and participation.

In addition, a meta-analysis can evaluate whether the effects of social media are broad-reaching across diverse groups of citizens and different political systems or whether social media effects are specific to a subset of the population or particular type of political system. For example, a meta-analysis can examine differences in findings for studies based on citizens in well-established democracies versus citizens in other types of political systems. Within countries, the effects of social media use may be concentrated among specific groups of people, for example, young people. Most studies do not include a sufficient sample size to highlight differential effects based on different subpopulations. As such, this meta-analysis examines how the findings differ based on the study population.

Finally, a meta-analysis can examine whether there are differences in findings depending on research design, which includes year of data collection as well as panel versus cross-sectional design. Given the rapid diffusion of social media and changes in how social media is being used, a meta-analysis can trace the evolution of social media effects on participation over time. In particular, do the effects of social media use differ by year of data collection? Additionally, separating panel studies from cross-sectional studies helps examine whether the relationship is correlational and/or casual in nature. Panel data are better at assessing causal relationships compared to cross-sectional data. However, a single panel study will have limitations on the sample population, measurement approach and the findings may be specific to the time period of data collection. A meta-analysis can address these limitations by examining a variety of panel studies to assess common findings across different sample populations, measurement approaches and time periods.

Scope and methodology

Selection of studies

For this meta-analysis, I chose to focus on the use of social networking sites. Social networking sites are web-based tools that allow users to create a profile and create a network attached to that profile as well as interact with others using this application (Xenos et al., 2014). These social networking sites include Facebook, Twitter and YouTube (and similar sites), as well as less popular sites, such as Google+ and MySpace.

The meta-analysis includes quantitative survey-based studies focused on behavioral-dependent variables, such as voting, protesting and volunteering. I do not include studies that are exclusively focused on behavioral intentions (e.g. Dimitrova & Bystrom, 2013; Skoric & Kwan, 2011). Prior studies suggest that the effects of media use are overstated when studying behavioral intentions versus actual behavior (Johnson & Kaye, 2003). As for measures of social media, studies used a wide variety of measurement approaches, including frequency of logging into social media sites, number of friends on social media sites and consumption of political information or current event news on social media sites. All studies relied on self-reported usage, rather than usage logs or direct observation.

The studies were compiled by searching academic databases in political science, communication, sociology, psychology and computer sciences. The reference list for each published study was consulted for additional citations. Furthermore, for each author of a published study, a Google search was conducted to identify the author's curriculum vitae and determine whether the author had additional papers on the topic. Finally, the search terms, that is, social media, social networking sites, Facebook, Twitter, as well as political/civic engagement, civic/political participation, voting, protesting and volunteering were entered into Google Scholar to identify additional sources.

Profile of studies

Student samples and studies of the general population are extremely popular (Table 1). Fourteen studies are based on samples of the general population and these studies report 50 estimates of the relationship between social media use and participation. Thirteen studies are based on student

Table 1. Profile of studies and coefficients.

	Number of studies	Number of coefficients
Sample Type		
Random sample of general population	14	50
Random sample of youth	7	20
Student sample	13	82
Snowball samples of a specific group, for example, a Facebook group or a group of protestors	2	18
Political System		
Established democracies	29	113
New democracies, formal democracies and other types of political systems	8	57
Cross-sectional versus panel		
Panel design	6	23
Cross-sectional	32	147
Year of data collection (*panel data excluded*)		
Before 2008	4	24
2008–2009	12	34
2010–2011	8	38
2012–2013	8	49
Sample size		
Less than 250 respondents	5	11
250–500 respondents	8	47
500–750 respondents	5	30
750–1000 respondents	9	28
1000–1250 respondents	5	10
1250–1500 respondents	5	15
1500 respondents or more	4	29
Total	**36 studies**	**170 coefficients**

Note: Number of studies may not add to 36, because some studies present results from multiple samples, for example, panel and cross-sectional samples as well a sample based on an established democracy and a sample based on another type of political system.

samples and these studies report 82 estimates of the relationship between social media use and participation.

Most of the studies are based on established democratic systems, such as Sweden, United States, United Kingdom, Norway and Australia, but there are a significant number of studies conducted in newer democracies (Singapore and Chile), formal democracies (Columbia, Egypt and Tunisia) and other political systems (China). Only two studies offer a cross-national perspective (Chan & Guo, 2013; Xenos et al., 2014). Xenos et al. (2014) examine United States, United Kingdom and Australia. Chan and Guo (2013) compare American students and students in Hong Kong.

The studies are all very recent, but few studies are based on large samples and few studies employ panel designs. Only four studies were conducted prior to 2008 (Table 1). Only 4 studies employ large (more than 1500 respondents) sample sizes. Finally, only six studies employ panel design (Table 1).

Analysis approach

Meta-analysis originates in the health sciences where studies tend to be experimental, for example, random assignment to medical treatment versus no medical treatment, and thus have a greater claim to causality (Lipsey & Wilson, 2001). Accordingly, meta-analysis terminology discusses 'effects' (Borenstein, Hedges, Higgins, & Rothstein, 2009; Ellis, 2010; Lipsey & Wilson, 2001). However, given that most of the studies in this field (and social sciences, more generally) report on estimates based on cross-sectional surveys, I discuss 'coefficients', rather than 'effects', because it is unclear whether the relationships are causal or merely correlational. Furthermore, I examine the multiple coefficients reported within a study, rather than calculate a single coefficient for the study as a whole (see discussion in Lipsey & Wilson, 2001). This approach was necessary to assess the role of different measurement approaches on the observed relationship (Boulianne, 2009). Aggregating results within a study would blur the differentiated effects based on measures of participation and measures of social media use. The weakness of this approach is that it does not address the relationship among the coefficients reported within a single study.

The analytic focus is on the percentage of positive coefficients and the percentage of statistically significant coefficients. This approach is a practical necessity because the analysis techniques and reporting practices vary greatly among these studies. Focusing on single type of coefficient, ordinary least squares estimate, would produce a good deal of missing data. While the studies used in the meta-analysis often treat *p*-values below .10 as statistically significant, I coded statistical significance using the more common threshold of .05 (also see Boulianne, 2009; Smets & Van Ham, 2013). I examine whether the likelihood of reporting a positive or a statistically significant coefficient varies by the measurement approach or other aspects of the research design (sample population, panel versus cross-sectional design, sample size and year of data collection).

In making sense of the differing coefficients, I coded the social media variables into general use, online news or political information, social network building and other measurement approach. General use variable refers to measures of whether or not the person uses a social networking site, frequency of logging on to social media, frequency of posting or reading status updates and how many years that one has been using social media. The online news or political information variable highlights use of social media for learning about current events and political information. The social network building variable highlights measures such as friending, following or liking political candidates, elected officials or other political actors, membership in Facebook groups, frequency of participation in Facebook groups, size of one's friendship circle and network heterogeneity. Any social media use measures that did not fit within these categories

or that used a combination of measures from the categories were coded as 'other measurement approach'.

While most of the participation measures used indexes that combined some elements of protest activities, civic activities and election campaign activities, there were studies that isolated specific domains of activities. These studies provide insight into differential effects based on type of participation activity. Street marches and demonstrations are grouped with other protest-type activities, such as signing petitions or boycotts. While this approach involves grouping activities with varying degrees of effort and risks, it is a practical necessity given the existing literature's approach to studying marches and demonstrations.

I also isolated activities that were specific to an election campaign. While campaign-specific activities, such as voting, are often combined with activities that are unrelated to election campaigns, such as meeting with community groups, some studies focused exclusively on election campaign activities. The types of activities included talking about the election campaign or candidates, donating to a political campaign, volunteering to work for a political party, attending a political rally, wearing a button supporting a candidate and voting or trying to influence others' voting behavior.

As a final dimension to the participation variables, I examined civic engagement as a separate item. This variable includes measures of volunteering for and donating to charities, non-profits or other groups. This measure excludes volunteering for and donating to political parties and candidates. This variable also includes measures about attendance at community or neighbor meetings and participation in civic groups. The grouping of civic activities in this way was necessary, because none of the studies looked at volunteering or donating as separate activities. Instead, these activities are included in a composite index and labeled 'civic engagement'. Any participation measures that did not fit within these other categories or that used a combination of measures from the other categories were coded as 'other measurement approach'.

Findings

Table 2 presents the percentage of positive and significant coefficients across the 36 studies (n = 170). Approximately 82% of the coefficients are positive. The percentage of negative coefficients is not presented in Table 2, but is simply estimated as the balance of the coefficients (18% of coefficients are negative). Approximately half of the coefficients are statistically significant and half of the coefficients are not. In summary, based on the metadata, the relationship between social media use and participation is clearly positive, but questions remain about whether the relationship is statistically significant.

The coefficients differ based on the sample population (Table 2). General population samples are distinctive as a sample type (e.g. Enjolras, Steen-Johnsen, & Wollebæk, 2012; Martin, 2013; Rojas & Puig-I-Abril, 2009; Zhang, Seltzer, & Bichard, 2013). General population samples almost universally report positive coefficients and are more likely to produce statistically significant coefficients, compared to the other sample types (Table 2). For example, Gil de Zúñiga has published 5 studies (14 coefficients) on the relationship between social media use and participation (Gil de Zúñiga et al., 2012, 2013; Gil de Zúñiga, Molyneux, & Zheng, 2014; Kim, Hsu, & Gil de Zúñiga, 2013; Yoo & Gil de Zúñiga, 2014). Using an online panel that is matched to the age and gender distribution of the United States, all coefficients are positive and 9 of the 14 coefficients are statistically significant. The set of findings mimics the results of all studies based on general population samples (Table 2).

Larger sample surveys are more likely to produce positive and significant coefficients, compared to smaller sample sizes (Table 2). However, the relationship is not perfectly linear. Given the importance of sample size in achieving statistical significance, any finding about statistical

Table 2. Aggregate findings by study characteristic.

	Percentage of positive coefficients	Percentage of coefficients that are significant at the .05 level
Sample Type		
Random sample of general population	98	66
	$p < .001$	$p = .004$
Random sample of youth	80	85
	$p = .785$	$p < .001$
Student sample	77	39
	$p = .071$	$p = .013$
Snowball samples of a specific group, for example, a Facebook group or a group of protestors	67	6
	$p = .154$	$p < .001$
Political System		
Established democracies	86	56
New democracies, formal democracies, and other types of political systems	75	35
t-test results	$p = .120$	$p = .010$
Cross-sectional versus panel		
Panel design	57	26
Cross-sectional	86	52
t-test results	$p = .011$	$p = .015$
Year of data collection (*panel data excluded*)		
Before 2008	96	46
2008–2009	94	68
2010–2011	92	55
2012–2013	71	41
Anova results	$p = .003$	$p = .098$
Sample size		
Less than 250 respondents	100	73
250–500 respondents	72	34
500–750 respondents	63	30
750–1000 respondents	96	71
1000–1250 respondents	90	30
1250–1500 respondents	87	80
1500 respondents	93	52
Anova results	$p = .002$	$p < .001$
Total	**82**	**49**
	$n = 170$	$n = 170$

Notes: The analysis is based on a series of *t*-test of group means, which in this case refers to the percentage of significant or positive effects. Each study characteristic is a dichotomous variable (e.g. random sample of population versus all other sample types). Equal variance is not assumed, given the very different sample sizes for each study characteristic. Year of study and sample size are based on an analysis of variance. *p*-values are based on two-tail tests.

significance must account for sample size. In a multivariate logistic regression model including a variable about general population samples and a variable for sample size, the sample size variable is not statistically significant as a predictor of the likelihood of producing positive ($p = .125$) or significant coefficients ($p = .236$). The variable denoting the use of a general population sample remains significant in this multivariate model predicting positive ($p = .011$) and significant coefficients ($p = .010$). As such, the difference in findings seems attributable to the use of a

general population sample, rather than due to sample size. General sample surveys are more likely to produce positive and statistically coefficients, compared to other sample types, after controlling for sample size.

Surveys based on random samples of youth, such as Skoric and Poor (2013), are more likely to produce coefficients that are statistically significant (Table 2). Approximately 85% of the coefficients based on random samples of youth produced significant coefficients. This 85% is much higher than the 49% based on all coefficients ($n = 170$). The findings about the youth samples require caution, because the findings are based on only 20 coefficients derived from 7 studies.

As mentioned, 13 studies report 82 coefficients based on student samples (e.g. Baumgartner & Morris, 2010; Hargittai & Shaw, 2013; Kim & Khang, 2014; Rice, Moffett, & Madupalli, 2013; Zhang & Lin, 2014). These studies are less likely to report statistically significant coefficients, compared to youth or general population samples (Table 2). Sample size does not account for the differences in findings for student samples versus other sample types. In a multivariate logistic regression model including a variable about student sample and a variable for sample size, the student sample variable remains statistically significant in predicting the likelihood of reporting a significant coefficient ($p = .026$). Student samples are less likely to report a statistically significant coefficient, after accounting for the role of sample size. In this multivariate model, the sample size variable is not a significant predictor of the likelihood of reporting a significant coefficient ($p = .128$). As such, the difference in findings seems attributable to the use of a student sample, rather than due to sample size.

Only 6 studies have been conducted using panel data and 23 coefficients are reported. The findings suggest that panel data are less likely to produce positive and statistically significant coefficients, compared to cross-sectional data (Table 2). Approximately, 57% of the coefficients based on panel data are positive, in contrast to 86% for cross-sectional surveys (Table 2). In addition, 26% of coefficients in panel studies are statistically significant, compared to 52% of coefficients based on cross-sectional surveys. In a multivariate logistic regression model including a variable about panel design and a variable for sample size, the panel design variable remains statistically significant. Panel designs are less likely to produce a positive ($p = .002$) and statistically significant coefficient ($p = .031$) after controlling for sample size.

The panel data are all based on well-established democracies. Little research has been done cross-nationally or comparing well-established democracies to other types of political systems. The metadata suggest that the relationship between social media and participation is consistent across political systems in reporting of positive coefficients, but the coefficients are slightly more likely to be statistically significant in well-established democracies, compared to other political systems (Table 2). The finding should be interpreted with some caution as the finding overlaps with other research design features. For example, snowball samples are much less likely to report statistically significant coefficients, compared to other sample types (Table 2). All studies employing snowball samples were conducted outside of well-established democracies (Breuer & Groshek, 2014; Tufekci & Wilson, 2012). Because there are only eight studies on political systems that are not well-established democracies, the findings should be interpreted with some caution.

In terms of differences in findings based on the measurement approach, the strongest and most consistent finding is around election campaign activities. Studies that focus exclusively on election campaign activities are less likely to report a positive coefficient and less likely to report a significant coefficient, compared to other participation activities (Table 3). For campaign activities, approximately 68% of the coefficients are positive and only 27% of the estimates are statistically significant. In other words, the relationship between social media use and participation in election campaigns seems weak based on the set of studies analyzed. In a multivariate logistic regression model including a variable denoting a focus on election campaign activities and a

Table 3. Aggregate findings by the measurement approach.

	Percentage of positive coefficients	Percentage of coefficients that are significant at the .05 level
Measurement of participation		
Campaign (voting, persuading others to vote), $n = 41$	68 $p = .023$	27 $p < .001$
Protest (petitions, marches or demonstrations, boycotts, contacting media), $n = 45$	91 $p = .037$	42 $p = .305$
Civic engagement (volunteering, donating, participation in civic group or neighborhood meetings), $n = 17$	82 $p = 1.00$	76 $p = .013$
Indexes that combine above items and/or use other measures, $n = 70$	83 $p = .886$	59 $p = .034$
Measurement of Social Media		
General use (hours, use/no use), $n = 53$	85 $p = .548$	42 $p = .201$
Building social networks, $n = 31$	94 $p = .018$	61 $p = .129$
Online news or political information, $n = 41$	76 $p = .241$	29 $p = .003$
Indexes that combine above items and/or use other measures, $n = 45$	78 $p = .382$	67 $p = .005$
Total	**82** $n = 170$	**49** $n = 170$

Notes: The analysis is based on a series of *t*-test of group means, which in this case refers to the percentage of significant or positive effects. Each study characteristic is a dichotomous variable (e.g. general use of social media versus all other measures of social media or campaign measures versus all other measures of participation). Equal variance is not assumed, given the very different sample sizes for each measurement approach. *p*-values are based on two-tail tests.

variable for sample size, the campaign activities variable remains statistically significant. Studies focusing on campaign activities are less likely to produce positive ($p = .013$) and statistically significant coefficients ($p = .002$) after controlling for sample size.

Measuring participation as protest activities is more likely to produce a positive effect, but the coefficients are not more likely to be statistically significant compared to other measures of participation (Table 3). For social media use and protest activities, approximately 91% of the coefficients are positive. Protest activity measures are not more likely to be significant, but again, there may be a suppressor effect, as protest tends to be the focal point of the handful of studies that use the snowball sampling approach. Snowball samples are less likely to produce significant coefficients, compared to other sampling approaches (Table 2). There are too few studies to be able to isolate sample issues from measurement issues. Valenzuela's (2013) study offers the strongest evidence of a significant, positive relationship between social media use and participation in marches and demonstrations. His study focused on mass protests in Chile in 2011. Based on a random sample of the Chilean population, he finds that social media users, measured in terms of frequency of use of four different platforms, were 11 times more likely to engage in a street demonstration or march, compared to non-users (Valenzuela, 2013).

Approximately 10 studies have studied civic engagement producing 17 coefficients. These coefficients are more likely to be statistically significant than for any other type of participation (Table 3). Approximately 76% of the coefficients are statistically significant, compared to 49% for all coefficients ($n = 170$). While the number of coefficients is relatively small, the diversity of studies examining civic engagement suggests that the finding is not related to the particularities

Table 4. Multivariate binary logistic regression analysis.

	Positive coefficient Exp(*B*)	Significant coefficient Exp(*B*)
Sample size	1.22 $p = .128$	1.09 $p = .286$
All non-campaign activities = 0		
Campaign measure = 1	0.79 $p = .650$	0.43 $p = .050$
Cross-sectional survey = 0		
Panel design = 1	0.28 $p = .031$	0.547 $p = .277$
Other sample types = 0		
General population sample = 1	11.54 $p = .020$	2.00 $p = .062$
Model statistics	Cox & Snell *R*-square = 14.2% – 2 Log likelihood = 132.38	Cox & Snell *R*-square = 9.9% – 2 Log likelihood = 217.83

of any one research design feature. These studies range in sample size from 168 respondents to 1463 respondents and the year of data collection varies from 2006 to 2013. Furthermore, these studies have been conducted across the globe with samples derived from China, Columbia, Australia, Sweden, United Kingdom, and the United States. The consistency in the findings across sample size, year of data collection and political system suggests that the finding may be robust. That said, only one of these 10 studies is based on panel data; this panel study of youth in Sweden failed to produce a statistically significant effect (Ekström, Olsson, & Shehata, 2014).

In terms of social media measurement approaches, the metadata suggest that a focus on social networks is more likely to produce a positive coefficient, compared to other measurement approaches (Table 3). While this measurement approach was also more likely to produce statistically significant coefficients (61% versus 49%), this difference is not statistically significant. Many studies combine social network features with online news and information (Bode et al., 2014; Gil de Zúñiga et al., 2013; Macafee & De Simone, 2012). These studies would be included, with other studies, in the 'other measurement approach' variable. This measurement approach makes it difficult to isolate the effects of social networks independent of the effects of online news or information. However, the findings suggest that different social media uses may have differentiated effects. Measuring social media use as online news or information acquisition is less likely to produce a significant effect, compared to other measurement approaches (Table 3). However, this measurement approach is highly correlated with other study characteristics, including the use of panel data and the focus on election campaign activities. As such, a multivariate model is necessary to isolate the role of measurement versus other research design features.

In summary, the focus on election campaign activities, use of panel data, sample size and the use of general population samples are the most consistent predictors of differences in findings about social media and participation. Table 4 presents a multivariate logistic regression model predicting the likelihood of reporting a positive coefficient and the likelihood of reporting a statistically significant coefficient using these four variables. In this model, the use of a general population samples, compared to other samples, increases the likelihood of finding a positive coefficient between social media use and participation, controlling for sample size as well as the use of election campaign measures and panel data (Table 4). Using panel data, compared to cross-sectional data, decreases the likelihood of finding a positive coefficient between social media use and participation. As for finding a significant coefficient, the focus on campaign

activities decreases the likelihood of finding a significant coefficient between social media use and participation, controlling for sample size as well as the use of panel data and a general population sample.

Conclusion

Overall, the metadata suggest a positive relationship between social media use and participation in civic and political life. More than 80% of the coefficients are positive. However, the metadata raise questions about whether the effects are causal and transformative. Only half of the coefficients were statistically significant. These findings raise doubts about transformative effects. The metadata suggest where to find transformative effects – random samples of youth. Xenos et al. (2014) find that their single measure of social media use explains more variance than all their demographic variables combined. They conclude, 'If one were seeking an efficient single indicator of political engagement among young people in the countries studied here, social media use would appear to be as good as, or better than, SES' (p. 163). Xenos et al. (2014) exemplify the finding that studies employing a random sample of youth are more likely to report significant effects, than studies using other types of samples. The transformative effects could be specific to this group who are intense social media users, but have relatively weak political habits and relatively undeveloped political identities (Xenos et al., 2014).

In terms of causal effects, few studies employ panel data and none of the studies employ an experimental design, which would help establish causality. As such, we do not know the causal effects of social media use on participation. The correlations of social media use and political participation could be spurious. For example, both use of social media and participation might depend on personality traits (Kim et al., 2013). Other studies propose that political interest might explain digital media use and participation (Boulianne, 2011). Only six studies use panel designs and these studies were less likely to produce positive and significant coefficients compared to cross-sectional surveys. The metadata raise serious doubts about causal effects. However, these findings may be explained by the measurement approach used in the existing research.

The metadata suggest social media has a minimal impact on participation in election campaigns. Popular discourse has focused on the use of social media by the Obama campaigns (Carr, 2008; Lohr, 2012). While these campaigns may have revolutionized aspects of election campaigning online, such as gathering donations, the metadata provide little evidence that the social media aspects of the campaigns were successful in changing people's levels of participation. In other words, the greater use of social media did not affect people's likelihood of voting or participating in the campaign.

The Arab Spring has fueled interest in how social media shapes protest events. Unfortunately, the literature offers little clarity about the effects of social media on this form of political activity. The bulk of research uses composite indexes that combine very different activities. For example, participation in a demonstration or march is included with measures such as talking to public officials and other measures (e.g. Gil de Zúñiga et al., 2013; Macafee & De Simone, 2012; Tang & Lee, 2013; Valenzuela, Arriagada, & Scherman, 2012; Zhang, Johnson, Seltzer, & Bichard, 2010). Furthermore, others do not see any distinction between participating in a demonstration and voting, and therefore use an index that combines both (e.g. Garcia-Castañon, Rank, & Barreto, 2011; Gil de Zúñiga et al., 2012). As another example, researchers combine participation in marches or demonstrations in a scale with volunteering for a political party (Wicks, Wicks, Morimoto, Maxwell, & Schulte, 2013). These measurement approaches make it difficult to isolate the relationship between social media use and protest. The few studies that isolate protest-type activities (marches, demonstrations, petitions and boycotts) suggest that social media plays a positive role in citizens' participation.

Thinking about the existing research, there are several streams of research that seem undeveloped and hold promise for illuminating the relationship between social media use and participation in civic and political life. One stream of research was exemplified by Conroy et al. (2012). They examine survey data about involvement in Facebook groups and political participation alongside a content analysis of Facebook groups. The mixed methods illuminate why Facebook groups may have limited effect on political knowledge and participation, that is, poor quality content (Conroy et al., 2012). This mixed-method approach would be helpful in studying civic engagement. Few studies have examined the relationship between social media use and civic engagement. A mixed-method approach would examine survey data on the relationship between using social media and volunteering in the community as well as would examine how community groups use social media to recruit or communicate with volunteers.

Finally, further research should be cross-national. In particular, do social media effects differ for well-established democracies compared to other types of political systems? The metadata could not accurately isolate differences in this area, because these differences were correlated with research design issues. Ideally, this cross-national research would offer panel data to fully assess whether participation is an outcome of social media use or whether participation leads to social media use.

Disclosure statement

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Notes on contributor

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References

Alexa. (2014). *The top 500 sites on the web*. Retrieved October 31, 2014 from http://www.alexa.com/topsites

Baumgartner, J. C., & Morris, J. S. (2010). MyFaceTube politics: Social networking web sites and political engagement of young adults. *Social Science Computer Review*, *28*(1), 24–44. doi:10.1177/0894439309334325

Bode, L. (2012). Facebooking it to the polls: A study in online social networking and political behavior. *Journal of Information Technology & Politics*, *9*, 352–369. doi:10.1080/19331681.2012.709045

Bode, L., Vraga, E. K., Borah, P., & Shah, D. V. (2014). A new space for political behavior: Political social networking and its democratic consequences. *Journal of Computer-Mediated Communication*, *19*, 414–429. doi:10.1111/jcc4.12048

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to meta-analysis*. Chichester: John Wiley & Sons.

Boulianne, S. (2009). Does internet use affect engagement? A meta-analysis of research. *Political Communication*, *26*(2), 193–211. doi:10.1080/10584600902854363

Boulianne, S. (2011). Stimulating or reinforcing political interest: Using panel data to examine the use of news media and political interest. *Political Communication*, *28*(2), 147–162. doi:10.1080/10584609.2010.540305

Brenner, J., & Smith, A. (2013). *72% of online adults are social networking site users*. Washington, DC: Pew Research Center. Retrieved October 11, 2013 from http://pewinternet.org/Reports/2013/social-networking-sites.aspx

Breuer, A., & Groshek, J. (2014). Online media and offline empowerment in post-rebellion Tunisia: An analysis of Internet use during democratic transition. *Journal of Information Technology & Politics*, *11*(1), 25–44. doi:10.1080/19331681.2013.850464

Carr, D. (2008, October 9). Obama's social networking was the real revolution. *The New York Times.* Retrieved October 30, 2014 from http://www.nytimes.com/2008/11/10/business/media/10carr.html

Chan, M., & Guo, J. (2013). The role of political efficacy on the relationship between Facebook use and participatory behaviors: A comparative study of young American and Chinese adults. *Cyberpsychology, Behavior, and Social Networking*, *16*(6), 460–463. doi:10.1089/cyber.2012.0468

Conroy, M., Feezell, J. T., & Guerrero, M. (2012). Facebook and political engagement: A study of online political group membership and offline political engagement. *Computers in Human Behavior*, *28*, 1535–1546. doi:http://dx.doi.org/10.1016/j.chb.2012.03.012

Dimitrova, D. V., & Bystrom, D. (2013). The effects of social media on political participation and candidate image evaluations in the 2012 Iowa Caucuses. *American Behavioral Scientist*, *57*(11), 1568–1583. doi:10.1177/0002764213489011

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:0.1177/0093650211426004

Ekström, M., Olsson, T., & Shehata, A. (2014). Spaces for public orientation? Longitudinal effects of internet use in adolescence. *Information, Communication & Society*, *17*(2), 168–183. doi:10.1080/1369118X.2013.862288

Ellis, P. D. (2010). *The essential guide to effect sizes: Statistical power, meta-analysis, and the interpretation of research results*. Cambridge: Cambridge University Press.

Enjolras, B., Steen-Johnsen, K., & Wollebæk, D. (2012). Social media and mobilization to offline demonstrations: Transcending participatory divides? *New Media & Society*, *15*(6), 890–908. doi:10.1177/1461444812462844

Garcia-Castañon, M., Rank, A. D., & Barreto, M. A. (2011). Plugged in or tuned out? Youth, race, and Internet usage in the 2008 Election. *Journal of Political Marketing*, *10*, 115–138. doi:10.1080/15377857.2011.540209

Gil de Zúñiga, H., Copeland, L., & Bimber, B. (2013). Political consumerism: Civic engagement and the social media connection. *New Media & Society*, *16*(3), 488–506. doi:10.1177/1461444813487960

Gil de Zúñiga, H., Jung, N., & Valenzuela, S. (2012). Social media use for news and individuals' social capital, civic engagement and political participation. *Journal of Computer-Mediated Communication*, *17*, 319–336. doi:10.1111/j.1083-6101.2012.01574.x

Gil de Zúñiga, H., Molyneux, L., & Zheng, P. (2014). Social media, political expression, and political participation: Panel analysis of lagged and concurrent relationships. *Journal of Communication*, *64*(4), 612–634. doi:10.1111/jcom.12103

Hargittai, E., & Shaw, A. (2013). Digitally savvy citizenship: The role of internet skills and engagement in young adults' political participation around the 2008 presidential election. *Journal of Broadcasting & Electronic Media*, *57*(2), 115–134. doi:10.1080/08838151.2013.787079

Holt, K., Shehata, A., Strömbäck, J., & Ljungberg, E. (2013). Age and the effects of news media attention and social media use on political interest and participation: Do social media function as leveller? *European Journal of Communication*, *28*(1), 19–34. doi:10.1177/0267323112465369

Johnson, T. J., & Kaye, B. K. (2003). A boost or bust for democracy? How the web influenced political attitudes and behaviors in the 1996 and 2000 presidential elections. *The Harvard International Journal of Press/Politics*, *8*(3), 9–34. doi:10.1177/1081180X03008003002

Kim, Y., & Khang, H. (2014). Revisiting civic voluntarism predictors of college students' political participation in the context of social media. *Computers in Human Behavior*, *36*, 114–121. doi:10.1016/j.chb.2014.03.044

Kim, Y., Hsu, S-H., & Gil de Zúñiga, H. (2013). Influence of social media use on discussion network heterogeneity and civic engagement: The moderating role of personality traits. *Journal of Communication*, *63*, 498–516. doi:10.1111/jcom.12034

Klofstad, C. (2011). *Civic talk: Peers, politics, and the future of democracy.* Philadelphia, PA: Temple University Press.

Lenhart, A. (2009). *The democratization of online social networks*. Paper presented at the Association of Internet Researchers, Milwaukee, Wisconsin. Retrieved July 24, 2014 from http://www.pewinternet.org/2009/10/08/the-democratization-of-online-social-networks/

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage.

Lohr, S. (2012, November 8). The Obama campaign's technology is a force multiplier. *The New York Times.* Retrieved October 30, 2014 from http://bits.blogs.nytimes.com/2012/11/08/the-obama-campaigns-technology-the-force-multiplier/

Macafee, T., & De Simone, J. J. (2012). Killing the bill online? Pathways to young people's protest engagement via social media. *Cyberpsychology, Behavior, And Social Networking*, *15*(11), 579–584. doi:10.1089/cyber.2012.0153

Martin, J. A. (2013). Closing gaps in international knowledge and participation: News attention, online expression, and the 2010 Haiti Earthquake. *Mass Communication and Society*, *16*(3), 417–440. doi:10.1080/15205436.2012.713149

McLeod, J. M., Daily, K., Guo, Z., Eveland, W. P., Jr., Bayer, J., Yang, S., & Wang, H. (1996). Community integration, local media use, and democratic processes. *Communication Research*, *23*(2), 179–209. doi:10.1177/009365096023002002

McLeod, J. M., Scheufele, D. A., & Moy, P. (1999). Community, communication, and participation: The role of mass media and interpersonal discussion in local political participation. *Political Communication*, *16*(3), 315–336. doi:10.1080/105846099198659

McPherson, M., Smith-Lovin, L., & Brashears, M. E. (2006). Social isolation in America: Changes in core discussion networks over two decades. *American Sociological Review*, *71*(3), 353–375. doi:10.1177/000312240607100301

Musick, M., & Wilson, J. (2008). *Volunteers: A social profile*. Bloomington: Indiana University Press.

Office for National Statistics. (2013). *Social networking: The UK as a leader in Europe*. South Wales: Office for National Statistics. Retrieved October 29, 2014 from http://www.ons.gov.uk/ons/rel/rdit2/internet-access—households-and-individuals/social-networking–the-uk-as-a-leader-in-europe/sty-social-networking-2012.html

Pancer, S. M., Pratt, M., Hunsberger, B., & Alisat, S. (2007). Community and political involvement in adolescence: What distinguishes the activists from the uninvolved? *Journal of Community Psychology*, *35*(6), 741–759. doi:10.1002/jcop.20176

Pasek, J., more, e., & Romer, D. (2009). Realizing the social internet? Online social networking meets offline civic engagement. *Journal of Information Technology & Politics*, *6*(3–4), 197–215. doi:10.1080/19331680902996403

Rice, L. L., Moffett, K. W., & Madupalli, R. (2013). Campaign-related social networking and the political participation of college students. *Social Science Computer Review*, *31*(3), 257–279. doi:10.1177/0894439312455474

Rojas, H., & Puig-I-Abril, E. (2009). Mobilizers mobilized: Information, expression, mobilization and participation in the digital age. *Journal of Computer-Mediated Communication*, *14*, 902–927. doi:10.1111/j.1083-6101.2009.01475.x

Sedghi, A. (2014, February 4). Facebook: 10 years of social networking, in numbers. *The Guardian.* Retrieved from http://www.theguardian.com/news/datablog/2014/feb/04/facebook-in-numbers-statistics

deSilver, D. (2014). *Facebook is a news source for many, but only incidentally.* Washington, DC: Pew Research Center. Retrieved July 24, 2014 from http://www.pewresearch.org/fact-tank/2014/02/04/facebook-is-a-news-source-for-many-but-only-incidentally/

Skoric, M. M., & Kwan, G. (2011). Do Facebook and video games promote political participation among youth? *eJournal of eDemocracy and Open Government*, *3*(1), 70–79. Retrieved from http://www.jedem.org/

Skoric, M. M., & Poor, N. (2013). Youth engagement in Singapore: The interplay of social and traditional media. *Journal of Broadcasting & Electronic Media*, *57*(2), 187–204. doi:10.1080/08838151.2013.787076

Smets, K., & Van Ham, C. (2013). The embarrassment of riches? A meta-analysis of individual-level research on voter turnout. *Electoral Studies*, *32*, 344–359. doi:10.1016/j.electstud.2012.12.006

Tang, G., & Lee, F. L. F. (2013). Facebook use and political participation: The impact of exposure to shared political information, connections with public political actors, and network structural heterogeneity. *Social Science Computer Review*, *31*(6), 763–773. doi:10.1177/0894439313490625

Towner, T. (2013). All political participation is socially networked?: New media and the 2012 election. *Social Science Computer Review*, *31*(5), 527–541. doi:10.1177/0894439313489656

Tufekci, Z., & Wilson, C. (2012). Social media and the decision to participate in political protest: Observations from Tahrir square. *Journal of Communication*, *62*(2), 363–379. doi:10.1111/j.1460-2466.2012.01629.x

Valenzuela, S. (2013). Unpacking the use of social media for protest behavior: The roles of information, opinion expression, and activism. *American Behavioral Scientist*, *57*(7), 920–942. doi:0.1177/0002764213479375

Valenzuela, S., Arriagada, A., & Scherman, A. (2012). The social media basis of youth protest behavior: The case of Chile. *Journal of Communication*, *62*, 299–314. doi:10.1111/j.1460-2466.2012.01635.x

Valenzuela, S., Park, N., & Kee, K. F. (2009). Is there social capital in a social network site?: Facebook use and college students' life satisfaction, trust, and participation. *Journal of Computer-Mediated Communication*, *14*, 875–901. doi:10.1111/j.1083-6101.2009.01474.x

Verba, S., Schlozman, K. L., & Brady, H. (1995). *Voice and equality: Civic voluntarism in American politics*. Cambridge: Harvard University Press.

Vitak, J., Zube, P., Smock, A., Carr, C. T., Ellison, N., & Lampe, C. (2011). It's complicated: Facebook users' political participation in the 2008 election. *Cyberpsychology, Behavior, and Social Networking*, *14*(3), 107–114. doi:10.1089/cyber.2009.0226

Wicks, R. H., Wicks, J. L., Morimoto, S. A., Maxwell, A., & Schulte, S. R. (2013). Correlates of political and civic engagement among youth during the 2012 presidential campaign. *American Behavioral Scientist*, *58*(5), 622–644. doi:10.1177/0002764213515226

Xenos, M., Vromen, A., & Loader, B. D. (2014). The great equalizer? Patterns of social media use and youth political engagement in three advanced democracies. *Information, Communication & Society*, *17*(2), 151–167. doi:10.1080/1369118X.2013.871318

Yoo, S. W., & Gil De Zúñiga, H. (2014). Connecting blog, Facebook, and Twitter use with gaps in knowledge and participation. *Communication & Society*, *27*(4), 33–48.

Zhang, W., Johnson, T. J., Seltzer, T., & Bichard, S. L. (2010). The revolution will be networked: The influence of social networking sites on political attitudes and behavior. *Social Science Computer Review*, *28* (1), 75–92. doi:10.1177/0894439309335162

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

Zhang, X., & Lin, W-Y. (2014). Political participation in an unlikely place: How individuals engage in politics through social networking sites in China. *International Journal of Communication*, *8*, 21–42. Retrieved from http://ijoc.org/index.php/ijoc/article/view/2003/1047

Zickuhr, K. (2010). *Generations 2010*. Washington, DC: Pew Research Center. Retrieved September 24, 2012 from http://pewinternet.org/Reports/2010/Generations-2010.aspx