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Social Media and the Decision to Participate in Political Protest: Observations From Tahrir Square

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Based on a survey of participants in Egypt's Tahrir Square protests, we demonstrate that social media in general, and Facebook in particular, provided new sources of information the regime could not easily control and were crucial in shaping how citizens made individual decisions about participating in protests, the logistics of protest, and the likelihood of success. We demonstrate that people learned about the protests primarily through interpersonal communication using Facebook, phone contact, or face-to-face conversation. Controlling for other factors, social media use greatly increased the odds that a respondent attended protests on the first day. Half of those surveyed produced and disseminated visuals from the demonstrations, mainly through Facebook.

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Since the "Arab Spring" burst forth in uprisings in Tunisia and in Egypt in early 2011, scholars have sought to understand how the Internet and social media contribute to political change in authoritarian regimes. Perspectives range across the full spectrum from those who view the Internet as potentially disruptive (Aday et al., 2010; Howard, 2010) to those who argue that it may even support authoritarian regimes (Morozov, 2011). What has been missing from these assessments and what this project sought to provide were evidence of how social media and the Internet were being used by protesters as events unfolded in real time. We examined social media use among participants in the Tahrir Square protests in Egypt through surveys conducted in late January and February, 2011. Our central research questions were: Did social media use shape how they learned about the protests, how they planned their involvement, and how they documented their involvement?

As much of the debate regarding the role of online activity in political change had been focused on Western democracies, we offer a new theoretical perspective on the

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role of the Internet and social media in authoritarian regimes. First, we will briefly recount key events linking online activity to political protests in Egypt.

Social media and political protest in Egypt

The Tahrir Square protests were set in a media context that had been developing in Egypt over several years. Others provide accounts of the growth of digitally augmented activism in Egypt (e.g., Howard & Hussain, 2011; Khamis & Vaughn, 2011). Here our goal is simply to situate our study with the events leading up to the Egyptian revolution in early 2011.

The Internet in Egypt was quickly utilized for dissent by liberals, minorities, religious groups, and others opposed to the Mubarak regime. The online political sphere emerged first in the form of blogs and personal sites, later in Facebook, YouTube, and Twitter. While the Internet was not censored in general in Egypt, some bloggers were targeted and jailed, often for long periods.

From about 2005 on, there were persistent efforts by small but dedicated groups, starting with the Kefaya (''Enough'') movement and later the April 6th Youth Coalition. The unrest was not, by any means, limited to the online sphere. Indeed, the April 6th movement was initially formed to support a labor strike. However, social media and satellite TV were the main public spaces where politically sensitive subjects were openly discussed and dissent could be expressed. The introduction of Facebook in Arabic in 2009 amplified this process. Political content online increased, with multiple campaigns by citizen journalists and online activists exposing poverty, corruption, and human rights abuses, including torture. However, until the Tunisian uprising, physical protests in Egypt remained fairly small and the regime appeared to be firmly in control.

Shortly after Tunisian unrest broke out in December 2010, there was first a dispersed campaign and later a firm protest date (January 25, 2011), and an invitation in the already popular ''We are All Khaled Said'' page on Facebook (Baker, 2011; Khamis & Vaughn, 2011). During the protests, protestors steadily produced and disseminated content in real time. The shutdown of Internet service between January 25 and February 2 slowed, but did not stop, the flow of information out of Tahrir Square, as a small but technologically savvy group of protestors continued to disseminate information and videos. Al-Jazeera, too, was focused on the events on Egypt, often replaying videos obtained through social media. After 18 days of sustained protests, Mubarak announced his resignation on February 11.

Emergence of a new system of political communication

Against all apparent odds, small, corrupt elites have remained in power in countries such as Egypt in spite of consistently dismal performances on most indicators of wealth and well-being. These regimes are thus exemplars of durable authoritarianism, defined as ''a new breed of modern dictatorship that has figured out how to tame the political, economic, and social forces that routinely did in autocracy's lesser

variants'' (Masoud, 2011, p. 21). Information flow and accessibility under these authoritarian regimes is tightly restricted: Broadcast media tend to be controlled by the government, journalists face restrictions, and censorship, and communication between citizens is often subject to surveillance and repression.

It is not simply the degree of control and repression, but rather a complex collective action problem that best accounts for the durability of regimes like Hosni Mubarak's Egypt. A collective action or ''public goods'' problem occurs when a broadly desirable outcome is achievable if there is coordinated mass participation, but when individual participation is stifled by prohibitively high costs (Olson, 1971). Authoritarian regimes not only discourage individual participation by greatly increasing the punishments for dissent, but also control the communicative infrastructure in ways that make it difficult for citizens to coordinate effective collective opposition or to express their dissent in the public sphere. Social media alter the key tenets of collective action (Bimber, Flanagin, & Stohl, 2005) and, in doing so, create new vulnerabilities for even the most durable of authoritarian regimes.

Social media are just one portion of a new system of political communication that has evolved in North Africa and the Middle East. News coverage of the recent uprisings tends to concentrate on catchphrases like ''Twitter Revolution'' or ''Facebook Revolution.'' However, the connectivity infrastructure should be analyzed as a complex ecology rather than in terms of any specific platform or device. This new system involves three broad, interrelated components. First, satellite TV channels such as Al-Jazeera contributed to the formation of a new kind of public sphere in the Arab world (Howard, 2010, Lynch, 2006; Nisbet & Myers, 2010). Second, the rapid diffusion of the Internet and the rise of dedicated platforms such as Facebook and Twitter dramatically changed the infrastructure of social connectivity (Khamis & Vaughn, 2011; Radsch, 2008). Third, the falling costs and expanding capabilities of mobile phones have enriched dispersed communication with picture and video capabilities. In the span of a decade, societies in which it had long been difficult to access information were transformed into massive social experiments fueled by an explosion in channels of information (Bailard, 2009; Howard, 2010).

Al-Jazeera has increased the amount of factual, cutting-edge reporting for the region, and serves as a platform for previously excluded populist and critical voices (Lynch, 2006; Seib, 2008). Traditional media have often been analyzed in terms of their ability to direct and delimit topics of conversation in the public sphere in the service of elite interests. In North Africa and the Middle East, however, Al-Jazeera often engages in ''reverse agenda-setting'' by directing attention to topics which are at odds with the interests of the elites in the region (Fahmy, 2010).

Al-Jazeera's transformative impact results not just from its broadening of topics and content in the formerly very restrictive Arab public sphere, but also from its ability to focus the whole region's attention on a particular topic or country, a key resource in a region which, while sharing a common linguistic, cultural and religious heritage, also includes great diversity across dialects, local cultures, and religious practices. Al-Jazeera's role as a focuser of attention is especially important because of the

significant increase in the number of content channels. Al-Jazeera is a truly pan-Arabic network both in the reach of its coverage, ability to command attention, and its staff.

The second component of the new system of political communication is the rapid expansion of the Internet. Activists in Egypt, for example, quickly saw the potential and began blogging shortly after it became possible to do so. In spite of increasing government repression, their early activity created a space in the public sphere where topics that were previously off limits could now be discussed (Fahmy, 2010). Person-to-person communication was also severely restricted due to fear and self-censorship and people often talked politics only with a few trusted family members or friends. For many people, the online sphere might have been the only context in which they encountered dissident content. Abdulla (2007), Howard (2010), and Lynch (2006, 2007) have all provided prescient insights into the impact of the introduction of new media on the broader Arab public sphere.

Perhaps one of the most important events in the transformation of the Egyptian public sphere was the diffusion of Facebook particularly its Arabic language service, which began in March 2009. Early political bloggers in Egypt connected mostly with each other. Facebook, however, provided a means for Egyptians to connect with their large social networks all at once. For the first time in modern Egyptian history, political activists and others could have pointed, broad, and semipublic political discussions across vast social networks.

Zuckerman (2008) has argued that nonpolitical platforms may provide better affordances for political dissent because they can avoid being targeted, marginalized, and being seen as only concerned with narrow issues. Indeed, along with pictures of children, animals, and light-hearted discussions of everyday concerns, political discussions flourished on Facebook, which had four million users in Egypt by late 2010 (Howard, 2010; Khamis & Vaugh, 2011). Facebook also allowed dedicated issue pages such as the now famous "We are all Khaled Said" page and soon became a crucial platform for announcing and coordinating protests. Twitter also played an important role, especially as a bridge between Egypt and outside communities. Much of the early news of the protests to outside world spread through Twitter, and then to traditional news media (Lotan et al., 2011).

The emerging public sphere both drew from and contributed to offline political activity and should not be analyzed in an either/or fashion. Years of activism, blogging, training, conferences, and key platforms like those provided by the Harvard-based NGO Global Voices meant that there was already a community of "tweeps" who knew each other, had often met in person, and trusted each other. Many of the activists who would later play prominent roles had met in person in venues such as the annual Global Voices conference, Arab Techies Collective in Cairo, 2008, Arab Bloggers Summits in Beirut in 2008 and 2009, and the Re:publica Digital Media Conference in Berlin. These networks were not just practical and political, but also helped sustain a core network of activists over time. Further, citizens as well activists in the region observed the Iranian "Green Revolution" and saw how social media could be used to spread news and information. Although the Green Revolution did

not topple the Iranian government, it did succeed in inspiring activists across the region to use social media in their own political activities.

The third component of the new system of political communication is the dramatic increase in citizen connectivity created by the explosion of steadily less expensive cellphones with video, photo, and Internet capability. By late 2010, cell phone penetration had reached 80% in Egypt overall and was even higher in major cities such as Cairo. These numbers are even more impressive when one considers that the 2010 figures represented a 24% increase over the previous year. More and more of these cellphones were Internet-capable as well.

The new system of political communication created by these developments cannot be easily separated into traditional media categories. Al-Jazeera, for example, has integrated social media into its news practices and cultivated citizen journalists across the region. While Al Jazeera cannot have a journalist in every trouble spot, the increasing numbers of smart-phone wielding citizens who have developed both the reflex and the ability to document politically important moments ensure that there will be at least some coverage, regardless of the logistics of the situation. Citizen journalists record events and distribute multimedia content through Facebook and Twitter, content which is then rebroadcast through Al-Jazeera and distributed to other media.

This emerging communication system has profoundly transformed the Arab public sphere by increasing citizens' ability to document and share, by greatly increasing the odds that misconduct by authorities will become widely known, and by overcoming barriers to individual political participation and the coordination of collective action. To see how these changes were manifested in the tumultuous days of the Tahrir Square demonstrations in early 2011, we turn to a survey of those who participated.

Method

Sample

A survey of media use by Egyptian protesters was fielded over a 4-day period beginning on Friday, February 24, 2011, less than 2 weeks after President Mubarak resigned. Interviews were initially conducted by approaching people in the open streets around Tahrir Square, but this strategy was dropped after less than 100 interviews because of interruptions and participant anxiety. This was a chaotic period of continuing street violence and political uncertainty. To better manage this sensitive situation, we shifted to a snowball sampling approach in which participants were recruited through referrals (Salganik & Heckathorn, 2004). To enhance safety and security, interviews were conducted in semicontrolled public spaces such as cafes or parks, near Tahrir Square and in other neighborhoods.

A total of 1,200 interviews were conducted with people who had participated in the Tahrir demonstrations as early as January 25. Questionnaires not completed due to security or other concerns or which had wildly inconsistent answers were dropped, yielding 1,050 valid surveys. The research team estimated a response rate of 60%, but it should be emphasized that this sample was gathered during a tumultuous, violent

time. It is impossible to assess the representativeness of the sample, both because of the conditions and the lack of reliable information about the population of Cairo. Perhaps the best that can be said is that team members believed that the sample was similar in demographic terms to those they had witnessed demonstrating at Tahrir Square. Despite these limitations, this dataset provides a unique opportunity, as it may be among the largest samples of protestor surveys conducted under such difficult conditions.

Procedures

The survey was led by experienced survey researchers, many of whom were affiliated with local NGOs involved in the project. Thirty interviewers, half of whom had previous survey experience, were recruited. All interviewers underwent a day long training session covering the survey and its administration.

The research team developed a protocol for approaching respondents which stressed the impartial, research-based nature of the endeavor and emphasized safety. This protocol was memorized by the interviewers, though it was sometimes modified in the field by team leaders due to security concerns. Upon completion, respondents were asked about other protestors who might participate in the same interview process and, if possible, to introduce the potential respondent to the research team in person or via telephone. Respondents were also encouraged to name people who were not in their immediate social group.

Questionnaire and measures

The questionnaire, conducted in Arabic and on paper instruments, required 25–45 minutes to complete and consisted of 90 mandatory and 46 optional questions. It was composed of six sections, including basic demographics, media use patterns, media production and citizen journalism, usefulness of different media for protests, responses to censorship and media blockages, and a short section on political engagement (see also Wilson & Dunn, 2011).

Internet access at home or on the phone, use of media for general or specifically for communicating about the protests (Facebook, Twitter, text, blogs, E-mail, telephone, satellite television, print, etc.), and previous protest participation were measured dichotomously as yes/no. Education was measured on a scale from 1 (*no formal education*) to 7 (*postgraduate*). Respondents were asked where they first heard of the protests (in person, Facebook, phone, satellite TV, or other media) and also if they produced or disseminated visuals from the protests and, if they had, via what method (multiple options were allowed. Respondents were asked the date that they joined the protests (January 25 was coded as ''participation on first day of Tahrir protests'').

Findings

Who went to Tahrir Square?

Descriptive statistics for this sample of protestors are summarized in Table 1. The protestors included in our sample ranged in age from 18 to 67, averaging just

Table 1 Sample Characteristics (*SD* in parentheses)

	Males ($n = 792$)	Females ($n = 258$)	Total ($N = 1{,}050$)
Mean age	29.1 (9.3)	26.6 (7.6)	28.5 (8.9)
Mean education	5.1 (1.6)	5.6 (1.2)	5.3 (1.6)
Percent with Internet at home	77	90	80
Percent with Internet on phone	50	57	52
Percent present on first day of protests	38	33	36
Percent who had previously attended protests	34	33	34

Note: Education scores ranged from 1 (*no education*) to 7 (*postgraduate degree*).

under 29 years of age overall. The distribution of age skewed to the youthful side, with a median age of 26. Although the majority of protesters interviewed were male (75.4%), there was also a substantial female presence (24.6%). Protestors of both sexes tended to be relatively well educated, with 60.3% reporting having college or university degrees and an additional 9.6% having earned a postgraduate degree. Only 14.1% indicated having less than a secondary degree. Protestors in our sample differed according to gender on several factors. Female protestors were on average about 2.5 years younger than male protestors. This difference was statistically significant ($t(1{,}048) = 3.99, p < .001$). Females were also somewhat better educated ($t(1{,}048) = 4.13, p < .001$). Women were also more likely to have Internet access on their phones ($\chi^2(1) = 4.07, p < .05$), and homes ($\chi^2(1) = 21.5, p < .001$).

Approximately two thirds of people in our sample who had demonstrated in Tahrir Square between January 25, 2011 and the completion of our data collection had not been involved in previous protests. There was no gender difference with regard to previous participation in protests. About a third of our respondents (34.5%) had previously been involved in politically active organizations, such as trade unions (8.2%), political parties (6.2%), social charities (11.0%), or other types of social movements or political organizations (9.0%).

Media access and use in general and for protest purposes

About 92% of the respondents used phones in general and 82% used phones for communicating about the protests (Table 2). About half had a Facebook profile (52%) and almost everyone who had one used it for communicating about the protests (51%). Twitter was used in general by 16% of the respondents, and for communicating about the protests by 13%.

Although males and females differed somewhat in their media preferences, the overall pattern is one of the similarity rather than difference. The largest significant gender differences were in the use of Facebook and Twitter. Females reported using Facebook more than males both in general (60% vs. 49%) and for communicating about the protests (60% vs. 48%). These differences were statistically significant ($\chi^2(1) = 9.81, p = .002$ and $\chi^2(1) = 11.87, p = .001$, respectively). Women were

Table 2 Percent of Protestors Using Different Media by Purpose and Gender

	Use In General			For Communicating About Protests		
	Male ($n = 792$)	Female ($n = 258$)	Total ($N = 1{,}050$)	Male ($n = 792$)	Female ($n = 258$)	Total ($N = 1{,}050$)
Blog	14	18	15	10	16	12
E-mail	83	85	83	25	33	27
Facebook	49	60	52	48	60	51
Phone	92	93	92	80	87	82
Print	64	59	63	59	52	58
Satellite TV	93	94	94	92	93	92
Text	61	67	62	46	49	46
Twitter	15	20	16	11	19	13

also somewhat more likely to use Twitter in general (20% vs. 15%, $\chi^2(1) = 3.41$, $p = .065$) and significantly more likely to use it for communicating about the protest (19% vs. 11%, $\chi^2(1) = 9.69$, $p = .002$).

Respondents tended to rely on the same media for information about the Tahrir Square protests as they did for more general communication. Satellite TV and the phones were the two most popular media choices for both types of use (Table 2). However, there were two striking differences. A far greater proportion of protestors (83%) reported using E-mail for general purposes than reported using E-mail for communicating about the protests (27%; $\chi^2(1) = 83.2$, $p < .001$). Respondents were also significantly more likely to use text messaging in general (62%) than for communicating about the protests (46%; $\chi^2(1) = 53.84$, $p < .001$).

Hearing about and participating in protests

In spite of widespread media use, nearly half (48.4%) of those in our sample reported that they had first heard about the Tahrir Square demonstrations through face-to-face communication. Interpersonally oriented media such as Facebook (28.3%) and telephone (13.1%) were the next most common first sources. Satellite TV was the initial source of information for only a few (4.0%). All other options barely registered as means of hearing about the protests with around 1% of subjects reporting that they had first heard of the protests through texting, E-mail, Twitter, radio, newspaper, or other printed materials. Thus, traditional mass media were far less important for information people about the protest than were more interpersonal means of communication (face-to-face, telephone, or Facebook). There were also stark differences among digitally mediated forms of communication. Although Facebook (28.3%) was by far the most dominant means of hearing about the protests outside of face-to-face communication, texting, for example, was rarely the means by which someone first heard about the protests (0.8%), even though it was used widely for sharing information about the protests (46%).

Table 3 Impact of General Media Use on Participation in Protests

	Attended Protests on First Day		Previously Attended Protests	
Predictor	Model 1	Model 2	Model 3	Model 4
Age	1.007	1.009	1.033***	1.036***
Male	1.294	1.291*	1.091	1.062
Education	1.047	0.997	1.143*	1.063
Internet at home	1.453*	1.318	1.602*	1.394
Internet on phone	1.092	1.031	1.169	1.123
Blogs		1.354*		1.486*
E-mail		0.799		1.020
Facebook		1.252		1.342*
Phone		1.137		0.683
Print		1.274*		1.677***
Satellite TV		0.540*		0.815
Text messaging		1.128		1.156
Twitter		1.536*		1.351*
Constant	0.214***	0.342*	0.057***	0.075***
Log-likelihood	−682.616	−670.172	−651.436	−635.845

Note: Logistic regression coefficients.
*$p < 0.10$. **$p < 0.01$. ***$p < 0.001$.

Tables 3, 4, and 5 present logistic regressions that model the odds that use of a particular media source or the channel through which a participant learned about the protests, controlling for age, gender, and location of Internet access, contributed to whether a respondent participated in protests. Pseudo R^2 is not reported as it is not interpretable in a manner comparable to R^2 in OLS regression and does not account for variation (Hoetker, 2007). Instead, log-likelihoods are included.

Table 3 includes models participation in previous protests or in the protests of January 25 (the first day of the Tahrir Square protests). Models 1 and 3 include age, gender, education, and general Internet use at home or on a phone as controls, while Models 2 and 4 take into account different types of media used in general by the respondents. Being older was associated with having attended previous protests and those with Internet at home were more likely to report being in Tahrir on the first day of protests or having participated in previous protests. However, breaking Internet use into specific platforms (Models 2 and 4) reveals that the relationship between Internet at home and protest participation is mediated by specific kinds of media use rather than general use. Respondents who had previously attended protests were more likely to use print media (primarily newspapers), blogs, Facebook, and Twitter for general information. These respondents were also more likely to have attended the Tahrir protests on the first day (though Facebook use was not a significant predictor). Satellite TV users had half the odds of being present on the first day of protests compared to those who did not use satellite TV and this was the only statistically

Table 4 Impact of Media Use to Communicate About Protests on Participation in Protests

Predictor	Attended Protests on First Day	Previously Attended Protests
Age	1.012	1.035***
Male	1.437*	1.130
Education	0.996	1.078
Internet at home	1.233	1.440*
Internet on phone	1.071	1.120
Blogs	1.574*	1.376
E-mail	1.313*	1.154
Face-to-Face	1.214	0.613*
Facebook	1.411*	1.200
Phone	1.531*	1.158
Print	0.961	1.353*
Satellite TV	0.714	0.784
Text messaging	1.116	1.180*
Twitter	1.414*	1.235
Constant	0.140***	0.088***
Log-likelihood	−662.300	−639.839

Note: Logistic regression coefficients.
*$p < 0.10$. **$p < 0.01$. ***$p < 0.001$.

Table 5 Media Source Where Respondent First Heard of Protests and Participation in Protests

Predictor	Attended Protests on First Day	Previously Attended Protests
Age	1.010	1.034***
Male	1.273	1.072
Education	1.025	1.135*
Internet at home	1.334	1.525*
Internet on phone	1.105	1.185
Facebook	0.830	1.020
Phone	0.438***	0.502**
Television	0.811	1.060
Other media	0.924	1.008
Constant	0.281***	0.065***
Log-likelihood	−675.694	−646.304

Note: Logistic regression coefficients.
*$p < 0.10$. **$p < 0.01$. ***$p < 0.001$.

significant factor associated with lower odds of protest. The use of other media did not distinguish between those who had or had not participated in previous protests or the first day of the Tahrir protests (Table 3).

The contrasting effects of media choice were even more sharply drawn when we asked about the use of various media to *specifically* communicate about the protests

(Table 4). Participation in protests prior to Tahrir Square was predicted by age, Internet access at home, and seeking information about the protests through text messaging and print media. Relying on face-to-face contact to communicate about protests was associated with significantly lower participation in previous protests. However, participation on the first day of the Tahrir Square demonstrations was associated with a larger and very different set of media sources for communicating about the protests. Those who used print or satellite TV were slightly, though nonsignificantly, less likely to participate in protests on the first day. Instead, the early participants in the Tahrir Square demonstrations tended to rely on blogs, Twitter, Facebook, phones, and E-mail for the information about the protests. Rather than mass media, interpersonal communication, especially in face-to-face and digitally mediated forms, appears as a key conduit of communication about the protests which erupted on January 25 on Tahrir Square.

Table 5 explores the question of whether the channel through which the respondents *first* learned about the protests was associated with differing odds of participating in previous protests or on 25 January protests in Tahrir Square. Having first heard of the protests face-to-face is left off Table 3 as a reference category (as options were mutually exclusive). Compared with face-to-face learning of the protests, hearing of the protests first through the telephone was the only method associated with lower odds of either having attended previous protests or the Tahrir protests on January 25. Learning of 25 January protests through all other channels, such as Facebook, Twitter, or Satellite TV, was associated with equal odds of participation in January 25 or previous protests as having heard of them through face-to-face.

Documenting the protests

One of the most striking consequences of the new system of political communication has been the emergence of the citizen journalist, a person who may or may not have a history of activism, but suddenly appears to convey critical information to the public at a crucial moment. To gauge the level of participation in such citizen journalism, respondents were asked whether they produced pictures or videos of the protests, and their means of producing and dissemination. Almost half (48.2%) the respondents had produced and disseminated video or pictures from political protest in the streets. The leading platform for producing and disseminating visuals was Facebook, used by about fully a quarter of the sample (25%), and phones were a distant second, used by 15%. These were not mutually exclusive options; many who used their phones also used Facebook (72% of those who used their phone also used Facebook), presumably uploading videos and pictures taken on their phones to Facebook. About 5% of the sample used Twitter. A smaller proportion shared multimedia content via E-mail (2%). Respondents were allowed to select up to four different media, but few (15%) reported using more than one medium to document the protests.

Table 6 probes the relationship between producing pictures or videos about the protests and previous or 25 January Tahrir Square protest participation through logistic regressions. Models 1 and 3 utilized only ''lack of production'' as a predictor,

Table 6 Media Used to Document and Share Personal Protest Experiences

	Attended Protests on First Day		Previously Attended Protests	
Predictor	Model 1	Model 2	Model 3	Model 4
Age	1.010	1.012	1.035***	1.035***
Male	1.261	1.241	1.074	1.068
Education	1.017	1.015	1.125*	1.126*
Internet at home	1.434	1.367	1.589*	1.533*
Internet on phone	1.065	1.062	1.154	1.143
None	0.538***	0.822	0.719*	0.839
Blog		4.284*		1.332
E-mail		1.491		0.934
Facebook		1.570*		1.218
Phone		1.166		0.887
Print		1.666		1.135
Text message		3.197*		3.410*
Twitter		1.250		1.236
Constant	0.321***	0.213***	0.071***	0.062***
Log-likelihood	−671.640	−663.340	−648.496	−643.719

Note: Logistic regression coefficients.
*$p < 0.10$. **$p < 0.01$. ***$p < 0.001$.

along with age, gender, education, and Internet use locations as controls. Models 2 and 4 explore the impact of different channels of media production. More active protest participants were behaving like citizen journalists. Respondents who had participated in previous protests or attended the protests on January 25 were more likely to be producers of multimedia content (Models 1 and 3). Those who had participated in protests prior to the uprising at Tahrir Square were more likely to use text messaging or print media for documentation and slightly less likely to use E-mail. Those who attended the first day of demonstrations at Tahrir Square also used text messages, but in addition were more likely to document their experience as the protests unfolded using blogs and Facebook. However, texting, print, and blogs were all used in 3% or less of the cases, and are thus of little overall significance.

Discussion

The results of this study underscore the central role that social media, particularly Facebook and Twitter, played in the protests leading up to the resignation of Egyptian President Mubarak in February, 2011. Although it only became available in Arabic in 2009, more than a quarter of the protestors we sampled had first heard of the protests on Facebook and, in addition a quarter used Facebook to disseminate pictures and videos they had produced. Twitter, along with blogs, was used by protestors to communicate about the demonstrations as they unfolded.

Through a series of logistic regressions, we were able to demonstrate that participation in protests, both before and on the first day of the Tahrir Square demonstrations, was associated with particular patterns of media use. Attending protests prior to the January uprising was associated with using print media, blogs, Facebook, and Twitter as general sources of information and, more specifically, with using print media and text messaging for information about protests. Participation in the first day of the Tahrir Square demonstrations, however, was linked to a broader and more varied pattern of media use. Those in attendance on January 25 reported using print media for general information, but not for communicating about the protests. Using satellite television as a general information source was associated with a lower likelihood of attending the first day of the protests, perhaps because other means of communication, such as social media, provided superior access to communication about the protests. Instead, those who used blogs and Twitter for both general information and for communicating about the protests were more likely to attend on the first day, as were those who used the telephone, E-mail, and Facebook to communicate about the protests.

The fact that women comprised an impressive 25% of the sample confirmed a significant push by women to be part of the political process—a point which has been noted by other observers of these protests. Bivariate analyses suggested that women who attended the protests in Tahrir Square were somewhat better educated and had greater economic resources than their male counterparts. They were also heavier users of social media, especially for protest activities. Nonetheless, after controlling for media use, men were significantly more likely than women to have attended the very first day of protests on the first day, January 25, attesting to the obstacles the initial uncertainty might have posed for women. Anecdotally, a number of women interviewed in Cairo, including some associated with the Muslim Brotherhood, told us that Facebook allowed them to express their opinions and participate in political activity even when they could not attend meetings or when they felt that conditions otherwise discouraged them from speaking up.

Although this study did not assess respondents' overall degree of participation in the protests during the month following January 25, we believe that participation on the first day is a crucial indicator. Under an autocracy, the riskiest kind of dissent is that which fails and the most dangerous protest is one that is small. Smaller protests have a higher likelihood of being effectively censored, isolated, or repressed in authoritarian regimes. A slow build-up in attendance is more plausible in democratic societies where small initial protests are less likely to be repressed. Thus, in authoritarian regimes, high participation on the first day is often necessary to initiate the larger cascade that ultimately results in the uprising's success. And, as we have shown, social media use, especially for political purposes, was associated with significantly higher odds of protest participation on that crucial first day. The courage and the determination required to attend the first day of the protests on January 25 should be interpreted in light of the fact that nearly two thirds of the sample had not previously attended a protest of any kind. These women and men left

their previous lives behind, risking death, torture, exile, injury, unemployment, and more, and showed up at Tahrir Square on January 25, 2011.

Our data illustrate a complex intertwining of multiple online and offline spheres. Nearly half of our respondents first heard about the protests from someone face-to-face, but the remaining half heard through a variety of media sources. Social media such as Facebook and Twitter, as well as E-mail, were, of course, superimposed on existing social ties between friends, families, and neighbors. In contrast to recent speculation about the limits of social media (e.g., Gladwell, 2010), we found that social media in Egypt mediated many kinds of ties and brought individuals news, information, and the social support needed to spur participation in political protest. Similarly, while some research about the civil rights era in the United States emphasizes the role of strong ties (McAdam, 1999), others have suggested that "sit-ins" often occurred because the Black students in college towns heard of the idea on television or radio, rather than from their social networks, and adopted it because it made sense in their political context (Andrews & Biggs, 2006). In the case of protests in Egypt, it appears that social networks, often mediated through the new online platforms in the emergent networked public sphere, played a crucial role.

The high level of production and dissemination of multimedia content, undertaken by about half the sample, shows that it became difficult to suppress information about protests. Approximately half of our respondents were actively documenting and sharing images of the protests. If that proportion was applied to even the most conservative estimates of total participation in the Tahrir Square demonstrations, it becomes apparent that at least tens, if not hundreds of thousands of people were documenting the protests—and were, de facto, functioning as citizen journalists.

This conclusion, like the others we have advanced, should be tempered by recognition of the limits of the sample. Surveys of protestors are rare in general and the vast majority of those have been conducted in comparatively stable democratic countries (Bédoyan, Van Aelst, & Walgrave, 2004; Heaney & Rojas, 2007; Klandermans & Oegema, 1987). Previous researchers have faced a methodological trade-off between asking many questions to a few people or asking many people a few questions. On one side are studies such as van Zomeren, Spears, and Leach's (2008) intensive two-part study with a sample of just 61 participants. In contrast, in another study of five different globalization protests, researchers obtained sample sizes ranging from 86 to 730, but their instrument contained only six items (Fisher, Stanley, Berman, & Neff, 2005). We incorporated more items and were able to obtain a much larger sample under inarguably more difficult conditions. Nonetheless, it is impossible to know how representative the sample was of Cairo in general or of those who participated in the protests in and around Tahrir Square during this dangerous period.

Our findings also highlight the need for further conceptual and empirical work. Most research on social movements and collective action centers on democratic countries (Maher, 2010), and often has little to say about the context and role of political communication, especially in authoritarian settings. There are, however, key mechanisms of control, repression, and affordances of social movements which need

to be reexamined, conceptually and empirically, in the context of this emergent new media ecology. For example, Kurzman (2004) and Kuran (1997), among others, have argued citizens, especially in authoritarian contexts, fail to express dissident views and keep hidden preferences because they inaccurately believe themselves to be a small minority as a result of repression or self-censorship, thus causing pluralistic ignorance. One priority for future research is to determine how social media such as Facebook and Twitter impact this dynamic.

Much discussion of the putative limits of online activism implicitly depends on viewing digital expressions as ''cheap talk'' (Farrell & Rabin, 1996) or dismissing them as mere ''slacktivism'' or ''clicktivism'' (Morozov, 2011). However, especially in authoritarian contexts, digital activism is neither without cost nor without political potency. The conditions under which citizens overcome the potential risks of online activism in repressive regimes are of obvious importance for future researchers.

We demonstrate that events in North Africa and the Middle East are now being shaped by a new system of political communication which sets into sharp relief the importance of digitally mediated interpersonal communication. This system is characterized by the increasingly interrelated use of satellite television, the Internet (particularly social media platforms such as Facebook and Twitter), and the widespread use of Internet-enabled cellphones capable of transmitting photos and video. The results of this study illustrate how elements of this system contributed to lowering the costs of initiating and coordinating collective action to topple a longstanding authoritarian regime. And perhaps most importantly, they illustrate a monumental shift in the ability of everyday citizens in repressive societies to document and express their desires for social change.

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