International Journal of Communication 14(2020), 4136–4159 1932–8036/20200005

Student Participation and Public Facebook Communication: Exploring the Demand and Supply of Political Information in the Romanian #rezist Demonstrations

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In 2017, the anticorruption #rezist protests engulfed Romania. In the context of mounting concerns about exposure to and engagement with political information on social media, we examine the use of public Facebook event pages during the #rezist protests. First, we consider the degree to which political information influenced the participation of students, a key protest demographic. Second, we explore whether political information was available on the pages associated with the protests. Third, we investigate the structure of the social network established with those pages to understand its diffusion within that public domain. We find evidence that political information was a prominent component of public, albeit localized, activist communication on Facebook, with students more likely to partake in demonstrations if they followed a page. These results lend themselves to an evidence-based deliberation about the relation that individual demand and supply of political information on social media have with protest participation.

Keywords: protest, political information, expressiveness, student participation, diffusion, Facebook

In this article, we examine the relationship among social media use, political information, and participation in the #rezist protests: a wave of anticorruption demonstrations in Romania that commenced in early 2017. An enduring expectation has been that protest participants are politically informed (Saunders, Grasso, Olcese, Rainsford, & Rootes, 2012). Indeed, cross-national evidence shows that protest participants are sourcing political information online (Mosca & Quaranta, 2016), which in turn raises the likelihood of their participation (Tang & Lee, 2013). At the same time, over the last two decades, digital media have provided a

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Date submitted: 2020–01–21

structural opportunity for social movements—albeit one that is limited by dominant commercial logics (Kaun, 2015)—to independently devise, publicize, and garner support for their own agendas and actions (Bennett & Segerberg, 2012). This opportunity has been variably embraced by different movements. A widening range of acts—from the individual expression of support and solidarity on social media to crowdsourced drives to coordinate and chronicle large-scale protests—now complement and extend collective action performed in physical space, such as street demonstrations or occupations (Valenzuela, 2013).

We approach these developments as two facets of a single study phenomenon, namely, (1) the relationship between individual demand and online supply of information, and (2) participation in collective political action. Taking a cue from research into the dissemination of scientific information (McNie, 2007), we adopt a dynamic perspective on the link between demand and supply in an effort to capture interrelations between them that goes beyond narrower investigations into either side, which we review in the next section. We consequently scrutinize the availability and circulation of political information on public Facebook event pages during the 2017 #rezist protests and explore how individual consumption of political information related to on-site protest activity. Facebook event pages allow users to provide information about their events and invite others to follow updates about them (Khan & Jarvenpaa, 2010).

The #rezist protests were a set of rolling demonstrations across Romania that peaked in February 2017, when more than half a million people took to the streets to protest the watering down of the country's anticorruption legislation following years of widespread—alleged and prosecuted—fraud in public office in the postcommunist period (Lovell, 2005). Demonstrators successfully forestalled the adoption of Emergency Ordinance no. 13, which would have ushered through the proposed changes. As in other instances (Tufekci, 2017), the #rezist protests were associated with intense communication on social media while being closely covered by news outlets nationally and internationally (Adi & Lilleker, 2017).

As in the course of other recent protest events in the country (Mercea, 2018), the #rezist protestors set up Facebook event pages to enable public, topical communication. A first in the Romanian context, activists devised the hashtag #rezist as a symbol expressing support for the demonstrations displayed on placards and on social media (Man, 2017)—for example, as a profile image overlay on Facebook (for comparison, see State & Adamic, 2015). In April 2017, there were 9.4 million Facebook users in Romania, representing 88% of all social media users in the country (Adcombo, 2017). According to the same source, 18- to 24-year-olds (21.47%) and 25- to 34-year-olds (26.83%) were together the most widely represented age groups on Facebook, making up nearly half (48.3%) of the service users.

In what follows, we outline the theoretical underpinnings of this study and advance three hypotheses for testing. We combine network analysis and topic modeling of communication on Facebook event pages associated with four Romanian cities where anticorruption protests transpired in January–March 2017, with original survey data on student participation in the same protests. Over the last decade, Romanian students have been a key protest demographic (Burean & Badescu, 2014). Although historically low (Pop-Eleches & Tucker, 2013), at the turn of the 2010s, levels of protest participation were notably higher among Romanian students than the general population of the country (1 in 4 students reported participating in a protest, as opposed to only 9% of the general population joining a demonstration or a strike; Burean & Badescu, 2014). The finding testified to young citizens' greater biographical availability to

protest (Corrigall-Brown, 2011). Equally, it threw into question the character of democratic citizenship, particularly among young people, who are less likely to vote and are less trustful of social and political institutions, but are exhibiting a rising desire—exacerbated by the use of the Internet—to express their politics and to effect immediate political change (Bennett, Wells, & Rank, 2009). This outlook was common among Romanian student protesters who were likely to embrace social media for both offline and online political participation (Burean & Badescu, 2014).

Next, we show that the likelihood of student participation in the #rezist demonstrations related positively to sourcing political information online and to using social media for symbolic political expressiveness and peer mobilization. Following a Facebook event page likewise raised that likelihood. Political information occupied a prominent place in the communication occurring on the event pages. The supply of political information was, however, structurally confined within local page networks. We thus posit a relationship between student participation, and individual demand and social media supply of political information that warrants further examination.

The Demand and Supply of Political Information in Collective Action

A growing concern with the political implications of social media use is that it feeds a perception that political information finds users by virtue of social or algorithmic recommendations (Gil de Zúñiga, Weeks, & Ardèvol-Abreu, 2017; Shehata & Strömbäck, 2018). Social media users have a misguided sense of being informed about politics while demonstrating lower levels of political knowledge than nonusers (Gil de Zúñiga et al., 2017) or traditional media users (Shehata & Strömbäck, 2018). Political knowledge pertains to cognizance of the political system, institutional rules, and topical policy issues in a democratic polity at any given time (Delli Carpini & Keeter, 1996).

Political information has been conceptualized as an account— "information or commentaries"—of public affairs, policy, or political issues (Tang & Lee, 2013). Social movement studies have described political information as enabling aggrieved people to form an appreciation of, on the one hand, reasons to become involved in collective political action (Schussman & Soule, 2005). On the other hand, political information delineates the conditions in which such action unfolds (Klandermans, Staggenborg, & Tarrow, 2002), that is, who its supporters and opponents are. The circulation of information in social networks especially will influence levels of participation in collective action (Klandermans, 2004).

Considering first the demand side of political information, an individual's readiness to participate in collective action may vary with the sources of information embraced. Differentiating between print and broadcast news sources, Schussman and Soule (2005) emphasized that having the habit of reading newspapers daily was predictive of protest participation, while watching news bulletins with the same frequency was not. Closer to the present time, cross-national survey research has evinced that omnivore news diets comprising broadcasting and online media content closely correlate with participation in demonstrations or occupations (Mosca & Quaranta, 2016). Additionally, and particularly for young people, following political groups on Facebook is a key political activity (Ekström & Shehata, 2018) that can be conducive to protest participation (Valenzuela, 2013).

Yet, even when they are politically engaged offline, individuals sourcing information about current affairs on social media may not at the same time have relevant knowledge about the political system (Gil de Zúñiga et al., 2017). To help disentangle the relationship among political information, political knowledge, and participation, one can refer to the distinction between applied political knowledge—a problem-related understanding of the political system (e.g., contextually, that the government can seek to amend anticorruption legislation)—and a basic grasp of the operations of government, or a familiarity with current affairs (Catellani, 1996). Of the three varieties, only applied political knowledge was linked to participation in a demonstration (Catellani, 1996).

Separate studies, moreover, have connected protest participation to political expressiveness on social media (Valenzuela, 2013). Political expressiveness was defined as a willingness to voice one's political opinions on social media (Valenzuela, 2013). For students specifically, talking about civic issues online was shown to increase the likelihood of civic participation (Reichert & Print, 2017). Alongside individual demand for online political content, we therefore likewise considered the association of political expressiveness on Facebook with participation. One hypothesis we consequently contemplated was that

H1: Student participants in the #rezist protests were distinguished from nonparticipants by a demand for political information manifested in varied news diets, their applied political knowledge, and a readiness to use social media expressively and to join pages associated with the #rezist protests.

Additionally, profile image overlays expressing support for an activist cause on Facebook can induce the adoption of the same behavior by contacts observing it (State & Adamic, 2015). In this analysis, we ascertained whether the symbolic signaling of support for the #rezist protests by placing a hashtag overlay on one's profile photo related to the likelihood of participation in them.

Looking more broadly at the supply side, Facebook outlets have acted as valuable information conduits for protest groups around the world. Since the turn of the previous decade, Occupy Wall Street (Gaby & Caren, 2012), emblematically, and numerous social movements in different parts of the world, including Romania (Burean & Badescu, 2014), have seized on Facebook and other social media to disseminate public information pertinent to their causes and collective action (Bennett & Pfetsch, 2018). However, studies of social media use associated with recent protest movements have not purposely and systematically characterized the supply of political information.

A comparative content analysis of tweets associated with Occupy, Indignados, and Aganaktismenoi highlighted that information and commentary about the movements—including their political aims—were more widely transacted on Twitter than any calls to action (Theocharis, Lowe, van Deth, & Garcia-Albacete, 2015). In Guatemala, Facebook pages were used extensively by activists to supply public information, most recurrently about their collective action, its enactment, coverage by the media, and, latterly, its principal political aims (Harlow, 2012). The public pages of the U.S. Occupy movement primarily carried reports by participants of confrontations (e.g., of activists with the police; see Poell & Borra, 2012), refutations of media stories, or personal narratives of involvement in the protests (Gaby & Caren, 2012).

Another content analysis, of Stop ACTA Facebook pages, found references to political institutions that were made to justify collective action. They channeled a critique of the state of democratic politics and the policy making that led to the Anti-Counterfeiting Trade Agreement (ACTA; Mercea & Funk, 2016). The Stop ACTA demonstrations sought to prevent the ratification of the trade agreement by national and the EU Parliaments. The content most common on their Facebook pages concerned the protests themselves or the media coverage they received.

In the same way as the Stop ACTA demonstrations, the #rezist protests pursued the reversal of executive policy through the rescindment of Ordinance no. 13. In this article, we seek to understand the relative position of political information on the #rezist event pages.

H2: While political information was expected to figure across the event pages, it was hypothesized that it would be subordinate in the supply of information to topics immediately pertaining to the demonstrations and their planning, enactment, and media coverage.

Third, the structural characteristics of online social networks, which were left unexamined in those textual analyses, may additionally confine the supply of information, be it political or otherwise. The structure of social media protest networks can be constrained by the incidence of structural holes (González-Bailón & Wang, 2016). A structural hole is a gap in an information flow between groups in a network (Burt, 2004). Structural holes are a common feature of networks where actors are connected in dense clusters (Newman, 2009). González-Bailón and Wang (2016) verified the existence of structural holes in the Twitter network of the Indignados and Occupy movements as the two converged in 2012 under a call for "united global change." They emphasized that communication among members of that Twitter network was confined to "clusters of redundant connections" and argued that the dearth of connections between clusters attested to modalities of social media usage that did not a priori expedite the exchange of information by dint of the technological affordances for social connectivity of the platform. Instead, the circulation of information and exposure to it were structurally restricted by the social groupings that existed among users on Twitter (González-Bailón & Wang, 2016).

On the other hand, in their investigation of the anti-vaccination movement, Smith and Graham (2019) evidenced the presence of "small worlds" among users commenting on posts made on its public Facebook pages. In network theory, a small world designates a network topology comprising small, highly clustered groups of closely interconnected nodes within sparsely connected, large networks (Watts & Strogatz, 1998). Effective (rapid and easy) diffusion, for example, of infectious diseases or, more pertinently, of seminal ideas that reinforce the ideology of a social movement (Smith & Graham, 2019) is more likely in small worlds than in other varieties of networks. This is due to a structural feature, namely that there is a higher probability of shortcuts being present in a small world between nodes that would be further apart—that is, several connections removed from each other—if chosen at random (Watts & Strogatz, 1998).

Alongside the analysis of the content exchanged on the #rezist event pages, we inspected the structure of the comment, reaction, and sharing networks to form an understanding of how effective the diffusion was of public-protest-related information on Facebook. Our aim was to shed light on the supply of

protest-related information through public pages previously shown to be instrumental to scaling up involvement in street demonstrations (Harlow, 2012).

A key means of expressiveness on Facebook, comments are responses to preexisting content—that is, posts or other comments (Bossetta, Segesten, & Trenz, 2018). They contribute simultaneously to the development and the dissemination of ideas (Bossetta et al., 2018; Smith & Graham, 2019). Commenting represents a deeper level of engagement than "liking"—recently encompassing a spectrum of reactions on Facebook—or "sharing." The latter are technological affordances for social feedback, be it positive or negative (Fox & Moreland, 2015). Reacting and sharing are two acts that may help diffuse ideas within user ego networks without simultaneously adding to their public supply on Facebook (Smith & Graham, 2019). Dwelling on this delineation, our third hypothesis foregrounded the analysis of the comment network.

H3: Commenters in the event page network formed a small world wherein information diffused effectively.

We equally assayed reaction and sharing networks to determine if they were small worlds aiding the diffusion of information without adding to its public supply.

Data and Methods

From April to June 2017, the research team conducted a student survey on a stratified random sample (N = 1,659).[1] Students were polled in Bucharest, Cluj, Oradea, and Timisoara. These four cities are university centers comprising 60% of the student population in Romania (Mihai, 2017). In a similar fashion to Burean and Badescu (2014), a paper-based questionnaire was administered in class and in person (see also Stolle, Hooghe, & Micheletti, 2005).

The sample accounted for the proportion of registered students per higher education discipline. According to records of the Romanian Ministry of Education made available to the research team, 47% of students enrolled in a higher education institution were studying a social science or humanities subject. A previous inquiry into levels of political activism per discipline (Crossley, 2008) found no effect of discipline on students' political activism. However, the small student sample (N = 25) in that study did not lend itself to statistical generalizations.

To test H1 and differentiate the contribution of specific groups of variables—particularly political information, knowledge, trust, and Facebook use—to protest participation, we used hierarchical logistic regression. The dependent variable, protest participation (N = 1,593), was a dichotomous variable recording attendance at one or more #rezist demonstrations. We employed a 6-point Likert scale to operationalize individual demand for political information as the retrieval of political news content either via broadcasting (radio and TV) or Internet sources. Drawing on Catellani (1996), we constructed an applied political knowledge index comprising one question asking whether students had read Ordinance 13 and two further

[1] On request and following anonymization, all research instruments and data can be obtained from the main author.

questions regarding its content. A lower than expected McDonald's ω value of .52 for the index was likely attributable to the small number of categories of the underlying dichotomous variables (Bandalos & Enders, 1996). We used dummy variables for respondents who placed a #rezist hashtag image overlay on their profile pictures, joined a Facebook event page, posted calls for participation in the protests, or commented on the protests on social media. Tests yielded variance inflation factor scores higher than 1 and lower than 10, which led us to infer that there were no problems with collinearity in the model.

We sought to control for confounding influences on protest participation. Studies of pathways into collective action have revealed that participation is primed by both formal and informal contacts ranging from civil society organizations to friends or family (Corrigall-Brown, 2012). This holds true for students (Maher & Earl, 2017). Low response rates for items on student organizational membership (51%) and attendance with peers (66%) or friends or family (69%) led us to exclude these items from the models.

Among Romanian protest goers, experienced participants were particularly likely to prime their protest participation with online information. On Facebook, they acted as recruitment agents conveying calls for participation among peers (Mercea, 2014). To control for participation experience, we used the sum of declared past attendance at one or more protests other than the #rezist demonstrations. Moreover, we considered gender as a predictor of participation. Contrary to prevailing indications (Verba, Schlozman, & Brady, 1995), female students were more likely to participate in the 2011–2012 wave of protests than their male counterparts.

Equally, like their counterparts in other democratic countries (Hooghe & Marien, 2013), participants in those protests were likely to be distrustful of key social and political institutions—to wit, the central government, Parliament, the judiciary, or the church (Burean & Badescu, 2014). We measured trust in institutions with 14 survey items. With the aid of the Factor program (Lorenzo-Seva & Ferrando, 2013), we reduced the number of dimensions to four. A combination of polychoric correlation matrices and principal component analysis resulted in trust in government, trust in the Parliament, trust in the church, and trust in the National Anticorruption Department loading on the four identified factors after scoring values above a random distribution.

In addition, we controlled for the observed disposition among young people—counting student participants in the 2012 protests (Burean & Badescu, 2014)—to refrain from voting. Those same students were likely to hail from families with lower incomes, thereby verifying the time-honored relative deprivation hypothesis (Orum, 1974). Students' civic participation has moreover been associated with their parents' education, with children of university-educated parents being more likely to be civically active than those of non-university-educated parents (Crossley, 2008). Age was excluded as a control because of the small variation in this item; 89% of students were 20–24 years old. Finally, we measured student income as the amount of money spent in a month, binned into four categories from low to high: RON 0–500 (US$125); RON 501–1,000; RON 1,001–3000; and RON 3,001 or more. Summary statistics for the independent variables are provided in Table 1.

Table 1. Descriptive Statistics for the Independent Variables in the Logistic Regression Models.

Variable	*N*	Min	Max	Mean	*SD*
TV or radio news consumption	1449	1.00	6.00	3.00	1.51
Used Internet for political information	1447	1.00	6.00	3.01	1.66
Posted calls for protest participation on social media	1543	1.00	2.00	1.26	0.44
Posted a protest-related comment on social media	1546	1.00	2.00	1.29	0.45
Placed *#rezist* on profile photo	1537	1.00	2.00	1.11	0.31
Joined a Facebook protest event page or group	1541	1.00	2.00	1.26	0.44
Distrust of government	1622	1.00	4.00	3.27	0.73
Distrust of parliament	1619	1.00	4.00	3.28	0.72
Distrust of the church	1602	1.00	4.00	3.03	0.99
Trust in the National Anticorruption Department	1622	1.00	4.00	2.43	0.90
Protest participation experience	1498	1.00	2.00	1.31	0.46
Voted	1576	1.00	2.00	1.56	0.49
Applied political knowledge	1058	1.00	2.00	1.30	0.46
Discipline	1659	1.00	2.00	1.43	0.49
Gender	1540	1.00	2.00	1.37	0.48
Income	1537	1.00	3.00	2.01	0.62
Mother's education	1530	1.00	2.00	1.39	0.48
Father's education	1507	1.00	2.00	1.37	0.48

We used NodeXL Pro and the Facebook's developer application programming interface (the Graph API) to gather all activity on Facebook event pages associated with the #rezist protests between January 16, 2017—two days before the first set of demonstrations—and March 7, two days after activists publicized their last protests at the start of that year. We retrieved the event pages from an index, activists published on the website www.undeprotestez.ro. The resulting data set comprised 48 event pages linked to the four cities examined in this study—Bucharest (29 pages), Cluj (14), Oradea (1), and Timisoara (4). The pages were public, accessible even by Facebook nonusers. We thus thought it reasonable to assume that the Facebook users active on those pages were cognizant of the publicness of the outlets (Markham & Buchanan, 2012). In our analysis, we only report on aggregated, anonymized data.

To map the content circulating on the protest event pages (H2), we used the topic modeling latent Dirichlet allocation algorithm (LDA; Blei, Ng, & Jordan, 2003). LDA is a "bag-of-words" approach to determining the probability that words from multiple documents cluster together into latent topics (Carley, Pfeffer, Reminga, Storrick, & Columbus, 2013; Nikolenko, Koltcov, & Koltsova, 2017). It enabled us to treat the 48 event pages (N = 29,517 unique posts and comments)—as a collection of documents wherein we identified the topics that spanned them. The composition of a topic can be controlled to include terms co-occurring most frequently through the manipulation of the Beta (β) parameter. On the other hand, the number of topics (*k)* to be selected is specified by the researcher who decides the number of times to run the algorithm to ascertain which are the most recurrent topics across all documents (Freelon, McIlwain, & Clark, 2016). To this end, we performed a sensitivity analysis wherein the number of runs was varied (1,000–5,000) alongside the β parameter and the number of topics.

The final number of topics reported is nine, following 15 iterations with *k* values ranging from 2 to 16 and a β set to 0.3, which was the lowest value constraining the algorithm to include only the terms with the highest probability of being most closely clustered together. The LDA-modeled topics were generated in ORA (Carley et al., 2013). In the last step, topic coherence was checked manually by the authors, who assigned topic labels heuristically so as to summarize the observed association between the words and to relate it back to the theoretical interest in the supply of information about the protests (Maier et al., 2018; Mohr, Wagner-Pacifici, Breiger, & Bogdanov, 2013).

To test H3, we examined the structure of #rezist event page networks. In those networks, an edge represented a link between two users (nodes, in network theory). To capture the largest number of connections among users within the interval January–March 2017, similarly to Smith and Graham (2019), we created an undirected edge between users *i* and *j* whenever they commented on, reacted to, or shared the same post. In the three resulting undirected networks, edges were assigned a weight representing the number of times two users were connected through such a link. Descriptive and network statistics for these co-comment, co-reaction and co-sharing networks are presented in Tables 2 and 3.

Table 2. Descriptive Page Statistics.

Network	No. co-comments	No. co-reactions	No. co-shares
Bucharest	47,383	4,029,124	185
Cluj	346	150,954	5
Oradea	599	183,194	1
Timisoara	31	22,581	4
Inner-city network	48,362	4,385,851	195

Table 3. Network Statistics: Node, Edge Count, and Density of the Comment, Reaction, and Sharing Networks

Network	Statistic	Bucharest event page network	Cluj event page network	Oradea event page network	Timisoara event page network	Inner-city network
Comment						
	Nodes	1,222	77	143	24	–
	Edges	9,792	256	461	22	–
	Density	0.013	0.086	0.045	0.080	
Reaction						
	Nodes	16,539	991	1,617	426	18,759
	Edges	3,513,749	147,607	169,127	21,536	4,345,539
	Density	0.026	0.301	0.129	0.238	0.022
Sharing						
	Nodes	55	6	2	4	64
	Edges	41	4	1	4	50
	Density	0.028	0.267	–	0.667	0.025

To probe for the presence of small worlds, we created 15 random networks for the comment, reaction, and sharing networks in each of the four cities and the intercity network of connections between them. We used the implementation of the Watts–Strogatz (Watts & Strogatz, 1998) small-world model in the Python package NetworkX (Hagberg, Schult, & Swart, 2008). The model requires a set number of nodes N with degree K, each connected in a circular lattice to its nearest neighbor. It rewires at random the edge of node i to node k with probability β that a node would be selected, such that there are no self-loops or duplicate edges. The number of nodes and edges and the average degree used in the random network are obtained from the observed network (Sajuria, van Heerde-Hudson, Hudson, Dasandi, & Theocharis, 2014).

An observed network is a small world if its average local clustering coefficient and mean shortest path length are comparable to those of the random network (Smith & Graham, 2019). In an undirected network, the clustering coefficient of the network is $C_n = 2e_n / (k_n (k_n - 1))$. k_n represents the number of neighbors of node n, while e_n is the number of connected pairs between all neighbors of n (Barabási & Oltvai, 2004). The average local clustering coefficient is the mean of the clustering coefficients of all nodes in that network. The shortest path is the shortest distance between selected nodes, measured as the smallest number of links connecting them. The mean shortest path is the average of the shortest paths between all pairs of nodes (Barabási & Oltvai, 2004).

In very small networks, the mean shortest path remains small in comparison with the shortest path length of the random network (Telesford, Joyce, Hayasaka, Burdette, & Laurienti, 2011). Ultimately, for an observed network to be a small world, it should have a high clustering coefficient (Telesford et al., 2011).

Findings

In 2017, a higher proportion of Romanian students said that they took part in a protest that year (39%) as compared with 2012 (25%; Burean & Badescu, 2014). At the outset, on the demand side, the regression analysis indicated that respondents' retrieval of political information increased the likelihood of protest participation (see Table 4). The relation between political information and protest participation was bifurcated. Sourcing political content online had a positive effect on participation, whereas the consumption of broadcasting news (radio and TV) bore a negative relationship to it. The effects recurred in all models.

On the supply side, the effect of one type of expressive activity on social media—commenting on the protests (Models 1 and 2)—disappeared when controlling for institutional trust. However, three other expressive acts—namely, the symbolic signaling of support for the protests by placing a #rezist hashtag overlay on one's profile photo; joining a Facebook event page; and airing calls for protest participation—increased the likelihood of participation. Next, we noted that applied political knowledge had no bearing on participation; nor did voting, higher education discipline, or any of the sociodemographic control variables.

Table 4. Predictors of Student Participation in the #rezist Demonstrations. *

	Model 1	Model 2	Model 3	Model 4
TV or radio news consumption	−.075***	−.063***	−.075**	−.086**
Used Internet for political information	.088***	.077***	.087***	.062**
Posted calls for protest participation on social media	.060***	.062**	.043	.065*
Posted a protest-related comment on social media	.061***	.051**	.026	.005
Placed *#rezist* on profile photo	.072***	.075**	.054*	.057*
Joined a Facebook protest event page or group	.112***	.105**	.067**	.074**
Distrust of government		.078***	.031	.030
Distrust of parliament		−.046*	.009	.017
Distrust of the church		.042*	.027	.029
Trust in the National Anticorruption Department		.057**	.078***	.089***
Protest participation experience			.139***	.134***
Voted			−.004	.002
Applied political knowledge			.035	.043
Discipline				.030
Gender				.046
Income				.040
Mother's education				.005
Father's education				.019
Nagelkerke R^2	.260	.292	.339	.351

*Dependent variable: protest participation * p< .05, ** p< .01, *** p< .001. Coefficients are standardized beta for logistic regression (see Heaton, Ciancio, & Williams, 2017).

In Model 4, which included all control variables, there were seven final predictors of participation. On the one hand, a one-standard-deviation increase in the use of the Internet for political information retrieval corresponded to a 6.2% higher probability of participation. The probability of participation likewise grew by 5.7% if students placed a #rezist hashtag overlay onto their profiles; if they posted calls for participation on social media (by 6.5%); if they trusted the National Anticorruption Department that spearheaded the institutional fight against graft in Romanian politics (by 8.9%); and if they had any previous experience participating in a protest (by 13%). On the other hand, gleaning information from broadcasting sources decreased that probability by 8.6%. Importantly, these predictors should not be interpreted as causing participation. Instead, controlling for key sociodemographic factors, they provide an indication of the extent to which these theoretically salient variables interact with the probability of participation positively or negatively. These results are discussed further in the final section.

Second, the LDA topic modeling (see Table 5) revealed that communication on the 48 event pages combined information outlining the political case for collective action, its aims, and its orchestration on the ground. To take these in turn, all but one of the topics (Topic 6) referenced the political character of the protests. Topics 1, 2, 5, and 7 supplied content for an informed case for collective action. The content pertained to political institutions, the processes set in motion by the drive to amend the anticorruption laws, and the opposition to it. Critical in tenor, the topics displayed a preoccupation with the legislative process

embarked on by the Romanian government. Described as an amputation of the country's anticorruption laws, the process was berated for bypassing parliamentary and public scrutiny by means of a streamlined emergency ordinance introduced by the government.

Table 5. LDA-Modeled Latent Topics.

Topic 1	Facebook, Oradea, come, PSD, street, Unirii, participate, tell, ordinance, EU, judgement, government, OUG, resist, give, positions, penal, is, Cluj, protest
Topic 2	Facebook, event, citizens, street, do, be, Sunday, public, government, right, protests, state, events, the people's, see, want, government, corruption, kill, defend
Topic 3	Victoriei, Facebook, audiovisual, event, play, generates, resistance, draw, law, code, do, television, constitution, CNA, regulation, disinformation, Sunday, resignation, see, protests
Topic 4	banner, Facebook, protest, be, see, street, people, Romania, can, meet, seeing, event, corruption, only, help, delimit, transmit, parliament, Victoriei
Topic 5	Protest, Facebook, are, do, change, public, see, corruption, be, kill, event, citizens, Sunday, want, begin, down, street, come, scandal, power
Topic 6	Sunday, Facebook, square, flag, street, Cluj, fight, celebrate, resistance, win, Unirii, , Bucharest, initiative, Victoriei, resist, tri-color, European, union
Topic 7	Right, Sunday, liberty, citizens, do, European, civic, gather, needs, be, authority, politics, expression, rights, people, public, Opera, help, education, resist

Note. The Social Democratic Party was the party in government in 2017. PSD = Social Democratic Party; EU = European Union; OUG = emergency ordinance; CNA = National Audio-Visual Council.

Terms evoking the specter of government curbs on anticorruption legislation were associated with language invoking collective action. Collective action was depicted as an opportunity to both face off the threat of the emergency ordinance being successfully brought into force by the government and to emphasize the rights-based and civic character of the protests opposing the proposed legislative change. Moreover, in Topic 3, collective action was portrayed as a chance to raise cognate public concerns with the media coverage of the protests and the degree to which the national audiovisual regulator (CNA) upheld statutory reporting standards.

Topic 6 was exceptional in that it referenced ideas for how to keep the momentum of a rolling protest going. It included practical tips for protest goers to carry Romanian (tricolor) and EU flags as a symbolic gesture celebrating the country's membership in a political union defined by the rule of law. In addition, Topic 7 further exposed an interpretation of the protests as a civic event where participants exercised a democratic right to hold authorities accountable by expressing their opposition to the planned amendment to the law. Finally, and notably, the term "Facebook," present in all but Topic 7, was a placeholder for Facebook-shortened URLs that users posted to supplement the content of their posts (similarly, see Poell & Borra, 2012).

Third, we examined the structure of the comment, reaction, and sharing networks. An inspection of network densities (i.e., the ratio of observed as opposed to maximum possible connections in a network) alerted us to the low density of both the city and intercity networks. This suggested that the networks were

sparsely connected. The exceptions were the Cluj reaction network, which exhibited a higher, albeit moderate, density, and the Timisoara sharing network, which was the second smallest subnetwork.

The small-world structures we expected to find were present in two of the five city comment networks (in Bucharest and Cluj; see Figures 1a and 1b) and in all the reaction networks (see Table 6). There was no intercity comment network, meaning that we found no connections among commenters from different cities. The absence of an intercity comment network was a strong indication that users did not contribute with comments to the supply of information between cities. The high clustering coefficient of two of the intracity networks alluded to commenters in Bucharest and Cluj being locally connected into close clusters, whereas shorter mean path lengths than in the random models denoted the presence of hubs (i.e., highly connected nodes linking many pairs of nodes).

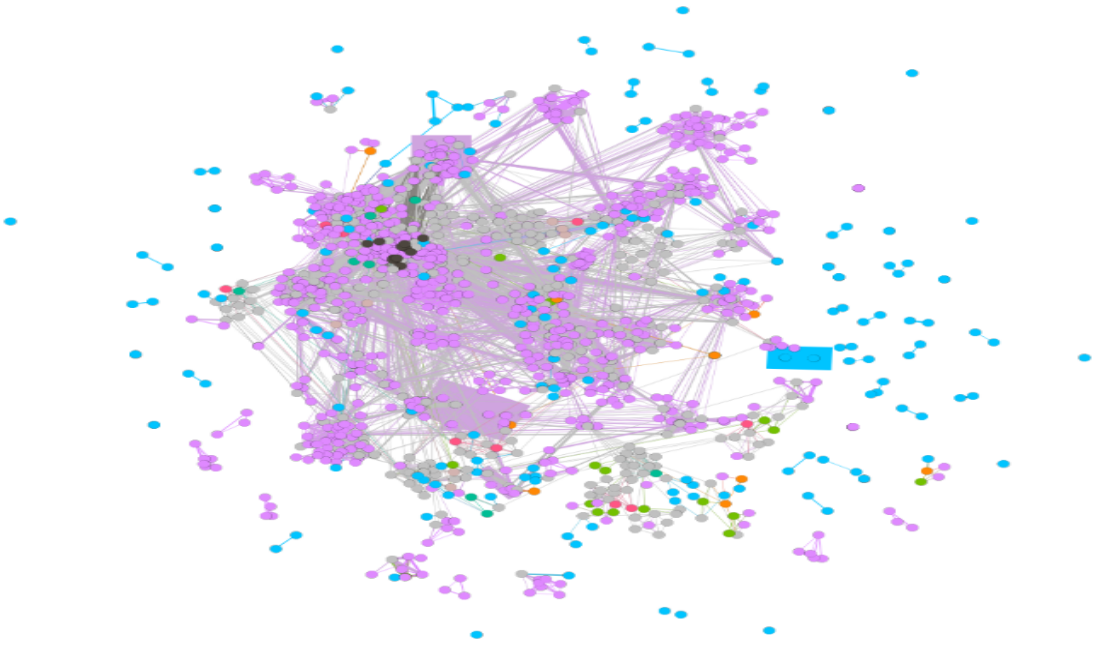

Figure 1a. Undirected Bucharest comment subnetwork grouped by average local clustering coefficient.

Because the Watts–Strogatz (1998) model does not account for the existence of hubs in a network, we used the preferential attachment model to test for this supposition.[2] In both cases, the mean shortest path lengths were greater than those of the random networks generated by the preferential model. We therefore surmised that although hubs were present in the Bucharest and Cluj comment networks, they were not governed by a power law distribution of a few large hubs and a long tail of nodes connected to them.

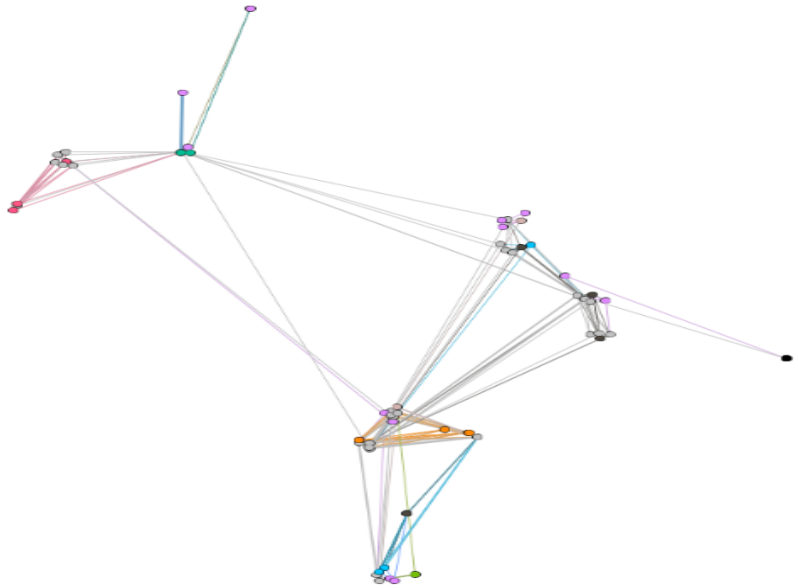

Figure 1b. Undirected Cluj comment subnetwork grouped by average local clustering coefficient.

The comment networks were smaller in size than the reaction networks. The reaction networks were all small worlds. As theorized, they were characterized by high average clustering coefficients and mean shortest paths of nearly the same length as those of the random networks. As in the case of the comment networks, we noted the presence of hubs, but no clear-cut power law distribution of the nodes (Table 6).

[2] The Barabási-Albert (BA) preferential attachment model is a scale-free random graph model that starts with a small network G(*n*,*m*)—with *n* the number of nodes with a degree of at least 1, and *m* the number of edges—to which new nodes are added with probability p_i, such that $pi = \frac{k_i}{\sum j \, k_j}$. BA outputs hubs that attract increasingly more edges, whereas nodes with fewer edges become increasingly less likely to acquire new edges.

Table 6. "Small World" and Preferential Attachment Metrics for Observed and Random Networks (in brackets, p = 0.01).

Small world						
	Co-commenter networks		Co-reactor networks		Co-sharer networks	
Network	Average local clustering coefficient	Mean shortest path length	Average local clustering coefficient	Mean shortest path length	Average local clustering coefficient	Mean shortest path length
Bucharest	0.741	3.831	0.799	2.233	0.430	1.293
	(0.682)	(6.251)	(0.726)	(2.733)	(0)	(1.284)
Cluj	0.707	2.956	0.909	1.790	0.5	1
	(0.568)	(5.199)	(0.727)	(1.727)	(0)	(0)
Oradea	0.568	3.443	0.783	1.947	0	0
	(0.590)	(7.610)	(0.724)	(2.267)	(0)	(0)
Timisoara	0.333	1.12	0.868	1.771	0.583	1.333
	(0)	(6.260)	(0.722)	(2.049)	(0)	(1.333)
Inner-city	–	–	0.797	2.310	0.432	1.338
	(–)	(–)	(0.726)	(2.777)	(0)	(1.628)

Preferential attachment				
	Co-commenter networks		Co-reactor networks	
Network	Average local clustering coefficient	Mean shortest path length	Average local clustering coefficient	Mean shortest path length
Bucharest	0.741	3.831	0.799	2.233
	(0.727)	(1.727)	(0.109)	(1.949)
Cluj	0.707	2.956	0.909	1.790
	(0.264)	(2.00)	(0.538)	(1.579)
Oradea	–	–	0.783	1.947
			(0.318)	(1.774)
Timisoara	–	–	0.868	1.771
			(0.466)	(1.637)
Inner-city	–	–	0.797	2.310
			(0.097)	(1.957)

Finally, the smallest in size, the sharing networks, did not resemble small worlds. Sharing was the least common of the three types of diffusion activities. None of the sharing networks were small worlds, reflecting that deliberate acts of dissemination that would have added to the supply of information were rare among event page followers. The implications of these findings are considered in the next section.

Discussion and Conclusions

In early 2017, the #rezist protests swept across Romania. In this study, we focused on four university centers with concentrated important populations of students and Facebook users. We sought to ascertain the degree to which political information influenced student participation; the extent to which political information was available on the Facebook event pages associated with the protests; and how the structure of the public domain established with those pages affected its diffusion.

An important protest demographic in Romania in the last decade, students were more likely to participate in the #rezist demonstrations if they engaged in symbolic rather than verbally expressive acts, such as placing a #rezist overlay on profile photos or joining a Facebook protest event page. An expressive act, the use of profile picture overlays can be regarded as a symbolic vehicle for signaling support for a political issue (State & Adamic, 2015) that we evinced was related to a greater probability of participation in street protests. Thus, contrary to our expectations, student protesters were not more likely than nonparticipants to contribute to the supply of information about the protests (i.e., with comments on social media), nor were they more likely to possess applied political knowledge. Yet, corroborating H1, participants were more likely to have political information that they sourced online rather than from broadcast media.

Second, we evidenced that political information was prominently available on the #rezist Facebook pages. Student participants were likely to follow such pages, thereby becoming exposed to this supply of political information. On those pages, only reactions to posts and comments formed small worlds within both intracity and intercity networks. H3 was confirmed for only two of the four city subnetworks where comment small worlds occurred. None of the sharing networks were small worlds. We concluded that the public supply of information remained local to city subnetworks, with only reactions to it generating a networkwide small world, facilitating effective intercity diffusion.

Reactions did not add to the supply of information. Instead, they helped distribute the local stock of information—developed through posts and comments—within the wider public domain created with the event pages, and likely also in user ego networks, thanks to the visibility of user reactions on Facebook (Fox & Moreland, 2015). At the time of this study, the Facebook Graph API did not provide access to personal user networks for independent researchers to determine, for instance, the degree to which and how public information diffuses within ego networks.

Contrasting H2, we showed that political information was an integral rather than a subordinate element of the public communication associated with the #rezist protests on Facebook. Political information qualified the character and aims of the demonstrations, grounding them in their institutional context and justifying them through a critique of the erosion of legal norms at the hand of nominally democratic institutions. Together, the results have four theoretical implications regarding the relation between individual demand and public social media supply of political information on the one hand, and protest participation on the other.

First, on the demand side, political information accessed online appeared to make engagement, specifically in collective political action, more likely. An outstanding question to be examined concerns the

likelihood that the use of social media—not only to retrieve political information or express political ideas (cf. Valenzuela, 2013), but also to call for involvement in collective action—will advance the formation of basic (cf. Jung, Kim, & Gil de Zúñiga, 2011) and applied political knowledge.

Second, our results foreground political expressiveness. We suggest that Facebook profile photo overlays are a vehicle for symbolic political expressiveness associated with a greater likelihood of physical participation. Reactions to comments and posts are arguably likewise expressive acts that can act as effective means of public information diffusion on Facebook. Therefore, on the supply side, a theoretical proposition we put forward for testing is that while public ideas underpinning a movement may develop in comparatively smaller, local networks, their wider network diffusion on social media can happen effectively through expressive acts. Scrutinizing large bodies of content can furthermore shed light on the distinctive representations of a movement thus diffusing on social media.

Third, our findings both reinforce and carry forward the work of González-Bailón and Wang (2016) and Smith and Graham (2019) regarding the public circulation of protest-related content. Similarly, to the former, we found that the diffusion potential of social media networks is confined by offline factors, such as, in our case, location. Yet, by extending the analysis by the latter to include two additional technological affordances, we revealed a diffusion differential between affordances. The dissimilarity in diffusion, with reactions on the one hand, and comments and shares on the other, merits more scrutiny. Such interest would further be warranted by the relation, to which this research attests, of public Facebook communication to protest participation (see also Harlow, 2012). Future inquiries may take up the distinction between diffusion with the three technological affordances at local, intercity, and, wherever relevant, transnational levels to produce a more granular analysis of that relation, perhaps with a dedicated survey instrument.

Fourth, we have shed more light on the place of social media use of experienced protest participants (Mercea, 2014). The most likely #rezist attendees, experienced student participants, were a minority committed to collective action. They were not news omnivores (Mosca & Quaranta, 2016). Unlike unexperienced participants, they sourced political information online, which, alongside joining a Facebook protest event page or group, bore a systematic relationship to protest participation. On Facebook pages, we showed, they had the opportunity to retrieve pertinent political information. They were likely to rely on Facebook to express solidarity with the #rezist protests with a profile overlay, while at the same time actively eliciting the support of their social media peers. At scale, such public displays can increase the likelihood of participation by social media users exposed to them (cf. Margetts, John, Escher, & Reissfelder, 2011).

These findings invite renewed scrutiny of the assertion that the use of Facebook does not contribute to involvement in collective acts of protest (Theocharis & Lowe, 2016). While others have indicated that the general use of Facebook bears on participation in street protests (Valenzuela, Arriagada, & Scherman, 2014), we encourage a fresh consideration of social media also as recruitment platforms used to that end chiefly by experienced participants. Research can be dedicated to the question of whether experienced participants will moreover supply political information that enhances the political knowledge of their peers.

Finally, this study offers only a snapshot of a cross-section of participants in a set of rolling demonstrations, and the public diffusion of information in the Facebook protest event page network

associated with them. Its limitations—owing to the focus on the student subpopulation of #rezist protestors concentrated in four university centers in Romania and the Facebook protest event pages linked to those localities—restrict its generalizability. Rather than analyze independent behavioral observations gathered under experimental conditions, we have examined self-reports of information sourcing, social media use, and protest participation. Although the trade-offs between experimental and survey data have been spotlighted previously (Trussler & Soroka, 2014), the combination of data sources in this study is part of a burgeoning methodology linking behavioral self-reports to digital activity (Guess, Munger, Nagler, & Tucker, 2018). The logistic regression, topic modeling, and structural network analyses enabled us to connect demand-side actions, such as joining a public Facebook protest page or group, with supply-side insights into the availability of political information and its circulation on Facebook. Experiments tracking online user behavior could help us better understand the demand-supply relationship and its dynamics.

With the present research design, we do not account for all possible confounders of protest participation and cannot report on the degree to which there is a causal relationship between statistically significant predictors in the logistic regression and participation. For instance, we cannot determine the extent to which antecedents such as political interest guided sourcing political information online and whether it happened before or during the protests. Our key finding in this respect is that in the aggregate, sourcing political information online is associated with an increased likelihood of participation. Future studies could ascertain whether online information sourcing is a causal parameter of participation by testing for its influence on participation before and during protests. A panel study in the vein of Gil de Zúñiga et al. (2017) and a longitudinal network analysis (Snijders, 2005) can illuminate the evolution of protest participation and the diffusion of information in a network over time, leading to insights into shifting patterns of information demand and supply in rolling demonstrations extending over several months or years.

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