New Media and Political Participation in China

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Abstract

Integrating rational choice theory with the perspective of information ecology, this paper investigates how new media affect political participation in China. We follow Chong’s (1991) theory that, under conditions of low cost, high expressive benefits, and high likelihood of critical mass, collective action can turn a prisoner’s dilemma game into a coordination game. Extending this theory to the Information Age, we argue that the prevalence of new media enables those conditions and facilitates collective action. Using both survey and aggregate data, we specify multilevel models to estimate the effects of new media use and penetration on the propensity to protest. Our findings show that new media affect protest propensity through individual-level usage rather than aggregate-level penetration.

Key words: new media, information ecology, rational choice theory, political participation, collective action, China

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Introduction

In the past two decades, the proliferation of digital media technologies has enabled the wide dissemination of information and fostered engaged citizenship worldwide. Research on the impact of new media on political participation, however, revealed mixed results. Meta-analytical studies show that the positive effects of Internet are not substantial, and social media, for example, have only minimal impact in electoral campaigns (Boulianne, 2009, 2015; Skoric, Zhu, Goh, & Pang, 2016). In authoritarian regimes, some studies show that Internet use is positively related to citizens’ demand of democracy, expressive engagement, and collective actions (Chan & Zhou, 2011; Lei, 2013; Nisbet, Stoycheff, & Pearce, 2012; Tufekcwe & Wilson, 2012; Huang, Jiang, Su, and Han, 2014), while others show that new media use cannot provide any or strong positive impact on participation, and sometimes the relationship is negative (Breuer & Groshek, 2014; Groshek, 2009; Qi, Kong, & Zhao, 2013; Rod & Weidmann, 2015).

The caveats derived from varied relationships between new media and political participation in these studies urge us to cautiously define what type of political participation is under study and what new media stand for. Political participation, as a multifaceted concept, could be distinguished according to the type of influence it could exert and the amount of initiative and cost it requires (Verba and Nie, 1972). Though research focusing on China has differentiated modes of political participation in to civic engagement, expressive engagement, and collective action (see Chan & Zhou, 2011; Zheng & Pan, 2016; Zhou, 2015; Lei, 2013), there lacks an updated account of how new media influence collective action such as protest and demonstration in the past few years.

The simplified understanding of new media is also problematic. By suggesting the impact of new media on political participation can only be realized through individual use, previous studies tend to leave out the wider context where such effect is operated. It should be noted that the Internet could be used as a tool by the power holder to exert its coercive control over the citizens, thus restricting the room for mass political participation (Rod & Weidmann, 2015). As such, new media should not be understood as the isolated and quantified individual use among citizens, but it should be, in addition, conceived as a context and environment for the civic process, which involves both citizens and governments. In addition, new media consists of a wide variety of technologies. Previous studies based on large-scale survey data in China put much emphasis on how the use of Internet influences political participation, there lacks knowledge about the role of mobile phones in mobilizing and sustaining collective action in the country.

To address the above issues, the current study aims to investigate how new media
Internet, mobile phone) affect collective action in China. Specifically, the study proposes and tests two competing theses – rational choice model versus information ecology – to help understand the mechanisms of how new media, as individual-level usage as well as contextual-level penetration, influence protest participation in China. Drawing on the fourth wave of Asian Barometer Survey (ABS) data, the study employs the hierarchical regression models to examine the research questions and hypotheses. The findings show that new media impacts protest participation through individual-level usage other than contextual-level penetration. The study also displays varied effects of different digital media technologies on protest participation. Specifically, individual-level mobile phone use has a stronger effect on protest participation than does Internet use. In the following sections, we provide a brief overview of political participation in China, the two competing theses that buttress the empirical analysis. Then, we introduce the research design, including data, measurement, and model specification, present and discuss the empirical results in light of the theoretical implications and future directions.

**Political Participation in China**

Different from established Western democratic countries, political participation in China is lacking but developing. According to Paik (2011) and Shwe (1997), political participation refers to citizens’ action with the aim to influence the decisions of lower-level government. Political participation in China can be classified into two sub-forms: the institutionalized and non-institutionalized ones. The former involves acts that are allowed by the government, such as political discussion, voting in the village, and petition (Zhou, 2015; Paik, 2011). The latter refers to social protest, normally involving a spectacle of angry crowds who demand for rights and social change. Protests include a wide variety of repertoires, to name a few, sit-ins, illegal assemblies, parades, demonstrations, strikes, traffic blocking, and burning, among others (Tong & Lei, 2013). Protests often lead to disruptive results – such as conflicts, injuries, and deaths, which is more visible and impactful than institutionalized political participation.

This study focuses on the non-institutionalized political participation in China, namely, protest and demonstration. Despite the small number of participants in protests since 1990s in China, there emerged new patterns and scales of protests in recent years. For example, farmers and villagers are joined by the new middle class who are really concerned about the environment issues in China; at the same time, the street protests are complimented by Internet-based ones (Tong & Lei, 2013). Researchers argued that such a shift is partly due to the commercialization of media as well as the development of Internet and social media (Huang, Boranbay-Akan & Huang, 2016; Steinhardt & Wu, 2016). While most studies in China examined the linkage between new media and institutionalized participation (Zhou, 2015; Zheng & Pan, 2016), there lacks updated
knowledge of how new media prompt the occurrences of social protests in China. This study serves to unpack the new media-protest nexus in China in light of the rational choice theory and information ecology thesis.

**Rational Choice Model of Collection Action**

Rational choice theory has been widely used to explain the paradox of political participation (Aldrich, 1993; Blais, 2000; Finkel, Muller, & Opp, 1989). The theory assumes that humans are self-interest, short-term maximizers, and therefore, one takes an action only if the perceived benefit resulted from the action outweigh the cost associated with it. Political scientists have extended this theory and proposed the “calculus of voting” model to address the behavioral dynamics in voting behavior (Downs, 1957; Riker & Ordeshook, 1968). According to that, one must estimate the expected benefit and cost of voting before casting the vote. The expected benefit of voting could be the benefit one would gain when the preferred candidate wins and cost refers to the time and resources one invests to obtain and understand the information about the candidates for determining the preference. In addition to the cost and benefit, perceived probability of the decisiveness of the vote in leading to the preferred candidate winning the election comes into play (Blais, 2000). While the three components are widely examined in empirical studies, the evidence is far from conclusive (Green & Shapiro, 1996). Blais (2000) noted that given the cost of voting is minuscule, one may not calculate the benefit and cost before voting, which in turn brings about the limited explanatory power of rational choice theory in voting behavior. He pointed out that, however, the model may work better when the stakes are high, such as social protests.

In general, the decision to participate or not to participate in contentious collective action is basically the same as the one to vote or not under the framework of rational choice theory (Blais, 2000). That is, one will partake the collective action only if when the perceived benefit outweigh the cost. It should be noted that unlike voting, which is an institutionalized political act, collective action is often outside the institutional space and not legally protected by the government institutions. As such, the cost of attending collective action often involves negative sanctions, such as being arrested or injured by the police, in addition to the opportunity cost (e.g., time and resource). We should also bear in mind that the benefit associated with attending collective action would be more direct than that of voting, as the benefit from attending collective action may correspond to the improvement of the status quo; otherwise people will still suffer from the bad or deprived condition. According to the “byproduct theory” (Olson, 2009), another distinct quality of the benefit gained from attending collective action is the “selective incentives” that are only available to the attendants. Chong (2014) elaborates the idea by developing the concept of “expressive benefits” that activists receive from voicing their convictions,
affirming their efficacy, and sharing the excitement of a group effort. Concerning the element of perceived probability, researchers have combined the traditional “personal decisiveness” and proposed “the likelihood of group success” into the rational choice model (Finkel, Muller, & Opp, 1989). Therefore, one’s decision to join the collective action is shaped by the assessment of the probability that whether one joining or not would be decisive, and the probability if the group action itself is effective and successful.

As one’s perceptions of the cost and benefit as well as probability of decisiveness remain central to the decision to participate collective action, a key question is: what accounts for such perceptions? Some studies noted that media coverage about how close the election could be translated to one’s perception of the probability of decisiveness (Blais, 2000). In this study, we turn to individual use of new media and conceptualize it as an important mechanism that could be added into the equilibrium of rational choice model. Expanding on the existing literature (Lin & Su, 2014; Tufekcwe & Wilson, 2012; Xenos & Moy, 2007), this study argues that new media use could contribute to the refined calculation of cost, benefit, and the perceived probability of decisiveness with regard to collective action.

From an instrumental approach, new media considerably reduce the cost of information and communication and enable those who join the protests to spread their voices widely to the general public in an unprecedented way, which may in turn enhance their political efficacy. Therefore, those who use the Internet and mobile phone are more likely to reach the conclusion that joining the protests may not be that costly and it could bring about notable expressive benefits that are only available to them. Those who use the Internet and mobile phone are also more likely to overestimate the probability of decisiveness of one’s own participation as well as the likelihood of group success. As we can see, the crowdsourcing culture prevails a mentality that tiny efforts made by an unknown netizen would have the potential to break the power dynamics, and consequently, these anonymous individuals could collectively bring about social change (see Bruns, Highfield, & Burgess, 2013; Howard & Hussain, 2013). In the context of China, networked public could engender a reverse agenda setting effect to decide what’s important in news agenda and even hold the government and other responsible parties accountable in mass online incidents (see Jiang, 2014; Nip & Fu, 2016; Tong & Zuo, 2014). In this sense, new media users may form and hold such mentality that might lead them to overestimate the probability of decisiveness of their own participation as well as the likelihood of group success. As a result, they are more likely to participate in collective action. *We presented a formal model of our argument in the Appendix.*

Based on the above discussion, this study posits the following hypothesis:
H1: The use of new media (i.e., Internet and mobile phone) is positively related to the propensity to join collective action among individuals in China.

**Information Ecology for Collective Action**

Individual-level theories of collective behavior oftentimes run short in explaining contemporary collective action. Scholars have advocated tying the structural and the individual factors together when studying individual behavior (Bimber, 2000). In political science research, it is noted that individual attitudes and behavior operate within the institutional context, and institutional-level factors can, sometimes, compensate for or enlarge differences and gaps in attitudinal and behavioral outcomes at the individual level (Verba, et al., 1978). Similarly, communication scholars contend that studying the relationship between media use and participation should consider the role of social context, which “provides opportunities and imposes constraints on individuals’ micro-level associational behavior” (Shah, McLeod, & Yoon, 2001, p.466).

This study proposes the information ecology thesis to study how contextual-level new media environment structures collective action in China. The information ecology thesis discerns media and digital technologies as an infrastructure, which is a complex communication system that provides people with new orientation for thought, for expression, for sensibility, but also model and activate social practices (Postman, 1985; Scolari, 2012). Several strands of theories have advanced this line of thoughts. Media dependency theory (Ball-Rokeach & Defleur, 1976), for example, posits that “the capacity of individuals to attain their goals is contingent upon the information sources of the media system” (Ball-Rokeach, 1985, p.487). Building on that, Kim and Ball-Rokeach (2001) put forward communication infrastructure, a key concept that describes the local communication action context. The communication infrastructure consists of neighborhood discussion and local media, which in turn foster the sense of belongings and civic engagement. Another school of scholars argued that print news reading penetration, for instance, fosters a “a norm across a community is a precondition for the formation of a local print culture that then functions as a broader community resource” for civic participation (Paek, Yoon & Shah, 2005 p.590).

Regarding new media, empirical studies have explored how Internet penetration at the aggregate levels influences individual-level citizen engagement. For instance, citizens in geographical units (e.g., province, country) with higher Internet penetration display higher demands for democracy, civic engagement, and movements towards democracy (Groshek, 2009; Nisbet et al., 2012). Zhou’s study (2015) on Internet’s effect on civic engagement in China revealed that higher Internet penetration, by producing a better communication infrastructure and communication action context, increases citizen
engagement. However, when coming to contentious political action, new media penetration cannot provide any or strong positive impact on participation, and sometimes the relationship is negative (Breuer & Groshek, 2014; Groshek, 2009; Qi, Kong, & Zhao, 2013; Rod & Weidmann, 2015).

In the context of this study, information ecology should be understood as a context and environment for the civic process which involves both citizens and governments. As a matter of fact, the Internet could be used as a tool by the power holder to exert its coercive control over the citizens, thus restricting the room for mass political participation (Rod & Weidmann, 2015). In China, the Internet and other digital media are subjected to government control and the Chinese citizens may not be able to receive diverse information and express their opinions, especially the ones with the aim to mobilize citizens or threaten the regime (King, Pan & Roberts, 2013). One study, though not directly examining the effect of new media penetration, revealed that Internet penetration is negatively related to lodging petition in person in China, but positively related to petition in the forms of letters (Qwe et al., 2013). The findings suggest that the government proactively utilizes digital media to encourage the non-threatened letter-writing petition among the citizens so as to indirectly curb the confrontational physical petition. This lends us to expect that the higher penetration of new media may enable the government to be more cautious about contentious political action, and at the same time, to be more capable of curtailing such behavior through e-government and other institutional channels. Thus, we put forward the following hypothesis:

**H2**: The penetration of new media is negatively related to the propensity to join collective action among individuals in China.

**Parsing the New Media Effect: Internet and Cell Phones**

To the best of our knowledge, only a few researches have touched upon the varied effects of different new media technologies on protest participation. Tufekcwe & Wilson (2012), for instance, studied the different functions that media play in the political communication during Egypt uprisings. The study revealed that Internet provides a space for dissident content, social media connect and help form protest networks without being targeted, and mobile phone facilitates real-time transmission of multimedia content. While studies focusing on China have not explicitly examined the varied media effects of the Internet and mobile phones, researchers have provided some initial evidence of the distinct functions that different media technologies could play in the progress of social protests. Huang and Yip (2012), for example, found that Internet has at least four functional significance in collective action by serving as an information disclosure hub, a discussion platform, the mobilization structure, and a facilitator in locating external allies.
In the study on mobile phone and offline-protest, Liu (2015) summarized that mobile phone affords the metacommunication mechanism which “involves an engagement of reciprocal relationships, generates a sense of mutual engagement, and enhances a feeling of solidarity” (p. 503) beyond information dissemination.

Following these findings, the wide penetration of new media such as the Internet and mobile phone could arguably play crucial, but distinct, functions in fostering collective action through both individual usage and contextual penetration. To be more specific, Internet and cell phone are different in terms of the type and volume of information they provide and the communication capacity they have, due to their varied technological affordances and the levels of government control over them (see Table 1). Thus, the study asks the following question: How does the association between new media use/penetration and the propensity to join collective action vary across internet and cell phone?

(Table 1 about here)

Research Design and Methodology

Data Source

Testing the two competing hypotheses was carried out using data from the fourth wave Asian Barometer Data – China. The ABS data was collected by the Center for East Asia Democratic Studies at National Taiwan University (hereafter “the Center”) from December 2014 to June 2016 in Mainland China. The sample represents the adult population over 18 years of age residing in family household at the time of survey, excluding those living in the Tianjin City, Qinghawe Province, Tibetan, Ningxia, and Xinjiang Autonomous Regions. A stratified multistage area sampling procedure with probabilities proportional to size measures was adopted to select the sample. The original questionnaire was in English and it was translated to Chinese language in the survey in Mainland China. In total, project scheduled interviews with 4068 of the prospective respondents from 26 provinces, of which has as few as 23 (Inner Mongolia) and as many as 457 individual respondents (Guangdong province), with the median being 105.

To measure the aggregate-level factors, the study also included published government statistics on GDP, college degree holders, Internet penetration, and mobile phone penetration in the provinces in 2015 to correspond with the survey period. The data was obtained from the official website of CNNIC and Statistics Bureau of China.

Variables and Measurements
Our dependent variables include non-institutional forms of political participation, namely “attended a demonstration or protest march”, measured on a 4-point scale (1=I have done this more than once, 2=I have done this once, 3=I have done this, but I might do it if something important happens in the future, 4=I have not done this and I would not do it regardless of the situation). To ensure the robustness of the hypotheses testing, we operationalized the outcome variable into both continuous and dichotomous forms:

For the continuous form, we classified the outcome variable into three categories: those who have not done this and would not do it regardless of the situation (1), those who have not done this, but might do it if something important happens in the future (2), and those who have done this at least once (3). \(M = 1.37, SD = 0.52\).

For the dichotomous form, we classified the outcome variable into two categories: those who have not done this and would not do it regardless of the situation (0) and those who intend to do or have done before (1). (intend to do or have done: 34.9%)

Our independent variables include the following:

- Internet use: For individual-level Internet use, respondents were asked to indicate how frequently they used the Internet (1 = several hours a day; 8 = never). The variable was reversely coded to create an index of individual Internet use (\(M = 3.33, SD = 3.02\)).
- Internet penetration: For aggregate-level Internet penetration, provincial data was obtained from government statistics (\(M = 50.85\%, SD = 0.12\)).
- Mobile Internet use: Individual-level mobile Internet access was measured based on the question in the survey “Do you have Internet access on a mobile phone?” (Yes = 1, No = 2). The answers are reversely coded into binary variables (No = 0; Yes = 1)(mobile Internet = 44.4%).
- Mobile phone penetration: Aggregate-level mobile phone, penetration data was obtained from government statistics (\(M = 97.68\%, SD = 0.26\)).

We also included the following control variables

- Political news attention: Respondents were asked to indicate how frequently they followed news about politics and government (1 = everyday; 5 = practically never). The variable was reversely coded to form the measure of political news attention (\(M = 3.49, SD = 1.62\)).
- Political interest: Respondents were asked to indicate their levels of interest in politics based on a four-point scale (1 = very interested; 4 = not interested at all). The variable was reversely coded to form an index of political interest (\(M = 2.18, SD = 0.88\)).
• Political efficacy: Respondents were asked to indicate how much they agreed (1 = strongly agree; 4 = strongly disagree) with the following statement: I think I have the ability to participate in politics. The answer was reversely coded to form the index of political efficacy \( (M = 2.29, SD = 0.65) \).

• Political discussion: Respondents were asked to indicate how frequently they get together with their family members or friends to discuss political matters based a three-point scale (1 = frequently; 3 = never). The variable was reversely coded to generate the indicator of political discussion \( (M = 1.53, SD = 0.62) \).

• Social demographics: Based on previous studies, the study included the following socio-demographic variables as control variables: sex (male, 48.9%), age \( (M = 49.26, SD = 16.30) \), education (years of schooling, \( M = 7.25, SD = 4.63 \)), household income \( (M = 2.36, SD = 1.36) \), marital status (single, 10.2%), and urbanity (rural, 66.1%).

• Aggregate-level variables: Based on previous studies, the study also includes several other aggregate-level variables to indicate social economic development of the provinces. These variables include (1) GDP per capita \( (M = 52973.6, SD = 22290.79) \) and (2) college degree holders per thousand people \( (M = 208.5, SD = 103.04) \).

Model Specification

For the continuous form of the outcome variable, we estimated two hierarchical linear models examining the relationship among individual Internet use, mobile phone use, Internet penetration, mobile phone penetration, and protest participation. Note that we run separate models for the Internet and mobile phone use/penetration to avoid multicollinearity. All these models were random-intercept and random-slope full models, which enabled us to examine the independent influences of individual-level predictors and aggregate-level variables on the outcome variables, respectively.

Level 1:

\[
\text{Protest propensity} = \beta_0 + \beta_1(age) + \beta_2(gender) + \beta_3(education) + \beta_4(\text{household income}) + \beta_5(\text{rural}) + \beta_6(\text{single}) + \beta_7(\text{news attention}) + \beta_8(\text{political interest}) + \beta_9(\text{political discussion}) + \beta_{10}(\text{political efficacy}) + \beta_{11}(\text{internet use}) + \epsilon
\]

Level 2:

\[
\beta_0 = \gamma_{00} + \gamma_{01}(\text{Internet penetration}) + \gamma_{02}(\text{GDP}) + \gamma_{03}(\text{Education}) + u
\]
It should be noted that given the dependent variable is really ordinal in its scale of measurement, a more appropriate model is ordered logit/probit regression model. This model, however, requires the so-called “parallel regression” assumption to be true, as assumption that is not supported by our data. This is not surprising because of the few observations in the highest category (those who have participated in protest at least once or more). We, therefore, decided to collapse “I have done this at least once or more” and “I have not don’t this, but I might do it if something important happens in the future” into a single category to represent propensity to join collective action. We then estimated two multilevel logistic regression models to test our hypotheses. Similarly, we enter the corresponding Internet and mobile phone variables separately into two models to avoid multi-collinearity issues.

Level 1:

$$\ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1(age) + \beta_2(gender) + \beta_3(education) + \beta_4(household\; income) + \beta_5(rural) + \beta_6(single) + \beta_7(news\; attention) + \beta_8(political\; interest) + \beta_9(political\; discussion) + \beta_{10}(political\; efficacy) + \beta_{11}(internet\; use)$$

Level 2:

$$\beta_0 = \gamma_{00} + \gamma_{01}(Internet\; penetration) + \gamma_{02}(GDP) + \gamma_{03}(Education) + u$$

Results

Before testing the two competing hypotheses, it is necessary to describe the general pattern of protest participation in China. The result showed that 2.0 % of respondents have participated in protest at least once, and 32.9% of them have the intention to participate in protest if something important happens in the future. The rest 65.1% would not engage in any protest regardless the situation. Among all the province, Zhejiang (5.9%), Shaanxwe (4.3%), Hebewe (4.1%), Inner Mongolia (4.0%) and Hunan (4.0%) are the five provinces with the highest percentage of protest participants, while no respondents attended any protest in Shanghai, Jiangxi, Hainan, and Gansu.

The first major hypothesis was whether new media use has a significant effect on protest participation in China. After controlling for all the other individual-level and aggregate-level variables, Table 2 shows that the average slopes for protest participation are still significant (Model 1: Beta = 0.013, p < 0.05 for Internet use; Model 2: Beta = 0.113, p < 0.001 for mobile phone use). However, the two aggregate-level new media
penetration factors (both Internet and mobile phone penetrations) as well as the provincial social development indicators are not significant predictor of protest participation.

(Table 2 about here)

We also ran the hierarchical logistic regression models to conduct the robustness check. As shown in Table 3, the result holds true that individual-level new media use variables are significant factors for protest participation (Model 3: Beta = 0.047, p < 0.05 for Internet use; Model 4: Beta = 0.470, p < 0.001 for mobile phone use) when holding all the other factors constant. On a similar note, the two aggregate-level new media penetration factors (both Internet and mobile phone penetrations), along with other contextual predictors, are not significantly associated with protest participation.

(Table 3 about here)

Taken the results from both the hierarchical linear regression and hierarchical logistic regression models together, we conclude that the results are in favor of the rational choice model (H1 is supported), while the information ecology thesis (H2) is not supported. In other word, the results from analyzing the ABS data indicate that the impact of new media on protest participation is operated through individual-level usage rather than contextual level information ecology in the context of China. With regard to the research questions, the study only confirms that mobile phone use has a stronger effect on the propensity to join protests than has Internet use.

Discussion and Conclusion

Based on the fourth wave of Asian Barometer Survey data in China, the study tests the two competing theses – rational choice model versus information ecology thesis to understand the mechanism of how new media influence protest participation in the context of China. Specifically, the study operationalizes new media as individual-level usage as well as contextual-level penetration and employs hierarchical regression models to analyze the data. The findings show that new media impacts protest participation through individual level usage other than contextual level penetration. Furthermore, this study displays varied effects of different new media technologies, in which individual-level mobile phone use has a stronger effect on protest participation than Internet use.

The above findings have several theoretical implications. To begin with, the overall results are in favor of the rational choice model rather than the information ecology thesis. It indicates that Internet or mobile phone users in provinces with higher new media penetration will not demonstrate significant differences with regard to protest participation from those living in areas with lower new media penetration. In contrast to
previous studies (Zhou, 2015), the non-finding of media ecology thesis may reflect the fact that unlike those ubiquitous civic practices such as civic engagement and expressive engagement, protest, however, is still a very rare and risky type of civic participation in China. It not only requires higher levels of social grievances, but also demands networked coordination and collective mentality to enact protest or demonstrate (Van Laer, 2010). This echoes findings in the West that it is hard for protest behavior to diffuse to new social groups (Caren, Ghoshal, & Ribas. 2011).

Based on our findings, the development of new media would not encourage ubiquitous protests among all citizens. Instead, new media could only benefit those who adopt and use the Internet or mobile phones quite frequently. The non-finding of the contextual level of new media penetration also implies that new media in China do not seem to create a viable communication action context for protest participation. Through early studies on the negative association between Internet penetration and the confrontational physical form of citizen petition indicate government’s ability to integrate the digital media into its governance (Qwe et al., 2013), the current study challenges the “repression technology” thesis that the government seem not able to take advantage of the networked technologies to curtail the protests that are outside institutional space.

What’s more, the study contributes to the existing literature on mobile technologies in leading to collective action. Unlike Internet, mobile technologies feature some distinct technological affordances, which largely facilitated interpersonal communication and protest coordination in real-time. Previous studies show that mobile phone play an indispensable role in communicating protest-related information in authoritarian regimes (Hussain & Howard, 2013; Liu, 2013, 2015; Tufekcwe & Wilson, 2012). SMS, for example, was used to mobilize Chinese youth for anti-Japanese protests in May 2005, and enact civil protests in 2003 SARS epidemics (Lu & Weber, 2007). What’s more important, censoring posts received on mobile phones become impossible in the context of China; instead it triggers follow-up communication and contributed to the so-called mobile public sphere in China (Rauchfleisch & Schafer, 2014). The findings of the current study are in line with the arguments on mobile phones’ mobilizing effect in protest participation.

Last but not least, the current study suggests directions for future research. First, the study uses province as the sub-unit of the hierarchical modeling, which potentially neglects the possible variation within the province. Future research should divide the geographical spaces into more homogenous sub-unit, such as city, village, and neighborhood, to tease out the contextual level effects in a more precise manner. Next, the study only examines the random intercepts model and does not take into consideration of how aggregate-level factors interact with individual-level predictors and
thus influence the outcome variables. Future research should explore the interaction mechanism of cross-level factors, which will contribute to theory building. Furthermore, we also advocate researchers to expand the empirical scope of this study in the two following ways. On one hand, it is important to consider the temporal dynamics of new media effect in China. We argue that new media may induce the effects on protest participation differently in times between when the technology was firstly introduced to the regime and when the technology reached the saturation level, as for now. We believe that the momentum of new technology in mobilizing collective action would be lost at the later stage of the adoption. On the other hand, we also hope researchers to apply the two competing theses to other countries, which would certainly offer new insights on how new media influence collective action.
Appendix. How Media Use Facilitates Participation: A Formal-Theoretic Model

The n-Person PD Game Model of Participation

We first follow Schelling’s (1978) and Bendor and Mookherjee’s (1987) models of n-person prisoner’s dilemma in making the following assumptions:

1. There are \( n \) members of a group, \( i = 1,2, \ldots n \).
2. A member can either participate (cooperate) or free-ride (defect). Let \( k_i \) denote whether member \( i \) is participating \((k_i = 1)\) or free-riding \((k_i = 0)\).
3. The participating member bears a cost, \( c \).
4. Collective benefits to be shared by all members increase linearly in the contributions of participants, at a rate of \( b \) per participant.
5. \( b/n < c < b \).

Under assumptions 1-4, the utility for member \( i \) is

\[
U_i = \left( \frac{b}{n} \sum_{j=1}^{n} k_j \right) - c k_i
\]

Assumption 5 makes the situation a prisoner’s dilemma game as illustrate by the Schelling diagram in Figure 1. In this game, every member free-riding is the unique Nash equilibrium but it is not Pareto-optimal.

(Figure 1 about here)

The n-Person Coordination Game Model of Participation

Chong (1991) argues that the traditional free-rider problem of collective action can be avoided when expressive benefits are considered. Expressive benefits are benefits that activists receive in voicing their convictions, affirming their efficacy, sharing the excitement of a group effort, taking part in a historical moment, etc. Expressive benefits are selective benefits, i.e., they are available only when one participates. Moreover, expressive benefits increase with the number of participants. Following Chong’s theory, we add another assumption:

6. A participant receives an expressive benefit at the rate of \( b' > 0 \) per other participant.

The utility for a typical member now becomes
\[ U_i = \frac{b}{n} \sum_{j=1}^{n} k_j + \left( \frac{b'}{n} \sum_{j=1}^{n} k_j \right) k_i - ck_i \]

When \( k_i = 1 \), the utility for a participating member \( i \) is

\[ U_i = \left( \frac{b}{n} + \frac{b'}{n} \right) \sum_{j=1}^{n} k_j - c \]

When \( k_i = 0 \), the utility for a free-riding member \( i \) is

\[ U_i = \left( \frac{b}{n} \right) \sum_{j=1}^{n} k_j \]

Note that, with the addition of expressive benefits, the marginal utility of participation, \( b/n + b' \), is greater than the marginal utility of freeriding, \( b/n \). Consequently, it is now possible that the two utility curves in the Schelling diagram can intersect at

\[ \sum_{j=1}^{n} k_j = \frac{c}{b'} \]

A condition for this to happen is

7. \( 0 \leq \sum_{j=1}^{n} k_j = c/b' \leq n \) or \( 0 \leq c \leq nb' \)

That is, the cost of participation must not be greater than the total expressive benefits a participant receives when all members participate. When the condition is true, the PD game becomes a coordination game. When the number of total participants exceeds \( V = c/b' \), the utility of participation exceeds the utility of free-riding. \( V = c/b' \) is the so-called critical mass. There are two stable Nash equilibria in this game: all members participating and all members free-riding.

(Figure 2 about here)

If the critical mass is reached, all members participating is a Nash equilibrium, at which a participant receives \( \left( \frac{b}{n} + b' \right) n - c = b + nb' - c \) while a free-rider receives \( b \). If the critical mass is not reached, all members free-riding is a Nash equilibrium, at
which a participant receives \(-c\) while a free-rider receives 0.

Suppose the probability of reaching critical mass is \(p\) and the probability of not reaching critical mass is \(1 - p\). The expected utility of a participant is \(E(C) = p(b + nb' - c) + (1 - p)(-c)\). The expected utility for a free-rider is \(E(D) = p(b) + (1 - p)(0)\). A rational member will participate if \(E(C) - E(D) = pn b' - c > 0\), or \(p > c/nb'\). That is, a rational member is more likely to participate under these conditions: (1) lower participating cost, (2) higher expressive benefit, and (3) higher probability of critical mass.

Why New Media Can Facilitate Political Participation

According to this model, we argue that new media can facilitate the conditions for collective action as a coordination game. The reasons are as follows

1. New media decrease participation cost \(c\) because of the ease to communicate and coordinate.
2. New Media increase expressive benefit \(b'\) because of the ease to reach out to many.
3. New media increase the probability of critical mass \(p\) because the size of critical mass \(V = c/b'\) becomes smaller.
4. New media increase the perceived probability of critical mass \(p\) because people tend to use their homogeneous social media network as a reference base.

Building on this model, Lin and Su (2014) conducted empirical tests for the effect of new media on protests using aggregate-level cross-national data and time-serial Taiwan data. Their results show that new media penetration can indeed explain the variation in frequency of protests. Lin and Su (2014) did not conduct tests at the individual level.

The extent to which this empirical relationship hold true in authoritarian China remains a puzzle, however. Protests are not only costly but also risky for citizens in China. The willingness to join a protest is thus shaped through individuals’ rational and careful calculation of costs and benefits derived from protest participation. Therefore, protests in China, as a high cost political activity involving a large group of people, prove to be an ideal candidate for rational choice theory. The wide penetration of new media enables Chinese citizens to receive great amount of information, monitor the political environment, express their opinions online, and expand their social networks. These promising aspects of new media may seemingly lead us to conclude that the prevalence of new media could make reaching critical mass easier and faster, and, in turn, facilitate
collective actions. However, the Chinese government tends to curtail information that could mobilize collective action (King, Pan & Roberts, 2013). In such a way, the blockage of protest-related information might impede such mechanism theorized by Lin and Su (2014). Whether the theory is applicable to political participation in China thus remains to be tested.
References


### Table 1 Parsing the new media effect: Internet and mobile phone

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<tr>
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<tr>
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<td>Volume</td>
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<td>Close</td>
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<tr>
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<td>High</td>
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<tr>
<td>Government control</td>
<td>Tight</td>
<td>Loose</td>
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Table 2: Hierarchical linear regression models predicting protest participation

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<th></th>
<th>Model 1 Beta (SE)</th>
<th>Model 2 Beta (SE)</th>
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<td><strong>Individual-level fixed effects</strong></td>
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<td><strong>Aggregate-level fixed effects</strong></td>
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Note: Cell entries for fixed effects are linear regression coefficients with robust standard errors in parentheses. *p<0.05; **p<0.01; ***p<0.001
## Table 3: Hierarchical logistic regression models predicting protest participation

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Note: Cell entries for fixed effects are logistic regression coefficients with robust standard errors in parentheses. *p<0.05; **p<0.01; ***p<0.001
Figure 1. Utility for Free-Riding vs. Participating in N-Person Prisoner’s Dilemma
Figure 2. Utility for Free-Riding vs. Participating in N-Person Coordination Game