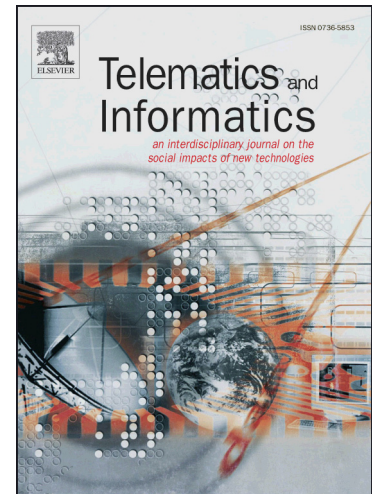# Journal Pre-proofs

Examining the roles of social media and alternative media in social movement participation: A study of Hong Kong's Umbrella Movement

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Examining the roles of social media and alternative media in social movement participation: A study

of Hong Kong's Umbrella Movement

Abstract

During the recent wave of pro-democracy movement across the world, new media technologies play

a vital role in mobilizing participants. Much scholarly attention has been paid to the role of social

media in empowering grassroots movements, but the rise of alternative media was somehow

ignored. This study examines the impacts of social media and alternative media on social movement

participation. The data came from a survey of 769 students from eight public universities in Hong

Kong at the height of the Umbrella Movement. The findings revealed that acquisition of political

information from social media and alternative media is associated with social movement

participation through different mechanisms. Specifically, social media serve as an echo chamber

where people are motivated to participate by perceiving a homogeneous opinion climate and

forming a pro-protest attitude. In contrast, alternative media serve as an attitude intensifier to

facilitate social movement participation.

Keywords: social media, alternative media, social movement participation, the Umbrella Movement

Examining the roles of social media and alternative media in social movement participation: A

study of Hong Kong's Umbrella Movement

Introduction

The recent wave of pro-democracy movements in many parts of the world would not be that influential or even possible without the help of new information technologies. Many of these movements display unique characteristics that differentiate them from conventional forms of engagement: occupying public spaces by unplanned and spontaneous actions (Bennett and Segerberg, 2012). The new social movements operate in a decentralized way made possible by digital media technologies that can be used to connect and to mobilize individual citizens (Tufekci and Wilson, 2012).

Researchers have argued that digital media should not be considered as a monolith because different types of new media outlets exert varying levels of influence over individual actions (Pasek et al., 2009). In recent years, scholarly attention turns to the growth of online alternative media, and many studies examined the content of alternative media. But few have explored the impacts of exposure to alternative media on social movement participation (Downing, 2000). Alternative media are characterized as critical and radical: they challenge the dominant power in society and have an intertwined relationship with protest groups (Downing, 2000). Due to such content features of alternative media, alternative media use seems to be capable of facilitating individuals' social movement participation by cultivating alternative political cognition and attitude such as oppositional knowledge and support for civil disobedience (Lee, 2015a; Leung and Lee, 2014).

In contrast, the implications of social media use on social movement draw substantial attention from communication scholars. Research finds that social media use in general facilitates political engagement by providing political information, stimulating discussions, and maintaining social networks (Skoric et al., 2016). The informal social network embedded in social media is one of the most important sources to mobilize individuals to join social movement (Tufekci, 2013). The filtering function of social media helps individuals to form a social network with the like-minded individuals. Within such an environment, socio-psychological factors such as sense of collective identity and perception of opinion climate facilitate individual involvement in social movement (Zhu et al., 2017).

Against this background, we aim to examine the role of social media and alternative media in terms of political information acquisition for social movement mobilization. Drawing upon the theory of reasoned action (Ajzen and Fishbein, 1980), we include two important psychological mediators that connect media exposure to participation action: perception of opinion climate supporting social movement and attitude towards social movement. In ensuing discussions, we first review existing studies on social media, alternative media, and social movement participation. We then introduce a theoretical model that incorporates acquisition of political information from both media outlets along with two mediating variables to explain social movement participation. Finally, we present and analyze our data collected from a survey of 769 students from eight public universities at the height of the Umbrella Movement in Hong Kong.

Social media and social movement

One strand of research points to the insurgent and anti-establishment role of social media in social movement worldwide because social media could be used for obtaining protest-related information, forming insurgent informal networks, and mobilizing individual participation (Bennett and Segerberg, 2012; Gil de Zúñiga et al., 2010; Lee et al., 2015; Valenzuela, 2013). First, social media serve as an important source of social movement information. Political information such as protest-related information is more accessible on social media than on traditional media given the lower cost of information transmission and the less severe censorship by government (Chen et al., 2019; Coopman, 2011). On the one hand, movement groups are relatively safe from government surveillance on social media and therefore could disseminate factual information about protest reach a wider public (Tsui, 2015). On the other hand, users can not only obtain information from movement groups, but also produce and disseminate first-hand news about protest on social media. Obtaining factual information including identificational (e.g., names and contact information of protest leaders), locational (e.g., time and place of a protest), and tactical (e.g., explicit and implicit instructions on how to participate) information is one of the necessary objective conditions for protest participation (Harlow, 2012; Valenzuela, 2013).

Second, political information constitutes important materials for further communication such as opinion expression, discussion, and deliberation on social media (Shirky, 2011). By discussing political and public affairs with other users, individuals process information more deeply and

elaborate their own viewpoints in a more rational way (Lee et al., 2017; Skinner, 2011). Such

communication process helps strengthen individuals' political efficacy and reinforce their interests in

and commitment to the protest, which consequently encourages protest participation (Gil de Zúñiga

et al., 2010; Rojas and Puig-I-Abril, 2009). For instance, Tufekci and Wilson (2012) found that during

Egypt's Tahrir Square protests, a large number of protest participants were engaged in intensive

discussion with others on Facebook.

In addition, the networking features of social media also facilitate protest participation.

During politically contentious times, protest groups and the counter-publics are more likely to

disseminate protest information and express dissenting views, which has the potential to reach a

large public through various private and public networks on social media. As a result, social media

become "an insurgent public sphere for issue advocates to galvanize into collective action, making

demands and putting pressure on the political authorities" (Lee et al., 2015, p. 360). People are more

likely to encounter pro-movement rather than anti-movement information in such an insurgent

public sphere. Individuals can build direct connections with protest leaders on social media by simply

joining their networks (Tufekci, 2013). Moreover, individuals' networks on social media often consist

of trusted members such as families, friends, colleagues, etc. (Chen et al., 2019; Lee et al., 2017).

Bennett and Segerberg (2012) argue that political communication such as information acquisition

and opinion expression within one's trusted social network makes people more encouraged and

determined to participate. Therefore, exposure to prevalent pro-movement information within

trusted social networks, social media users are more inclined to participate in social movement because favourable opinions towards movement are reinforced, shared grievances are strengthened, and people perceive public support for social movement (Dalton et al., 2010; Garrett, 2009; Shirky, 2011).

Although users engage in a variety of activities on social media (e.g., information consumption, expression and discussion, entertainment, and network connection) and different activities can exert varying influences over social movement participation (Boulianne, 2015; Skoric et al., 2016), the current study focuses on examining acquisition of political information from social media for several reasons. First, acquisition of political information is a most fundament activity on social media. As illustrated above, obtaining political information such as protest-related information on social media during social movement is crucial for further communication such as expression, discussion, and sharing. It also helps users to understand how others in their social networks think and act in social movement. Second, obtaining political information from social media is particularly important in countries without a fully free and independent media system such as Hong Kong (Boulianne, 2019; Rojas and Puig-I-Abril, 2009). With increasing levels of political control from the Chinese government, broadcast media in Hong Kong start to exercise self-censorship since the last decade and the current media system in Hong Kong becomes more pro-establishment (Chan, 2017). Therefore, social media is a unique platform with more diverse opinions. More importantly, in the context of a specific social movement, expressive behaviours such as posting protest-related

information, discussing with others, and mobilizing others to participate on social media should be

conceptualized as a form of participation, rather than antecedents to social movement participation

because such behaviours constitute a sign of commitments to social movement and need more

efforts than merely receiving information. Based on these rationales, we propose the first

hypothesis.

H1: Acquisition of political information (e.g., protest-related information) from social media

is positively related to social movement participation.

Alternative media and social movement

Alternative media is a complicated and fuzzy concept. Generally speaking, alternative media

are defined as media platforms devoted to providing perspectives and viewpoints different to those

of mainstream media and advocating social reform of alternative types (Couldry and Curran, 2003;

Haas, 2004). Communication scholars attribute the emergence of alternative media to the demands

of protest groups and to the biased portrayals of protest in mainstream media (Atkinson, 2005;

Boyle et al., 2005). Indeed, very often protest groups posing a threat to the status quo are either

portrayed as dangerous and radical or receiving no coverage in mainstream media due to the

sophisticated gatekeeping process in mainstream media (McLeod, 2007). To satisfy their need for

information and mobilization, protest participants often turn to "alternative" newsletters and

websites which can offer a large amount of information about protests and reinforce collective

actions (Boyle and Schmierbach, 2009).

The content of alternative media is usually characterized as critical, independent, and

localized, or simply put, different from the dominant ideology in a society (Atton, 2003; Hamilton,

2001). The capacity of alternative media to challenge mainstream ideology lies in their finance

independence and counter-hegemonic political stance (Couldry and Curran, 2003; Lee, 2015a).

Alternative media take on different forms ranging from print to online outlets. Compared with the

legacy media, the internet becomes a natural habitat for alternative media: wider audience reach

with lower costs and fewer resources (Thörn, 2007).

Furthermore, many online alternative media make use of social media platforms for

generating publicity, for instance, setting up public pages on Facebook (Leung and Lee, 2014). People

who "like" alternative media's Facebook page can constantly get news updates and further "share"

the stories to their friends, so that distribution networks of alternative media can be expanded and

their readership increased (Chan, 2017). The expanded distribution networks of alternative media on

social media makes it possible for social media users to be exposed to content from alternative

media. First, during political turmoil, citizens will activate their interests in protest and become more

attentive when they are exposed to political information on social media, in particular news updates

from alternative media (Boczkowski and Mitchelstein, 2010). In order to seek more detailed

information about protests, active and attentive social media users will be motivated to visit

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alternative media directly. In other words, obtaining political information on social media can stimulate users' need for more detailed and critical information about protest which can be found on alternative media. Second, it is possible that people tend to find others share news from public pages of alternative media on Facebook because social media constitute an insurgent network during social movement (Lee et al., 2015). Such observation could encourage people to use alternative media, partly because of perceived prevalence of the behaviour in the public (i.e., the effect of descriptive norms, see Reno et al., 1993), and partly because of their curiosity about alternative media outlets. Many studies provide empirical evidence on the close relationship between social media use and alternative media use in social movement across countries (Bennett and Segerberg, 2012; Chan, 2017; Fenton and Barassi, 2011). Therefore, we propose the second hypothesis.

H2: Acquisition of political information from social media is positively related to acquisition of political information from alternative media.

The critical tone of alternative media is closely tied to their intimacy with protest activists and social movement organizers. Alternative media are asylums for political activists who are expelled from the dominant political economic structure (Atton, 2002). Activists who are stigmatized and muted on mainstream media consider alternative media as an important channel to express their ideas, to define political issues in their own words, and to make them heard (Ryan et al., 1998).

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The unique features of alternative media make it an optimal platform for social movements. The symbiotic relationship between alternative media and social movements has been demonstrated in many empirical studies (Atton, 2002; Lee, 2015b). Political activists and protest groups who are normally in charge of alternative media mobilize citizens for protest participation by circulating factual information about protest groups and movement activists on alternative media (Haas, 2004; Lee, 2015a). Fenton and Barassi (2011) observed that the Cuba Solidarity Campaign kept people informed about the organization's activities and encouraged them to join the campaign through different alternative media outlets.

In addition to information feeding, alternative media play a powerful role in cultivating rebellious values, which facilitates protest participation (Atton, 2002; Haas, 2004). The insurgent discourse embedded in the messages of alternative media constructs social reality in accordance with an antagonistic framework, which helps generate oppositional consciousness among its audience (Whittier et al., 2006). Lee (2015a, p. 322) explicates that oppositional consciousness includes negative considerations about the dominant political and economic power, as well as "people's understanding of concepts that are central to oppositional discourses or contentious political actions." Certain media content such as government official misconduct can engender negative considerations in a sense that it depicts an attitudinal object (e.g., government official) in a negative light. Negative considerations are the foundation of critical attitudes towards the dominant

system, which catalyzes protest participation (Rodriguez, 2001). Therefore, we propose the following

hypothesis.

H3: Acquisition of political information from alternative media is positively related to social

movement participation.

Our discussions above tend suggest that to some extent social media and alternative media

overlap with each other. However, some previous studies demonstrate that they are conceptually

distinct in terms of the features of content, functions, and audiences (see Table 1 for a summary).

Given their conceptual differences, use of social media and alternative media for political

information may activate different psychological antecedents to social movement participation,

which will be discussed in the following section.

[Table 1 about here]

From information to participation: Two intervening variables

The impacts of social media and alternative media on social movement participation may

occur under different psychological mechanisms (Dalton et al., 2010; Shirky, 2011). Communication

theorists emphasize the importance of studying psychological mechanisms through which media

exposure exerts indirect influence on political participation (e.g., Cho et al., 2009; Valenzuela, 2013).

The theory of reasoned action developed by Ajzen and Fishbein (1980) pinpoints two crucial

determinants of behaviours: attitude and subjective norm. Attitude is a psychological tendency

evaluating an object or an issue (Eagly and Chaiken, 1993). Subjective norm refers to the expected

reactions of significant others and the personal importance of such reactions (Klandermans, 1984).

From the perspective of social norms, a similar if not identical concept to the subjective norm, the

descriptive norm which describes what people perceive others think and do can affect individuals'

behaviours as well (Gerber and Rogers, 2009; Panagopoulos et al., 2014). Similarly, the theory of

spiral of silence emphasizes the role of perceived opinion climate on individuals' willingness to

express ideas. When individuals perceive their own opinion as minority opinion, they tend to refrain

from expressing themselves (Noelle‑Neumann, 1974). Perception of opinion climate has been

found to influence not only individual's intention to express opinions, but a diverse forms of political

participation (Dvir-Gvirsman et al., 2018; Scheufele, 2001).

Drawing upon the aforementioned theoretical framework, our study aims to examine the

role of two important mediators: perception of opinion climate supporting social movement and

pro-protest attitude. First, if people perceive a favourable opinion climate to protests by the

majority, then they are encouraged to participate because such behaviour will gain support from the

general public (Dvir-Gvirsman et al., 2018). Second, if individuals hold the positive attitude toward

social movements, they would consider social protests as morally righteous, weigh the benefit of a

protest over its cost, and consequently they are more inclined to participate in the protest (Simon et

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al., 1998). Therefore, we propose two hypotheses regarding the two predictors of social movement

participation.

H4: Favourable attitude toward social movement is positively related to social movement

participation.

H5: Perceived social movement support is positively related to social movement

participation.

Media use plays a considerable role in shaping one's issue attitude and issue opinion climate

perception (Dvir-Gvirsman et al., 2018; Wang, 2007). Past studies found that people could sense

public opinion and develop attitude towards political issues based on information from traditional

media (Hoffman, 2013). Researchers argue that such effects could be extended to digital media use

(Kim and Chen, 2016). People are capable of forming their opinion climate perceptions and attitudes

toward political issues through exposure to information on social media (Valenzuela et al., 2012).

In Hong Kong, given the pro-establishment bias of traditional news media, social media

become a venue where pro-democracy ideas exist as a mainstream opinion (Chan, 2017). Citizens

especially the young generation who have pro-democracy political inclination are active users of

social media. Due to the selective exposure mechanism, it is less likely that citizens with pro-

establishment inclination use social media frequently because there are many counter opinions.

During the time of social movement, social media further turn into a platform in which numerous

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insurgent networks reside. Heavy exposure to such a media environment magnifies the strength of

pre-existing opinions and breeds a strong sense of public support of their own views in particular for

people who hold pro-democracy attitudes (Shirky, 2011). It is even possible that people with pro-

establishment attitudes may vacillate in this scenario because exposure to much cross-cutting

information induces ambiguity (Huckfeldt et al., 2004). The positive effects of social media use on

pro-protest attitude and opinion climate are also found in other societies. For instance, research on

a protest against a controversial bill in Wisconsin showed that social media use led people to believe

that the protest was prevalent, and made them more likely to participate in the protest (Macafee

and De Simone, 2012). Likewise, a study on the protest against the Iraq War showed that discussion

with like-minded people on social media helps relieve fear of social isolation which prevents

individuals from participating in protest (Hwang et al., 2006). Therefore, two hypotheses were

proposed accordingly.

H6a: Acquisition of political information from social media is positively related to pro-protest

attitude.

H6b: Acquisition of political information from social media is positively related to one's

perception of pro-protest opinion climate.

Compared with social media, alternative media with goals to offer different viewpoints from

mainstream media and to advocate social reforms might be more effective in influencing one's

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attitude towards protests. Given their close connection with social movement and protest activists,

alternative media provide a substantial amount of information about protest organization and

counter-information against the dominant political economic system (Haas, 2004; Leung and Lee,

2014). Constant consumption of critical and radical messages evokes and reinforces users' negative

emotion towards the political establishment (Xia and Shen, 2018). It can also make the audience

sympathize with protesters (Chan, 2017). Leung and Lee (2014) found that alternative media use is

related to support for civil disobedience in Hong Kong. Nevertheless, the emancipatory and radical

nature of alternative media may not directly influence one's perception of opinion climate. The

availability of socially connected environment is a necessary condition for people to perceive opinion

climate (Dvir-Gvirsman et al., 2018; Scheufele, 2001). For alternative media which mainly play the

roles of information feeding and emotional arousal (Atton, 2003), it might be vague for alternative

media users to sense opinion climate because people seldom get to know other users' opinions

without an obvious socially represented and interactive network on alternative media. However,

with more alternative media appearing on social media platforms, a loose organizational structure is

formed on alternative media through "Likes" and "Share" of its news on social media, which might

give some hints of opinion climate for user (Chan, 2017). Since there is no existing study providing

clear empirical evidence about the effect of alternative media use on perception of opinion climate,

we thus formulate a hypothesis and propose a research question as follows:

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H7: Acquisition of political information from alternative media is positively related to pro-

protest attitude.

RQ: Does acquisition of political information from alternative media relate to one's

perception of pro-protest opinion climate?

Taken together, the above discussions suggest two potential pathways through which social

media and alternative media influence social movement participation: through pro-protest attitude

and supportive opinion climate perception. The theoretical framework with our research hypotheses

and question is presented in Figure 1.

[Figure 1 about here]

Method

Study Background

The current study was conducted during the Umbrella Movement which marked one of the

most important pro-democratic events in recent years in Hong Kong. The Umbrella Movement is a

loosely organized pro-democracy movement which demands free and fair universal suffrage to be

held in Hong Kong. The movement was originated from the plan of Occupy Central, in which

participants would practice civil disobedience to force the government to introduce universal

suffrage for the Chief Executive election in 2017. However, the Chinese government took a hardline

approach on political reform and announced an election framework which was considered to involve

a high degree of political pre-screening in late August 2014. On the morning of September 28, 2014,

following a one-week class boycott by student organizations, the Occupy Central activists announced

the beginning of movement. A huge number of citizens protested in front of the government

headquarters where severe physical confrontations took place between protesters and the police

before the police fired tear gas in the crowd.

As the Umbrella Movement continued, many citizens made good use of different digital

media platforms to engage in the movement in both online and offline settings (Lee and Ting, 2015;

Lee, 2015b). Facebook is the dominant social media platform to obtain information about the

movement by protesters (Ma et al., 2014). In the meanwhile, online alternative media work as the

purveyor of protest-related information and critical messages towards the government (Lee and Ting,

2015). Protesters engaged in a variety of online actions on social media. For instance, they used

Facebook to disseminate information, to connect with protest groups and activists, and to mobilize

others to participate. More than 100,000 citizens followed the Facebook page of Occupy Central

with Love and Peace, a key organizer of the movement (Lee, 2014). Many youngsters even switched

their Facebook profile pictures to the image of yellow ribbons to support the movement. In offline

settings, protesters marched in several core districts in Hong Kong such as Admiralty and Mong Kok;

they erected the Lennon Wall, built the camps, and stayed in the protest site overnight in order to

express their anger and grievance to the local government. Eventually, the movement lasted 79 days.

The Umbrella Movement to some extent follows the logic of connective action in which online

participation actions were prevalent (Bennett and Segerberg, 2012). It is thus a suitable case to

examine how digital media use can influence online and offline social movement participation.

Data

The data for this study came from a survey of students from eight public universities in Hong

Kong between October 20 and November 3, 2014, at the height of the Umbrella Movement. The

current study chose student samples for two reasons. First, university students were the main force

of the movement. The primary organizational forces of the movement consisted of two student-

related organizations (Scholarism and Hong Kong Federation of Students) and one social

organization (Occupy Central with Love and Peace). Second, university students are at the forefront

of new media technology adoption. To insure higher levels of population representativeness, the

number of questionnaires to be disseminated at each campus was roughly proportional to the size

student population in each institution: The University of Hong Kong (140), Chinese University of

Hong Kong (150), Hong Kong University of Science and Technology (80), City University of Hong Kong

(110), The Hong Kong Polytechnic University (170), Hong Kong Baptist University (60), Lingnan

University (20), and The Education University of Hong Kong (50).

Five student helpers were recruited and trained to collect the data. Student helpers were

instructed to strictly follow the same set of procedures for data collection: a) only disseminating

questionnaires at the largest student canteens in the eight universities during dining hours; b) using

systematic sampling method within canteen areas (e.g., approach students sitting in every other

seat); c) emphasizing the survey is anonymous; d) excluding staff and faculty members; and e)

making a good record of cases that refused to participate.

A total of 780 questionnaires were collected and 119 students refused to participate in this

study. The cooperation rate for the study was 86.8%. After discarding unqualified cases, 769 samples

were retained for final analysis. While we do not argue that our sample constitutes a probability

sample of the entire Hong Kong university student population, it is a good approximation of it.

Measurement

Acquisition of political information from digital media. Acquisition of political information

from digital media is the main predicting variable of interest. Respondents reported the frequencies

of obtaining political information on social media and alternative media on a 5-point scale raning

from "never" to "always." Acquisition of political information from social media was measured by

asking respondents how often they used Facebook which was the most popular social media site

during the movement for political information such as protest-related information (M = 4.16, SD =

1.01).

In the past decade, the growth of Hong Kong online alternative media is closely related to

the revitalization of pro-democracy movements (Xia and Shen, 2018). Alternative media are mainly

operated by liberal political activists (Leung et al., 2011). For instance, the website *Hong Kong In-media* was founded in 2004 and is run by a group of social activists, while the online newspaper *Post 852* is established by media critics in 2013. At the time of this study, there were several prominent pro-democracy alternative media, which can be divided into online newspapers and news websites in terms of media format. The former has both online and print versions, while the latter only has online version.

In order to reduce the operationalization difference between social media and alternative media, obtaining political information on alternative media specifically refers to reading print newspapers and visiting websites of alternative media in the current study. Therefore, respondents were asked "how often they get political information from alternative online newspapers such as *Passion Times, Bastille Post,* and *Post 852*" (*M* = 3.37, *SD* = 1.24) and "how often they get political information from alternative news websites such as *Hong Kong In-media, VJMedia,* and *Dash*" (*M* = 3.45, *SD* = 1.25). Answers to the two questions were averaged to form an index of acquisition of political information from alternative media (α = .84).

Pro-protest Attitude. Attitude toward the Umbrella Movement was operationalized by three items. Respondents were asked to evaluate three statements on a 5-point scale ranging from "strongly disagree" to "strongly agree": "I support the recent student protest," (*M* = 3.83, *SD* = 1.12) "I support the recent Occupy Central movement," (*M* = 3.71, *SD* = 1.19) and "The universal suffrage

plan proposed by Chinese government is not democratic." (*M* = 4.07, *SD* = 1.01) The three

statements constituted a reliable measure for attitude toward the movement (α = .87).

Perception of pro-protest opinion climate. Following studies on the descriptive norm and the

spiral of salience (Dvir-Gvirsman et al., 2018; Panagopoulos et al., 2014), we measured perception of

pro-protest opinion climate with three items. Respondents were asked to estimate the percentage

of people who supported the movement on the internet (*M* = 68.54%, *SD* = 26.30%), the percentage

of movement participation among people on the internet (*M* = 51.58%, *SD* = 27.14%), and the

percentage of the general public who supported the movement in Hong Kong (*M* = 47.78%, *SD* =

19.04%). The Cronbach's alpha of the three items was .64.

Social movement participation. Social movement participation was the final endogenous

variable. With the proliferation of digital media, recent social movements have been transformed

from conventional offline collective actions into a combination of diverse online and offline

connective actions which Castells (2017) theorizes as networked social movements. Consequently,

participation in such social movements can take place in different settings. Although the distinction

between online and offline forms of participation is established in terms of political participation at a

general level, some scholars argue that networked social movements comprise of the construction

of autonomy in both urban space and cyberspace, the difference between online and offline

participation in a specific protest mainly lies in the physical setting rather than informational and

psychological antecedents (Bennett and Segerberg, 2012; Castells, 2017). Such a claim is supported

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by empirical studies, showing that both online and offline participation shares similar predictors (Lee et al., 2017; Tufekci and Wilson, 2012). Thus, both online participation and street protest participation during the Umbrella Movement were taken into consideration as two dimensions of social movement participation.

To measure online participation, respondents reported the frequencies of four types of activities (α = .87) on the internet on a 5-point scale where 1 means "never" and 5 means "always": "posted first-hand protest-related information such as your personal experience and photos taken from the protest sites," (*M* = 2.44, *SD* = 1.34) "posted information about organizational matters related to the protest," (*M* = 2.24, *SD* = 1.24) "shared others' posts about organizational matters related to the protest," (*M* = 2.43, *SD* = 1.25) and "mobilized others to take part in the protest" (*M* = 2.15, *SD* = 1.20). Respondents' street protest participation was measured by two items (α = .67): "how many days did you participate in the protest" (*M* = 3.76, *SD* = 6.18, min = 0, max = 36) and "how many times did you participate in the protest overnight" (*M* = 1.04, *SD* = 3.01, min = 0, max = 30). The distribution of two street protest participation items was highly positive skewed (days of protest: skewness = 2.72; overnights of protest: skewness = 5.15), and therefore the logarithm of their original values were used for analysis.

Control Variables. Variables that can potentially influence political participation such as gender, income, national identity perception, political interest, and news consumption from traditional media were all included as controls. About 47.6% of respondents were male. Monthly

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household income was measured as an ordinal variable with ten brackets varying from "no income"

to "HKD 50,000 or above" (median = 7, HKD 20,000-29,000). National identity was a 4-point ordinal

variable ranging from identified oneself as Hongkongese, Hong Kong Chinese, Chinese Hongkongese,

and Chinese. About 67.2 % of respondents perceived themselves as Hongkongese and only 12.9%

Chinese. Political interest was measured by the statement "I am interested in politics" on a 5-point

scale (M = 3.19, SD = 1.01). Traditional media use for protest-related information (α = .39) was

measured by two items: reading local newspapers (M = 3.81, SD = 1.05) and watching local television

(M = 3.72, SD = 1.05).

Findings

Structural equation modelling (SEM) was used to examine the direct and indirect effects of

media use on political participation. Before constructing a structural model, we first conducted

confirmatory factor analysis (CFA) with all endogenous variables to ascertain the level of

measurement model fit. Two digital media use variables, two mediating variables, and two political

participation variables were included in the analysis, including acquisition of political information

from social media, acquisition of political information from alternative media, perception of pro-

protest opinion climate, pro-protest attitude, online-participation, and street protest participation.

Among this list of variables, only social media use is single item observed variable, all others were

constructed as latent variables. The measurement model fits the data fairly well (CFI = .98, RMSEA

= .04, χ^2 = 167.10, df = 76, p < .001). The factor loading of each observed item was statistically

significant and satisfactory (see Figure 2 for single coefficients).

[Figure 2 about here]

A structural model was then built to test our hypotheses. All endogenous paths were freely

estimated and all control variables were set to be associated with all endogenous variables. Likewise,

the structural model achieved a satisfactory goodness of fit (CFI = .97, RMSEA = .04, χ^2 = 291.43, df =

145, p < .001).

[Figure 3 about here]

H1 hypothesizes that acquisition of political information from social media is positively

related to social movement participation. The results lent some support for H1. Use of Facebook for

political information had a positive effect on street protest participation (β = .18, p < .001), while it

was not statistically significantly related to online participation (β = .07, n.s.). Therefore, H1 was

partially supported. H2 expects that acquisition of political information from social media to be a

predictor of use of alternative media for political information. The findings suggested that Facebook

use was positively related to alternative media use for political information (β = .42, p < .001). In

other words, H2 was supported. H3 predicts a positive relationship between acquisition of political

information from alternative media and social movement participation. The data showed that

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alternative media use for political information was related to online-participation (β = .30, p < .001)

and street protest participation (β = .25, p < .001). H3 was supported.

H4 proposes a positive relationship between pro-protest attitude and social movement

participation. Pro-protest Attitude was found to be positively associated with online-participation (β

= .21, p < .001) and street protest participation (β = .42, p < .001). H5 posits that perceived social

movement support increases the likelihood of social movement participation. The results

demonstrated that perception of social movement support predicted online protest participation (β

= .14, p < .10), while perceived support for social movement didn't necessarily relate to street

protest participation (β = -.09, n.s.), after controlling for attitude toward the movement. Therefore,

H4 was supported and H5 was partially supported.

H6a and H6b hypothesizes that use of social media for obtaining political information

promotes pro-protest attitude and perception of pro-protest opinion climate. The data supported

both H6a and H6b: acquisition of political information from Facebook was positively related to pro-

protest attitude (β = .33, p < .001), and perception of pro-protest opinion climate (β = .30, p < .01).

H7 predicts the relationship between acquisition of political information from alternative media and

pro-protest attitude. The results revealed a positive relationship between two variables (β = .27, p

< .001). Our research question intends to explore the effect of alternative media use for obtaining

political information from one's perception of pro-protest opinion climate. The data suggested no

significant relationship between two variables (β = .10, n.s.).

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Finally, statistical mediation analyses were conducted to check if the relationship between

use of social media and alternative media for receiving political information and social movement

participation was mediated by pro-protest attitude and pro-protest opinion climate perception.

Acquisition of political information on alternative media indeed showed significant indirect effects

on online-participation (β = .10, p < .01) and street protest participation (β = .07, p < .001) through

influencing people's pro-protest attitude. For social media, obtaining political information on

Facebook had indirect effects over online participation (β = .11, p < .001) and street protest

participation (β = .11, p < .001) through pro-protest attitude and perception of social movement

support.

[Table 2 about here]

Discussion

Our study aims to enrich existing literature on new media effects by examining the impacts

of social media and alternative media on social movement participation. Our findings indicate that

acquisition of political information from social media and alternative media has distinct relationships

with social movement participation through different psychological mechanisms. There are a few

noteworthy points to be elaborated.

First, obtaining political information from social media cultivates both pro-protest opinion

climate perception and pro-protest attitude, whereas use of alternative media for political

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information plays an influential role in shaping pro-protest attitude only. Protest groups attempt to

construct an anti-establishment networked community on social media by disseminating

information, attracting people subordinate to the mainstream society, and mobilizing them to

participate in social movement (Asen, 2000). In such an anti-establishment network, one possible

situation is that people will encounter a substantial amount of pro-protest information posted or

shared by their friends or acquaintances (Lee, 2015b; Loader and Mercea, 2011). Consequently,

frequent exposure to ideologically homogenous pro-protest information helps social media users to

form a pro-protest attitude and an impression of mass support for social movement as well, even

though such perception could be sometimes biased.

By contrast, we found obtaining political information from alternative media only predicts

pro-protest attitude, but not perception of pro-protest opinion climate. On the one hand, similar to

social media users, alternative media users are constantly exposed to protest-related issues and

critical perspectives, which work as the cornerstone for them to form pro-protest attitude through

cognitive means (Lee, 2015a). On the other hand, alternative media are not network oriented in

nature, and often times these websites do not provide a function of interactivity to their users, and

therefore it is difficult for alternative media users to observe opinion climate directly.

Second, this study finds that Facebook use for obtaining political information has an indirect

effect on online participation through influencing perceived movement support and pro-protest

attitude. Also, Facebook use only shows an indirect effect on street protest participation through

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pro-protest attitude. Although the data generally support the hypothesis that acquisition of political

information from social media leads to social movement participation in both online and offline

settings, the findings raise two interesting points to be discussed. First, why do social media have

ignorable direct effects on online participation and street protest participation? In recent years,

many scholars argue that media effects on political participation are strong, but largely channelled

through socio-psychological factors (Cho et al., 2009; Jung et al., 2011). Obtaining political

information from media is essential for political participation, but it may contribute little to political

participation unless people are involved in certain degree of elaborative information processing and

become motivated to participate (Eveland, 2004; Klandermans, 1984). Being motivated is one of the

most important prerequisites to social movement participation (Klandermans and Oegema, 2006).

Such a requirement seems to be more important when people get information from social media

where there are diverse views and perspectives. People stumble across incongruent political views,

even if they exercise selective avoidance on social media. Exposure to dissonant political views about

protests on social media mitigates the willingness to participate in social movement because people

might experience a state of ambiguity and inconformity, feel less supported, become less motivated,

and eventually refrain from participation. In this case, acquisition of political information from social

media doesn't necessarily facilitate social movement participation. However, another scenario is

that people receive constant exposure to homogenous pro-protest viewpoints on social media, and

as a result they will feel more determined and being supported to engage in social movement.

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Therefore, only when motivations are activated will social media use lead to social movement participation.

In addition, our study finds that online political participation differs from offline political participation (Jung et al., 2011). Both pro-protest attitude and perception of pro-protest opinion climate can motivate people to participate in online activities related to the movement. For online activities, people are likely to be encouraged to participate by perceiving a pro-protest opinion climate because they believe such behaviours will be entertained by a large public and won't incur much risk as well. However, the scenario is different when it comes to offline social movement participation. Joining street protests requires more cost of time and money, entails a greater risk, and reflects a higher level of commitment and involvement than online participation. During the Umbrella Movement, there were many times when protesters had physical confrontation with the police, and many got injured when they tried to dodge tear gas on protest sites. In a high-risk context, it should be understood that people are motivated to participate in street protests because of their own attitude and belief, rather than the opinion climate toward protest, although some studies find perception of opinion climate promotes political participation such as voting (Dvir-Gvirsman et al., 2018; Scheufele, 2001).

Third, consistent with previous studies of alternative media in Hong Kong, we find that acquisition of political information from social media is positively related to alternative media use for political information. During social movement, monitorial citizens tend to become more active

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and attentive. Once they encounter alternative media content from social media, they will be more

likely to access relevant information on alternative media directly.

Consequently, acquisition of political information from alternative media leads to online and

offline social movement participation. Specifically, alternative media use for political information

shows both direct effects and indirect effects via pro-protest attitude on online participation and

street protest participation. The significant direct effects of alternative media use could be partly

explained by the demographic features of its audiences. In Hong Kong, online alternative media are

more likely to attract those liberal individuals who already possess negative and critical evaluation of

the Hong Kong government and have pro-democracy inclinations (Leung and Lee, 2014). The

Umbrella Movement with its goal of achieving genuine universal suffrage was considered a political

democratic movement. For people with strong liberal political orientation, they might use

alternative media to obtain necessary factual information about protests. With protest-related

information, alternative media users can either mobilize more participants or participate in protests.

But what is possible is that alternative media use also exerts indirect effects on social

movement participation by cultivating pro-protest attitude among the general public. Alternative

media disseminate insurgent discourses and alternative ideology by covering problems with Hong

Kong society, such as the lack of genuine democracy and the exacerbating social inequality. Exposure

to critical and insurgent discourses towards the government turns people to be politically

emancipatory and progressive (Atton, 2002). Alternative media use can potentially reshape people's

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political views, help them become democracy supporters, and develop pro-protest attitude, which in the end turns into social movement participation.

One thing to be further pointed out is that alternative media can have the progressive political influence because the internet in Hong Kong is relatively free from political inference. However, with increasing political and economic influence to be exerted on the internet, there is no doubt that the government will adopt systematic strategies to muffle undesirable voices (Tsui, 2015). On the other hand, in opposite to pro-democracy alternative media, pro-establishment organizations recently set up conservative (pro-government) alternative news websites such as *Speak Out HK* and *Silent Majority for Hong Kong* to disseminate political content speaking favourable of the government. It remains unclear whether the rise of pro-establishment websites will diminish the progressive political impacts of pro-democracy alternative media in Hong Kong. This points to one possible direction for further research.

To summarize, both social media and alternative media are important vehicles of protest-related information, the use of which could lead to social movement participation. Some argue that the development of new media technology creates a pluralistic media environment in which different media outlets complement each other and affect how people think, feel, and behave in different ways (Scolari, 2012). Our findings echo this argument with strong evidence (see Table 3). Alternative media shape and strengthen pro-protest attitude through communicating mobilizing information and critical viewpoints, which in turn motivates people to involve in social movement

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online and offline. In other words, alternative media serve as an attitude intensifier to invigorate

individuals' intention of social movement participation. In contrast, social media serve as an echo

chamber saturated with pro-protest messages during social movement. Consequently, those

motivated social media users will be prone to participate.

[Table 3 about here]

This study has a few limitations. First, the cross-sectional design of the current study does

not allow us to specify the causality in the model, although previous studies suggest that political

perception and attitudes do precede political participation (e.g., Cho et al., 2009; Valenzuela, 2013;

Xia and Shen, 2018). Further research with more rigorous design such as using panel surveys is

needed to ascertain the direction of causality – specifically, whether favourable attitude towards

and perceived support for social movement leads to social movement participation or vice versa.

Second, we used a convenient sample of university students. Although the use of student sample

could be justified, a representative sample would help to extend our findings to the general public in

Hong Kong. Third, given that both social media and alternative media take a liberal and critical role

and almost all alternative media have Facebook accounts, it is difficult to distinguish social media

use from alternative media use when measuring the two constructs. But conceptually, social media

and alternative media are different. Finally, this study examined the influence of new media use on

social movement participation at the individual level. Given the fact that the impacts of new media

technologies could vary from country to country depending on the political, cultural, and social

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configurations of each society, it is important to note that generalizing our findings to other

geographical regions should be made with caution.

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SOCIAL MEDIA, ALTERNATIVE MEDIA, AND SOCIAL MOVEMENT

Table 1. Social media and alternative media feature comparison.

	Social media	Alternat
Content	- General news, entertainment information (Bennett and Segerberg, 2012; Chen et al., 2019; Skoric et al., 2016). - General protest information and critical messages (Chan, 2017; Tufekci and Wilson, 2012).	- Local news and prote 2002; Hamilton, 200 - Critical and radical m against the political e 2003; Couldry and C 2015a)
Functions	- Obtaining, exchanging, and sharing information (Lee et al., 2015; Harlow, 2012). - Connecting people for social interaction and building and maintaining social networks and relationships (Bennett and Segerberg, 2012; Boulianne, 2019; Lee et al., 2017).	- Obtaining critical inf opinions (Fenton and Lee, 2015a). - Arousing negative er (Xia and Shen, 2018)
Audience type	- General public and citizens with liberal political inclination (Lee et al., 2015; Skoric et al., 2016).	- Political activists, dis negative evaluation c liberal political inclir Lee, 2014; Xia and S
Audience size	- Large (Chan, 2017; Macafee and De Simone, 2012).	- Relatively small (Leu
Audience political motivation	- Moderate or weak (Boulianne, 2017, 2019).	- Strong (Leung and L 2018).

Table 2. Direct and indirect effects within endogenous model.

	Explanatory variables

	Acquisition of political information from social media	Acquisition of political information from alternative media	Perception of pro-protest opinion climate	Pro-protest attitude
Perception of pro-protest opinion climate	.30**	.10	--	--
Pro-protest attitude	.33***	.27***	--	--
Online participation				
Direct effect	-.05	.23***	.14#	.21***
Indirect effect	.11***	.10**	--	--
Total effect	.07	.30***	.14#	.21***
Street protest participation				
Direct effect	.07	.15**	-.09	.42***
Indirect effect	.11***	.07***	--	--
Total effect	.18***	.25***	-.09	.42***

Note: All entries are standardized estimates, after controlling for gender, household income, national identity perception, political interest, and traditional news media use. Two tailed significance test of indirect effects were based on bootstrapping test: bootstrap sample size = 2000, model without missing case sample size = 619.

#p < .10. *p <.05. **p < .01. ***p < .001.

Table 3. A summary of media effects on psychological antecedents and social movement participation.

	Acquisition of political information from social media	Acquisitio
Psychological and behavioural outcomes		
Perception of pro-protest opinion climate	Yes	
Pro-protest attitude	Yes	
Online participation		
Direct effect	No	
Indirect effect		
through pro-protest attitude	Yes	
through perception of pro-protest opinion climate	Yes	
Street protest participation		
Direct effect	No	
Indirect effect		
through pro-protest attitude	Yes	
through perception of pro-protest opinion climate	No	

Note: The effects above indicate the unique effects of a digital media use on psychological and behavioural outcomes when controlling for other media use in a multiple regression model. *Yes* denotes positive effects, and *no* denotes insignificant effects.

Figure 1. Theoretical model integrating media use, psychological mediators, and social movement participation
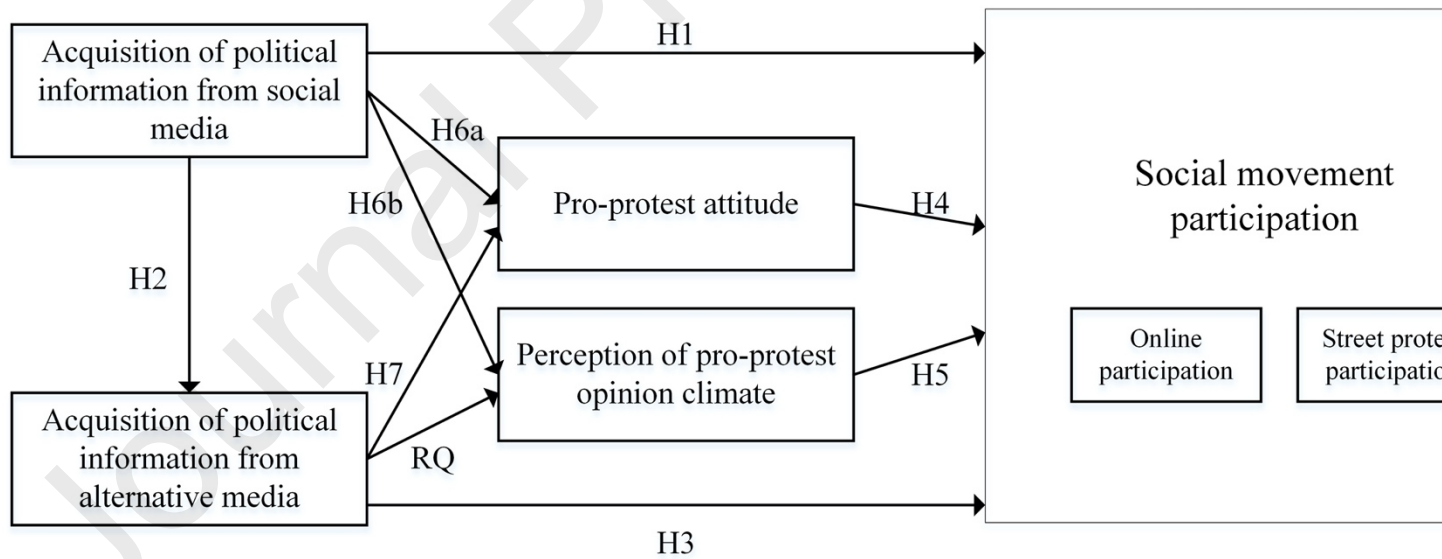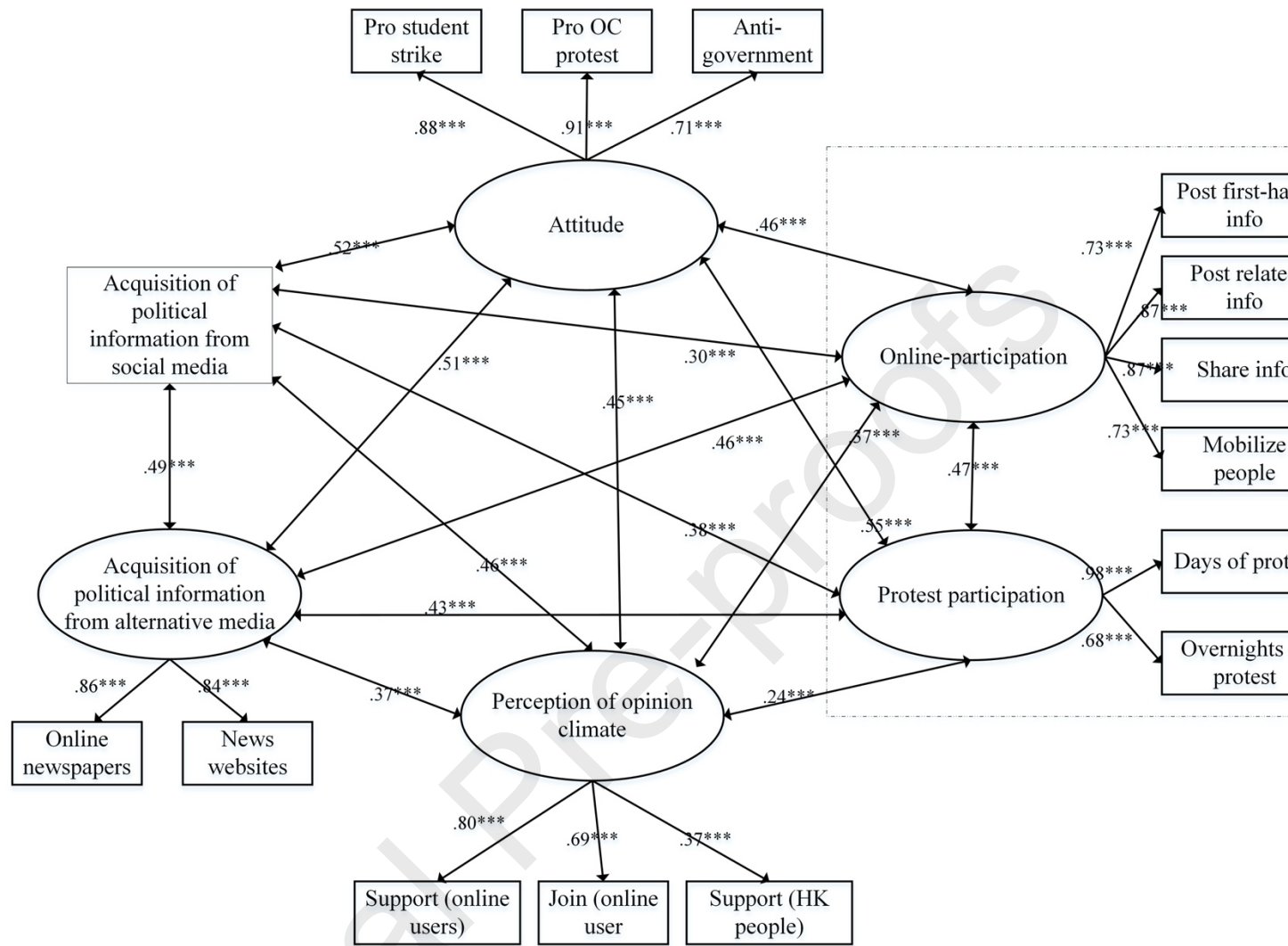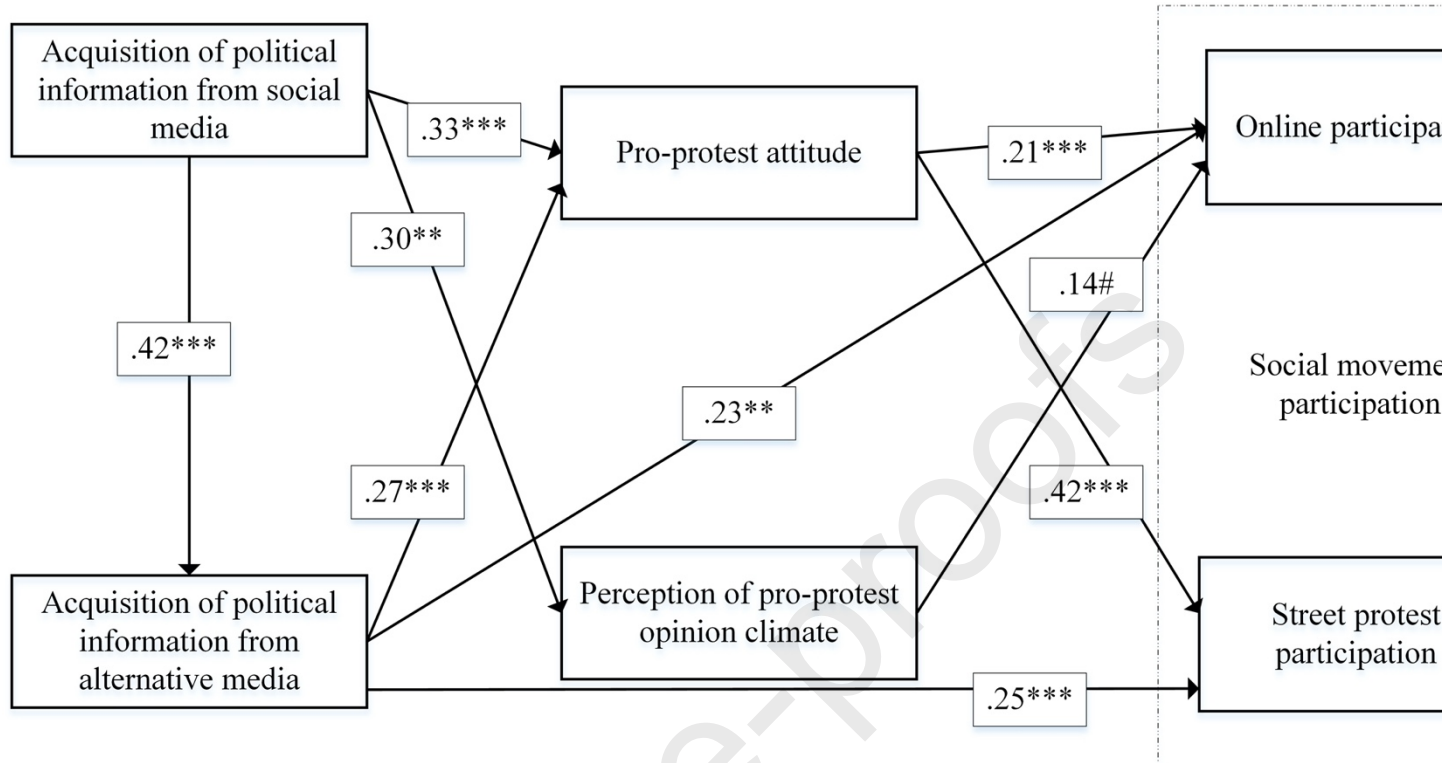
Figure 2. Confirmatory factor analysis

Note: All entries are standardized coefficients.

Figure 3. Predicting social movement participation (endogenous relationships)

Note: The effects of control variables (gender, household income, national identity perception, political interest, and traditional news media use) on endogenous variables have been residualized. For ease of exposition, only significant paths are presented in the figure.

#p < .10. *p <.05. **p < .01. ***p < .001.

Conflict of interest

We have no conflict of interest to disclose.

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Highlights:

1. Given the alleged statement that new information technologies facilitate and transform the
contemporary pro-democracy social movements, this study empirically examines the effects of social
media use and alternative media use over protest participation among citizens.

2. In addition to examining the direct effects of digital media use on protest participation, this study also
explores the indirect effects through two significant socio-psychological variables: pro-protest attitude
and perception of pro-protest opinion climate.

3. Within the context of the Umbrella Movement in Hong Kong in the late 2014, this study reveals
different mechanisms under which different digital media uses exert various influence over protest
participation.

4. This study contributes to the existing literature on social movement by comparing alternative media
exposure with social media exposure in terms of their impacts on protest participation among citizens,
which has been largely under-examined in previous research.

Data source

The data for the current study came from a survey of students from eight public universities in
Hong Kong between October 20 and November 3, 2014. The survey used student samples from eight
public universities in Hong Kong including The University of Hong Kong, Chinese University of Hong Kong,

Hong Kong University of Science and Technology, City University of Hong Kong, The Hong Kong

Polytechnic University, Hong Kong Baptist University, Lingnan University, and The Education University

of Hong Kong.

Five student helpers strictly followed the same set of procedures for data collection. A total of

780 questionnaires were collected and 119 students refused to participate in this study. The

cooperation rate for the study was 86.8%. After discarding unqualified cases, 769 samples were retained

for final analysis.

The survey mainly measured student's media use behaviour, their attitudes towards the

Umbrella Movement, their perception of opinion climate, their evaluation of political figures, and their

demographics. The survey could be obtained from authors by request.