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Media Use and Environmental Engagement: Examining Differential Gains from News Media and Social Media

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This study examines how the uses of news media and social media are linked to environmental activism and consumerism. The analysis of survey data from Hong Kong (N = 1,047) demonstrates positive relationships between news media use and these two types of environmental engagement. Findings also reveal that political use of social media is positively associated with both environmental activism and consumerism, whereas relational use of social media is negatively associated with environmental activism but positively related to environmental consumerism. Notably, the associations are moderated by membership in environmental nongovernment organizations (ENGOs). The positive relationship between news media consumption and environmental engagement tends to be stronger for ENGO members than nonmembers, whereas the positive association between political use of social media and environmental engagement is stronger for nonmembers. These findings shed new light on the equalizer role of social media in environmental engagement and highlight the importance of softer forms of engagement in proenvironmental activities.

Keywords: *news media, social media, environmental engagement, Hong Kong*

Hong Kong, like many other highly populated cities in the world, has experienced serious environmental problems. Since the 1970s, economic prosperity enjoyed by Hong Kong and the nearby region of Guangdong has led to severe environmental degradation, which has consequently increased people's environmental awareness (Yau, 2010). Although environmental protection is a salient issue in Hong Kong society, very few studies have examined environmental engagement in Hong Kong, especially in the digital era (F. L. Lee, 2015). With an increasing number of studies finding a positive role of media use in facilitating civic participation (e.g., Chen, Chan, & Lee, 2016; Gil de Zúñiga, Jung, & Valenzuela, 2012; F. L. Lee, Chen, & Chan, 2017), it is necessary to examine the relationship between types of media use and environmental engagement in Hong Kong. In this study, we will investigate the extent to which news media use and social media use in particular are related to the likelihood of engaging in proenvironmental activities.

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This study is motivated by three important factors. First, it aims to examine the relationship between media use and environmental participation, which has not been extensively studied in the literature. Previous studies attempting to explain people's environmental engagement have mostly examined general sociodemographic characteristics (e.g., Skogen, 1996; Tindall, Davies, & Mauboulès, 2003) and psychological aspects (e.g., Milfont & Sibley, 2012; Mobley, Vagias, & DeWard, 2010), seldom examining communication dimensions (Östman, 2014). The present study thus focuses on the role of media consumption in shaping citizens' environmental behaviors. Although studies have found positive effects of both news media and social media use on civic engagement (e.g., Gil de Zúñiga et al., 2012; Xenos & Moy, 2007), the differential effects of traditional media use and social media use should also be examined. As previous studies demonstrate, traditional news media follow a more structured and longer format of reporting than social media, which makes it more difficult for citizens to identify specific information on how to participate (Hardy & Scheufele, 2005). Therefore, the effects of traditional news media are more likely to be contingent on individuals' interest and knowledge, in line with the "rich get richer" reinforcement hypothesis (Price & Zaller, 1993). In contrast, social media have enabled easy creation and dissemination of individualized political content, providing new opportunities for discussion and debate, which may in turn lead to behavioral outcomes (Bennett & Segerberg, 2012; Skoric, Zhu, Goh, & Pang, 2016). Therefore, social media allow loosely connected individual citizens to get engaged in both formal politics and lifestyle politics with relatively little effort (Gil de Zúñiga, Copeland, & Bimber, 2014), suggesting that social media may play a role in mitigating political inequality (Xenos, Vromen, & Loader, 2014). Given the potential of social media to act as the equalizer, this study is to advance the scholarly debate on the use of news media and social media for proenvironmental behaviors.

Second, this study will examine different forms of environmental engagement, including traditional environmental behaviors (i.e., environmental activism) such as protests and petitions, and softer, more consumer-focused actions. Although studies have shown that media use predicts many forms of civic engagement, it is still not clear whether the findings about formal participation apply to daily proenvironmental consumer actions (Gil de Zúñiga et al., 2014). Therefore, it is necessary to distinguish between these two forms of participatory behaviors and to understand the roles that traditional and social media play in facilitating them.

Last, we believe that it is important to shed more light on contemporary activism in Hong Kong. Since Hong Kong became a Special Administrative Region of China in mid-1997, the "One Country, Two Systems" framework has preserved Hong Kong's capitalist system and guarantees wide-ranging autonomy to Hong Kong. According to the framework, Hong Kong's economic, political, and judicial freedoms would continue for 50 years, until 2047. In this sense, Hong Kong remains China's freest city, which has the Basic Law as its constitution and is largely responsible for its domestic affairs. Although Hong Kong is facing socioeconomic and political challenges such as Beijing's refusal to grant its citizens true universal suffrage, its political freedom has provided the context for resistance and the development of prodemocracy movements (E. W.-Y. Lee, 2011). Therefore, in contrast to the citizens of mainland China, Hong Kongers enjoy higher levels of civil and political liberties, and more space for social and political activism.

Literature Review

This study examines two types of environmental engagement, environmental activism and environmental consumerism, both of which are environmentally significant behaviors (Stern, 2000). *Environmental activism* refers to social movement-type of activities, such as getting involved in fundraising campaigns, signing petitions, and writing letters to policy makers (Dono, Webb, & Richardson, 2010; Tindall et al., 2003). It includes those "most difficult ecological behaviors" (Seguin, Pelletier, & Hunsley, 1998, p. 631) and is often treated as a part of social movement participation (Stern, 2000). Because these activities belong to more traditional forms of political participation carried out in the field of environmental politics, environmental activism can be understood as political engagement with environment issues (Carvalho, van Wessel, & Maeseele, 2017).

By contrast, *environmental consumerism* refers to environmentally friendly consumer behaviors, also referred to as "green consumerism" (Stern, 2000). As a form of "non-institutional, informal action" (Gil de Zúñiga et al., 2014, p. 491), environmental consumerism embodies personalized and lifestyle-oriented politics. In contrast to environmental activism, environmental consumerism describes daily behaviors that are more common and often appeal to a larger share of the population (Dono et al., 2010). In fact, these private-sphere environmentally friendly behaviors are a form of "lifestyle politics," offering informal opportunities for involvement (Bennett, 1998). They require less effort and will have environmentally significant impact only "when many people independently do the same things" (Stern, 2000, p. 410). Despite the differences between environmental activism and consumerism, studies suggest that environmental consumerism may have long-term consequences on activism. For instance, by influencing personal values and establishing social norms, consumption behaviors could "offer an ideological foundation" for future formal participation (Östman, 2014, p. 94).

Environmentalism is linked with the change in dominant values that come as a consequence of socioeconomic development. More specifically, postmaterialistic values emphasizing individual autonomy, diversity, self-expression, and quality of life are becoming more prevalent among Hong Kong citizens (Wong & Wan, 2009). In contrast to materialism, which mainly focuses on material or economic conditions, postmaterialism promotes a new political agenda, including environmental protection (Scherman, Arriagada, & Valenzuela, 2015). Furthermore, the participatory and open nature of digital media is coherent with the spirit of postmaterialism (Theocharis, 2011), which suggests an important role of social media in facilitating postmaterialistic behaviors.

Media Use and Environmental Engagement

Because news consumption facilitates political knowledge that helps citizens better understand public affairs, it is not surprising that numerous studies found a positive relationship between news consumption and various forms of political and civic participation (e.g., Moeller, de Vreese, Esser, & Kunz, 2014; Xenos & Moy, 2007). As with politics more generally, media are also important information sources for environmental issues (Nisbet, 2009). Because citizens often cannot experience the consequences of environmental deterioration immediately, the media play an important role in informing the public, raising their awareness of environmental problems, and making suggestions on environmentally friendly actions

(Olausson, 2011; Östman, 2014). Therefore, by providing information and cultivating attitudes about "green choices" (Malhotra, Melville, & Watson, 2010), news media act as a significant factor to increase citizens' engagement in environmental issues (e.g., Arlt, Hoppe, & Wolling, 2011; Östman, 2014).

In Hong Kong, using media for information purpose is also positively associated with civic engagement (Chen et al., 2016). In fact, since the establishment of Environmental Campaign Committee (ECC) by the Hong Kong Government in 1990, environmental messages designed by the ECC have been widely disseminated through mass media and online media (Chan, 1998). Meanwhile, both local and international ENGOs are actively using news media to distribute information and advocate proenvironmental behaviors (Chu & Tang, 2005). Because news about social and environmental issues provides an important informational basis for citizens to engage in environmental activities (Östman, 2014), this study holds that:

H1: Traditional news media use will be a positive predictor of environmental engagement.

H2: Online news media use will be a positive predictor of environmental engagement.

Because neither traditional nor online news media are specifically designed to facilitate conversations and debate or to encourage active user participation (Gurevitch, Coleman, & Blumler, 2009), it is necessary to examine how social media uses are related to environmental engagement. As a source of information and a platform for expression and discussion, social media have been found to be positively related to civic and political participation in several studies and political contexts (Skoric et al., 2016). These have especially emphasized two patterns of use behavior: political use and relational use (Campbell & Kwak, 2010; Kushin & Yamamoto, 2010).

Political use of social media refers to using social media for political purposes, focusing on the informational and expressive function of social media (Kushin & Yamamoto, 2010), which parallels the emergence of noninstitutional citizenship, or citizenship emphasizing direct engagement and self-expression (Dalton, 2008). Because social media allow for highly decentralized creation and diffusion of information, citizens are increasingly exposed to diverse and even conflicting information about public issues from various sources, which is expected to have procivic implications (Skoric et al., 2016). Therefore, social media provide new opportunities for expression, discussion, and debate, which may improve citizens' reasoning and elaboration of public issues and in turn lead to behavioral outcomes (Gil de Zúñiga et al., 2012). Particularly, studies on environmental engagement have found that digital media can facilitate environmental behaviors by getting involved in the process of "information acquisition and attitude formation" (Melville, 2010, p. 10). From this perspective, social media act as persuasive agents encouraging people to take specific actions and giving suggestions on proenvironmental behaviors, and they are thus positively associated with citizens' environmental engagement (Oakley & Salam, 2014). Based on this idea, this study expects that:

H3: Political use of social media will be a positive predictor of environmental engagement.

In addition, relational use of social media can be also associated with environmental engagement. In this study, *relational use* means using social media to keep in touch with others, to strengthen existing ties, and to build new ties. The positive effects of relational use are mainly attributed to the role that social media play in the creation and maintenance of social capital. According to Putnam (1995), informal social connections enhance social trust in others, which may promote commitment and encourage people to view themselves as members of a society. Moreover, boyd and Ellison (2007) point out that interaction on social network sites can influence how individuals behave by providing them "an imagined audience to guide behavioral norms" (p. 220). In other words, users can develop "guidelines of acceptable behavior" and facilitate prosocial actions (Oakley & Salam, 2014, p. 516). Because consumption practices can spread through social influence and information sharing online, they are expected to be closely associated with relational use of social media (Gil de Zúñiga et al., 2014). Thus, this study proposes that:

H4: Relational use of social media will be a positive predictor of environmental engagement.

Membership in Environmental Groups

Research has provided solid evidence supporting the links between media use and participatory behaviors, and studies have also increasingly examined the contextual variables that these relationships might be contingent upon. Psychological factors such as efficacy and interest have been found to be the key drivers of a propensity to participate (F. L. Lee et al., 2017; Lilleker & Koc-Michalska, 2017). With feelings of competence and beliefs that one's actions can make a difference, individuals are more likely to engage with civic issues (Kenski & Stroud, 2006). Because political interest is linked to information-seeking motives, individuals with high interest are more motivated to look for political information and to get engaged in activities (Kaye & Johnson, 2002). Studies in the Hong Kong context have also demonstrated that having strong political awareness and interest and a strong feeling of competence in handling difficulties are positive predictors of protest participation (F. L. Lee et al., 2017). Besides, group membership has also been found to have a significant impact on environmental behaviors (e.g., Dono et al., 2010; Fielding, McDonald, & Louis, 2008). In civic engagement studies, membership functions "as a context in which various democratic values are enhanced" (Kwak, Shah, & Holbert, 2004, p. 644) and thus plays an important role in the process of mobilization (Olsen, 1972). More specifically, organizational membership can promote participation in several ways. First, group activities and interactions among group members can increase individuals' interest, making them more willing to participate in civic activities. Second, organizations often train their members in leadership and civic skills, increasing members' self-efficacy. Finally, organizations help to cultivate a sense of community, enhancing their members' psychological attachment to the community and encouraging their involvement in public life (Kwak et al., 2004).

According to the differential gains model, the impact of news media consumption depends on the degree of interpersonal discussion of politics (Scheufele, 2002). Likewise, the potential influence of news media and social media use can also be contingent on group membership. According to selective exposure theory, individuals are more likely to expose themselves to information supporting their own positions (Lazarsfeld, Berelson, & Gaudet, 1944). As traditional news outlets often include a mix of viewpoints, media users tend to choose opinion-reinforcing information rather than opinion-challenging information

(Garrett, 2009). Online media make opinion-reinforcing information even more accessible, which helps people to become more knowledgeable about their existing beliefs and further promotes participation (Kenski & Stroud, 2006). In this sense, when using news media, ENGO members are more likely than nonmembers to select content focused on environmental protection. Members of ENGOs are also more motivated and more skilled to use news media to get information about environmental issues (Kwak et al., 2004). Based on the above, the gap in participation willingness between ENGO members and nonmembers is likely to expand as news consumption increases. Thus, the following research hypothesis is proposed:

H5: The positive relationships between environmental engagement and both (a) traditional and (b) online news media use will be moderated by group membership. The relationships will be stronger for ENGO members than for nonmembers.

In contrast, the interaction effects of membership and social media use on environmental behavior are likely to be different. Because social media make it easier to access to information (Bennett & Segerberg, 2012), both ENGO members and nonmembers are likely to be exposed to information about environmental issues through social media. Through information filtering, social media platforms promote the most relevant activities in accordance with users' preferences and habits (Gillespie, 2014). Especially, the advocacy of some cultural values such as postmaterialism could also act as the implicit norms that influence social media algorithms (Gillespie, 2015). In this sense, algorithms are tools of civic knowledge from which public culture and proenvironmental values may emerge (Gillespie, 2014, 2015). Meanwhile, social media facilitates accidental exposure to news, which is expected to have procivic implications. As news about politics and civic issues on social media travel side by side with lifestyle news, entertainment updates, and interactions with families and friends, social media have bridged public and private and political and nonpolitical domains. Therefore, social media may increase citizens' political knowledge through accidental exposure (Valeriani & Vaccari, 2016). Moreover, the interactive affordances of social media also help nonmembers engage in public discussions, thus increasing their willingness to participate in environmental activities. Therefore, this study proposes that:

H6: The positive relationships between environmental engagement and both (a) political and (b) relational use of social media will be moderated by ENGO membership. The relationships will be stronger for nonmembers than for members.

Method

Data

This study uses data from an online panel survey conducted in early 2017 by a reputable market research firm in Hong Kong. By the end of 2016, the population in Hong Kong was estimated to be 7.377 million, of which 48.1% were male and 51.9% were female, with a median age of 43.4. Additionally, 62.5% had received high school education or above, and 81.4% had a monthly income of more than HK$10,000 (Census and Statistics Department of Hong Kong, 2017). The sample was recruited from a proprietary consumer panel using gender and age quotas. The size of the online panel from which the respondents were recruited was 15,000, with a response rate of 30% to 40%. The final sample size was

1,500 for all items, with a subsample of 1,407 respondents (93.8%) who reported using social media. In detail, the sample consisted of 673 males (47.8%) and 734 females (52.2%), with a mean age of 34.3 (*SD* = 10.9). Of these participants, 94.4% had received high school education or above, and 81.4% had a monthly income of more than HK$10,000. Among them, 337 (24%) were members of an environmental nongovernment organization. Compared with the population of Hong Kong, the sample was younger and better educated, possibly because young and educated people are more likely to be Internet users and participate in online surveys (F. L. Lee & Chan, 2015).

Measures

Criterion Variables

Because willingness is a necessary condition of actual participation (Lilleker & Koc-Michalska, 2017), the following scale will measure the willingness to engage in environmental activism and consumerism. The environmental activism scale, developed from Seguin et al.'s (1998) study, assesses respondents' willingness to take part in the following activities: giving financial support to an ENGO, signing a petition for an environmental issue, writing a letter or calling government officials to support environmental protection, and participating in a protest or demonstration for an environmental issue. Each item was based on a 7-point scale ranging from 1 = strongly disagree to 7 = strongly agree. The responses were summed to form an additive index (Cronbach's α = .868, *M* = 3.32, *SD* = 1.36).

For environmental consumerism, respondents were asked about their willingness to participate in three types of consumer behavior: buying household chemicals that are environmentally friendly, buying products made from recycled materials, and boycotting or avoiding buying products from a company that may harm the environment (Dono et al., 2010). Each item was measured on a 7-point scale, and an additive index was formed from the responses (Cronbach's α = .839, *M* = 4.25, *SD* = 1.27).

Predictor Variables

This study uses four independent variables: traditional news media use, online news media use, political use of social media, and relational use of social media.

Traditional news media use. This index was created based on five items asking participants to rate on a 7-point scale (ranging from 1 = never to 7 = all the time) how often they use the following media to get information about public issues and politics: watching local free-to-air TV, watching cable TV, listening to radio news, reading traditional newspapers, and reading traditional magazines (Gil de Zúñiga et al., 2014). The five items were combined into an additive index (Cronbach's α = .723, *M* = 3.85, *SD* = 1.14).

Online news media use. Drawing from previous research (Gil de Zúñiga et al., 2014), four items were developed to measure online news media use. Respondents were asked how often they use the following media to get information about public issues and politics: reading online text news, reading online magazines, watching online video news, and visiting online discussion forums. These were

measured on a 7-point scale ranging from 1= never to 7 = all the time, and the responses were combined to form a new index (Cronbach's α = .780, *M* = 3.4, *SD* = 1.19).

Political use of social media. To assess their political use, respondents were asked how often they use social media for the following purposes: staying informed about your community, getting news or opinions on political or social issues, expressing your opinion about political or social issues, and discussing political and social issues with others. Each item was measured on a 7-point scale ranging from 1 = not at all to 7 = very often, and responses were finally combined into an additive index (Cronbach's α = .892, *M* = 3.41, *SD* = 1.48).

Relational use of social media. This index was created based on three items: staying in touch with family and friends, getting connected with more people, and meeting people who share your interests (Gil de Zúñiga et al., 2014). Again, a 7-point scale was used, and an index was created from the responses to the three items (Cronbach's α = .786, *M* = 4.39, *SD* = 1.42).

ENGO membership was adopted as a moderator in the study. It was measured by a single item asking each respondent whether he or she was a member of any organization aiming to protect the environment. This is a categorical variable, with yes (*n* = 354), no (*n* = 1024), and do not know (*n* = 29) the possible answers. The study treated do not know as the missing value (Dono et al., 2010).

Control Variables

For other variables known to be associated with environmental behaviors (e.g., Park & Yang, 2012; Stern, 2000), the study controlled the following demographic variables: age (*M* = 34.3, *SD* = 10.9); gender (*n* = 734 females, *n* = 672 males); income (*Mdn* = HK$15,000–19,999); and education, operationalized as the highest level of school completed (*Mdn* = associate degree).

In addition, this study included five psychological variables that may influence environmental behavior. As interest is positively related to most forms of political engagement and environmental engagement (Östman, 2014), the study measured environmental interest by a single item (Arlt et al., 2011). Respondents were asked to rate how interested they are in environmental issues on a 5-point scale ranging from 1 = not interested at all to 5 = extremely interested (*M* = 3.34, *SD* = .91). Meanwhile, environmental efficacy was also found to play a positive role in promoting environmental activities (Park & Yang, 2012). In this study, efficacy consisted of self-efficacy and collective efficacy, both of which were measured by a single item on a 7-point scale ranging from 1 = strongly disagree to 7 = strongly agree. To measure self-efficacy, respondents were asked how much they agreed with the statement, "People like me can contribute to the improvement of environmental conditions through action" (*M* = 4.31, *SD* = 1.41). To measure collective efficacy, respondents were asked how much they agreed with the statement, "Environmental organizations are effective at improving environmental situations" (*M* = 4.15, *SD* = 1.39). Previous studies also show that social pressure, or perceived popularity of a certain behavior, acts as an important factor influencing individuals' behavior (Park & Yang, 2012). This study used an open-ended question to measure perceived popularity of environmental activities that asked people to estimate the percentage of Hong Kong people who currently participated in environmental activities (*M* = 27.32, *SD* =

19.6). Moreover, as general life satisfaction is strongly correlated with consumerism (Gil de Zúñiga et al., 2014), the study controlled for the effects of life satisfaction as well. Following Diener, Emmons, Larsen, and Griffin's (1985) approach, we measured life satisfaction with an additive scale of five items: "In most ways my life is close to my ideal," "The conditions of my life are excellent," "I am satisfied with my life," "So far I have gotten the important things I want in life," and "If I could live my life over, I would change almost nothing." Respondents rated their level of agreement with these statements using a 7-point scale ranging from 1 = strongly disagree to 7 = strongly agree (Cronbach's α = .859, *M* = 3.79, *SD* = 1.10).

Results

The study first compared individuals' willingness to participate in environmental activism and environmental consumerism. On the whole, respondents showed more willingness to be engaged in environmental consumerism than in activism. Specifically, only 6.5% of respondents agreed that they wanted to participate in a protest or demonstration for an environmental issue, and 7.5% showed their desire to write a letter or call officials about environmental issues. For signing a petition and giving financial support to an ENGO, the percentages of respondents who were willing to participate were 12.2% and 10%, respectively.

As to environmental consumerist behaviors, 18.1% of respondents agreed that they would buy household chemicals that are environmentally friendly, and 19.5% were willing to buy products made from recycled materials. Moreover, 20% of respondents were willing to boycott buying products from a company that may harm the environment.

ENGO members and nonmembers showed differences in their demographic characteristics, psychological features, media use behavior, and environmental participation. In detail, compared with nonmembers, ENGO members were younger, with the average age of 32.17; more likely to be male (*n* = 175) than female (*n* = 162); and had higher incomes. Moreover, the results show that ENGO members have higher levels of environmental interest, self- and collective efficacy, and life satisfaction. For media use behavior, ENGO members appeared to spend more time on news media and social media. Finally, ENGO members were more active in both environmental activism and consumerism (see Table 1).

Table 1. Means Comparisons Between ENGO Members and Nonmembers.

	Nonmembers (n = 1024)	ENGO members (n = 354)	t value/X^2
Age	35.05	32.17	4.65***
Gender (n)			
Male	455	175	2.01
Female	504	162	
Income	5.66	5.98	−2.49**
Environmental interest	3.24	3.68	−7.92***
Self-efficacy	4.21	4.63	−4.78***
Collective efficacy	4.07	4.42	−4.09***
Perceived popularity (%)	25.4	31.37	−4.64***
Life satisfaction	3.66	4.18	−7.09***
Traditional news	3.74	4.22	−6.82***
Online news	4.31	4.70	−5.19***
Political use (social media)	3.18	4.23	−12.0***
Relational use (social media)	4.32	4.71	−4.47***
Environmental activism	3.04	4.23	−15.2***
Environmental consumerism	4.12	4.76	−14.7***

**p < .01. ***p < .001.

Table 2 displays all correlations between the key variables. All pairwise relationships were positive and significant. The highest correlation coefficient among variables was .55, the relationship between environmental activism and consumerism. The correlation coefficients between membership and four types of media use behaviors were smaller than the recommended threshold of .70 (Tabachnik & Fidell, 2001), suggesting that the constructs in this study did not exhibit severe multicollinearity problems.

Table 2. Zero-Order Correlations.

Variable	1	2	3	4	5	6	7
1. Membership	1						
2. Traditional news	.186**	1					
3. Online news	.143**	.418**	1				
4. Political use	.315**	.346**	.481**	1			
5. Relational use	.123**	.258**	.381**	.531**	1		
6. Environmental activism	.386**	.382**	.310**.	.514**	.243**	1	
7. Environmental consumerism	.223**	.271**	.421**	.430**	.431**	.551**	1

*$p < .05$. **$p < .01$.

Table 3 shows findings for H1, H2, H3, and H4, each of which concerns the relationship between media use behaviors and the criterion variables. As shown in Table 3, demographic variables, as a block, accounted for a significant amount of variance in environmental activism (R^2 is around 3.9%) but not in environmental consumerism (R^2 is around 0.4%). Among them, younger male respondents and those who have higher income were found to be more likely to participate in environmental activism. Psychological variables accounted for a significant amount of variance in both environmental activism (R^2 is around 22.2%) and environmental consumerism (R^2 is around 31.6%). Self-efficacy, environmental interest, and life satisfaction were significantly related to both criterion variables. Membership in an ENGO, as a block, explained 5.9% of variance in environmental activism and 0.6% in environmental consumerism. Overall, the control block accounted for 32.0% and 32.6% of the variance in environmental activism and environmental consumerism, respectively.

The forth block in Table 3 examined the relationship between news media consumption and the criterion variables. As expected (H1 and H2), both traditional news media use (β = .193) and online news media use (β = .080) were found to be meaningful predictors of environmental activism, although the effect size was small. However, for environmental consumerism, only online news consumption (β = .256) had a significant relationship (H2), whereas the relationship with traditional news media use was not significant (H1). As a block, news media use accounted for 4.3% and 5.7% of the variance in environmental activism and environmental consumerism, respectively. In conclusion, H1 was partly supported and H2 was supported.

The role of social media in promoting environmental behavior was examined in the next block. As expected (H3), political use of social media was significantly and positively associated with both environmental participation measures (β = .313 for environmental activism, and β = .081 for environmental consumerism). However, the results showed a negative relationship between relational use and environmental activism (β = −.075), and a positive and significant association between relational use and consumerism (β = .169). In this sense, H3 was supported and H4 was partly supported.

Table 3. Predictors of Environmental Participation.

	Environmental Activism		Environmental Consumerism	
	β	*t* Value	β	*t* Value
Demographics				
Age	−.153***	−4.99	−.038	−1.21
Gender (high: female)	−.107***	−3.92	−.027	−.978
Salary	.147***	4.61	.062	1.91
Education	−.054	−1.78	−.018	-.586
R^2 (%)	3.9***		0.4	
Psychological variables				
Self-efficacy	.074**	2.61	.177***	6.48
Collective-efficacy	.146***	5.32	.152***	5.77
Interest	.159***	5.94	.322***	12.5
Perceived popularity	.132***	5.36	.042	1.78
Satisfaction	.245***	9.64	.126***	5.16
Inc. R^2 (%)	22.2***		31.6***	
Membership	.257***	10.5	.084**	3.45
Inc. R^2 (%)	5.9***		.6**	
News media use				
Traditional news	.193***	7.29	.010	.379
Online news	.080**	3.10	.256***	10.1
Inc. R^2 (%)	4.3***		5.7***	
Social media use				
Political use	.313***	10.6	.081**	2.74
Relational use	−.075**	−2.86	.169***	6.47
Inc. R^2 (%)	5.2***		3.4***	
Total R^2 (%)	41.5***		41.6***	

Note. Entries are standardized regression coefficients.
*p < .05. **p < .01. ***p < .001.

The findings shown in Table 3 suggest that media consumption could be a significant factor, and the analysis reported in Table 4 examined the possibility that the role of media use might be strengthened or weakened depending on one's membership in an ENGO. To reduce the multicollinearity between predictors and interaction terms, each variable was first mean centered, and the interaction terms were based on the centered values. As shown in Table 4, the interaction of traditional news media use and membership (H5a) was positively and significantly associated with environmental activism (β = .068) but not with consumerism (β = .005). In contrast, the interaction term between online news media use and

membership (H5b) was found to be positive and significant for environmental consumerism (β = .067) but not for activism (β = .020). Moreover, the interaction between political use of social media and membership was significant but negative (β = −.060 for environmental activism, and β = −.095 for environmental consumerism), which thus showed that the positive association between political use of social media and environmental behavior tended to be stronger among nonmembers (H6a). However, the interaction effects of relational use of social media and membership were not significant for either of the criterion variables (H6b). Therefore, H5a and H5b were partly supported, H6a was supported, and H6b was not supported.

To understand the significant interaction relationships, predicted values of environmental activism and environmental consumerism were plotted in four figures. Similar relationship patterns were found for environmental activism and environmental consumerism. The findings in Table 3 indicate a positive relationship between use of news media and both types of environmental behaviors, and the results in Figures 1 and 2 demonstrate that the positive relationships tend to become stronger for ENGO members.

Table 4. Interactions Between Media Use and ENGO Membership.

	Environmental Activism		Environmental Consumerism	
	β	*t* Value	β	*t* Value
Prior blocks (R^2, %)	41.5***		41.6***	
Interaction items				
Traditional news × Membership	.068 **	2.61	.005	.211
Online news × Membership	.020	.707	.067*	2.40
Political use × Membership	−.060*	−1.95	−.095**	−3.08
Relational use × Membership	.039	1.45	.023	.855
Inc. R^2 (%)	.6*		.5*	
Total R^2 (%)	42.1***		42.2***	

Note. Prior blocks include age, gender, education, personal income, self-efficacy, collective efficacy, environmental interest, perceived popularity, life satisfaction, news media use, social media use, and membership. Entries are standardized regression coefficients.
*p < .05. **p < .01. ***p < .001.

As a result, the gap in environmental engagement between ENGO members and nonmembers increases with the use of news media. However, the opposite pattern was observed for social media use. The results in Figures 3 and 4 show that the positive relationships between social media use and environmental engagement appear to be manifested mostly among nonmembers. In fact, political use of social media can narrow the gap in environmental behaviors between ENGO members and nonmembers.

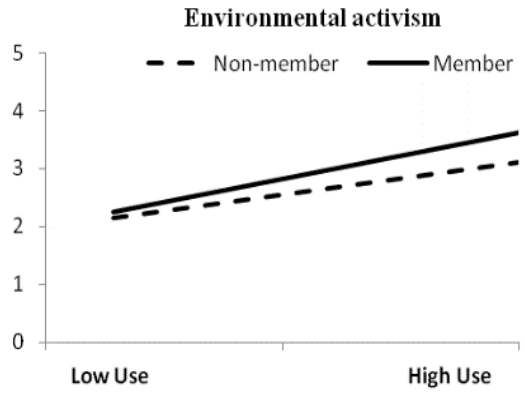

Figure 1. Predicting environmental activism with traditional news media use by membership.

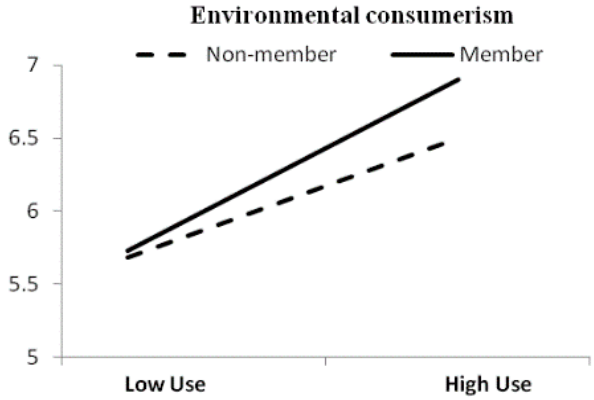

Figure 2. Predicting environmental consumerism with online news media use by membership.

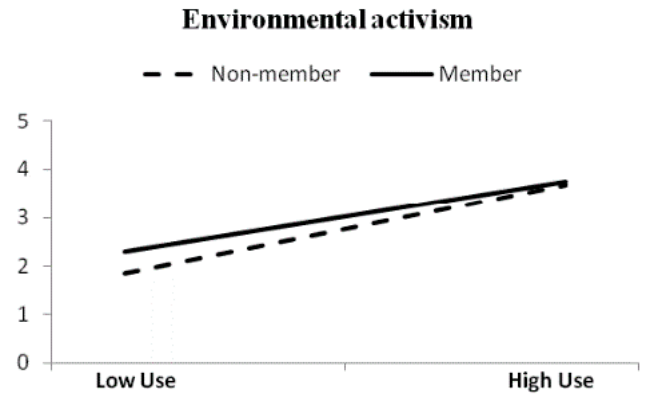

Figure 3. Predicting environmental activism with political use of social media by membership.

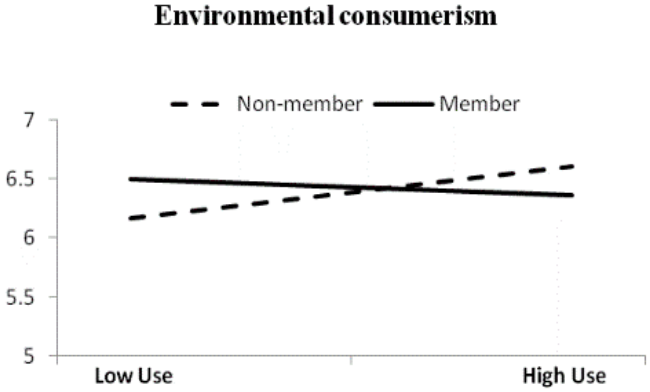

Figure 4. Predicting environmental consumerism with political use of social media by membership.

Discussion

This study examined two forms of environmental engagement in Hong Kong: environmental activism and environmental consumerism. As shown in the study, environmental activism is significantly associated with individuals' demographics and psychological characteristics, but environmental consumerism was more strongly related to individuals' psychological characteristics than their demographics. The differences indicate that softer forms of environmental participation such as daily consumer behaviors are indeed available to people who are willing to get engaged, regardless of age, gender, income, and education (Östman, 2014). The study also shows that psychological traits act as key factors influencing people's values and attitudes (Milfont & Sibley, 2012). Indeed, people who are interested in environmental issues and optimistic about their capabilities are more capable of cognitively

processing environmental information and have stronger incentives to act. Therefore, like F. L. Lee et al.'s (2017) study shows, psychological factors have a significant impact on civic participation in Hong Kong.

In line with previous studies reporting that news media use promotes environmental behavior (Östman, 2014), this study shows that news media use is positively associated with environmental engagement. In fact, news media serve as an important source of information on the current issues for citizens to understand what is going on. In this way, news consumption could increase citizens' environmental knowledge and raise their environmental awareness and environmental consciousness, which can then promote citizens' willingness to engage in environmental behaviors.

However, the only significant association for environmental consumerism was with online news consumption, indicating important differences between online and traditional news platforms. As suggested by Bachmann, Kaufhold, Lewis, and Gil de Zúñiga (2010), the Internet has increased both the amount and variety of news content, facilitating the diffusion of soft news about topics such as green lifestyles and green consumerism. Compared with traditional news platforms, online news media are more open to people looking for the information that is similar to their lifestyle values. In this sense, using online news media to acquire information could help increase people's awareness of the recommended lifestyle, which could impact individuals' consumption choices.

The results also show the importance of distinguishing patterns of social media use in civic engagement studies. As highly interactive platforms, social media have empowered users to select information according to their interests, and online discussion further aids comprehension of issues (Bachmann et al., 2010; Gil de Zúñiga et al., 2012). In this sense, political use of social media is positively related to individuals' participatory behaviors. By contrast, the role of relational use of social media is more context dependent. This study shows that although relational use of social media is positively associated with environmental consumerism, it has a negative relationship with environmental activism. The findings are consistent with Oakley and Salam's (2014) and Östman's (2014) studies of proenvironmental behaviors. In fact, in the process of socializing with family members, friends, and coworkers, people often discuss issues related to environmental protection. As a result, proenvironmental social norms and behaviors are promoted and likely to be mimicked by their contacts through social influence and experience sharing (Gil de Zúñiga et al., 2014). In this sense, relational use of social media is likely to be related to daily consumer behaviors (Gil de Zúñiga et al., 2014; Oakley & Salam, 2014). However, the negative association between relational use of social media and environmental activism was somewhat unexpected. One of the explanations is that spending time on socialization might reduce the time available for information acquisition, which would negatively affect people's knowledge of environmental issues. Also, the egocentric and apolitical nature of relational use may limit the effects on participatory behaviors, particularly in the case of more serious forms of engagement (Shah, Kwak, & Holbert, 2001; Theocharis & Lowe, 2016).

In addition, the findings indicate that the positive relationship between media use and engagement is moderated by a third variable: membership in ENGOs. The study shows that ENGO members are younger and have higher income and life satisfaction. The findings are consistent with Lai's (2000) observation that ENGO members are mostly from the upper social stratum. These people feel more

empowered, more satisfied with life, and are more motivated to make efforts to participate in postmaterialistic activities. Meanwhile, group membership also enhances democratic values and promotes media use. For instance, activities and interactions among ENGO members may increase their environmental awareness, interest, and psychological attachment to the organizations, which could further promote members' news media consumption and interest in connecting with other environmentalists (Kwak et al., 2004).

The interaction effect indicates differential gains from news media and social media between ENGO members and nonmembers. In most cases, neither traditional news media nor online news media were specifically designed to encourage direct user engagement. Individuals need to make an effort to identify the mobilizing information from the massive amount of potentially relevant materials and to use their knowledge to understand such information (Hardy & Scheufele, 2005; Scheufele, 2002). In this sense, the effects of news media are largely dependent on individuals' motivation and ability, which is consistent with knowledge-gap and rich-get-richer hypotheses (Price & Zaller, 1993). In contrast, on social media platforms, both members and nonmembers can easily get involved in the production and dissemination of ideas and participate in discussions and debates. As Bennett (2012) suggests, social media promote personalized politics in which individuals are mobilized around their personal lifestyle values to engage with multiple causes, including environmental protection. Non-ENGO members may get acquainted with environmental issues via serendipitous exposure on social media, which increases their awareness of environmental protection (Valeriani & Vaccari, 2016). Furthermore, the weak ties that are abundant on social media promote connections between otherwise disparate communities (Lim, 2012) and can facilitate interactions between individuals with high and low environmental interest. In this process, social media provide chances for nonmembers to be exposed to environmental information, participate in civic discussions, and get mobilized through personal networks.

In addition, citizens who are connected to environmental activists may become more exposed to environmental content via recommendations made by social media algorithms. Given the prevalence of postmaterialistic values in Hong Kong society (Wong & Wan, 2009), it is reasonable to expect that these algorithms may promote environmental protection information to social media users via lifestyle-oriented content (Gillespie, 2015). This could potentially account for a portion of the "equalizing" effect of social media (Xenos et al., 2014). Still, it is important to refrain from making any claims of revolutionary effects of social media, as the interaction effect sizes in this study were quite small, especially for environmental activism.

We also note some limitations of the current study. A fundamental methodological issue is that the study does not permit causal inferences related to the relationship between media consumption and participatory behaviors. The notion that media may affect general environmental engagement is based on longitudinal evidence in political and civic engagement studies (Eveland, Hayes, Shah, & Kwak, 2005; N. J. Lee, Shah, & McLeod, 2013). Although there is little to suggest that environmental engagement promotes a general inclination to consume more news and to use social media more frequently, caution should be exercised when claiming that media use is a key causal factor. Another issue is that our study did not include any measures of interpersonal discussion, although previous research has demonstrated direct effects of interpersonal discussion on climate engagement (Roser-Renouf, Maibach, Leiserowitz, & Zhao,

2014). Additionally, we did not specify the strength of membership identification, which varies according to the feelings of empowerment and trust toward organizations (Dono et al., 2010; Park & Yang, 2012). In this sense, how ENGO members differ in their self-empowerment and how this is related to different levels of environmental engagement need further exploration.

Conclusion

This study offers new evidence that the uses of news media and social media have different implications for environmental engagement for ENGO members and nonmembers. Although both news media and social media use are positively associated with environmental activism and consumerism, the positive relationship depends on individuals' membership in ENGOs. More specifically, ENGO members gain more from the use of traditional and online news media, which then increases the gap in environmental engagement between members and nonmembers. In contrast, nonmembers benefit more from political use of social media, which consequently narrows the gap in participation. To a certain degree, social media act as the equalizer in encouraging nonmembers' participation, especially in softer forms of citizen engagement such as environmental consumerism. Cumulatively, such lower-involvement activities may have a significant impact over time on broadening the base of participation in environmental movements and preventing further deterioration of environmental conditions.

The findings also have practical implications in the sense that we find the potential in social media to encourage grassroots environmental participation. Considering the dense population of Hong Kong, grassroots participation in environment-friendly activities may contribute significantly to improving environmental conditions. To deal with the deteriorating environmental situation, the government of Hong Kong has established both environmental policies and pollution control agencies and has carried out numerous educational campaigns in schools and through media channels (Hills, 2005). The study highlights the role of social media in spreading environmental knowledge, promoting interactions between environmentalists and nonenvironmentalists, and mobilizing citizens to participate in daily proenvironmental activities. This study suggests that the government, ENGOs, and those who are concerned about the environment should use social media to promote information related to environmental protection, such as that advocating green consumerism and green lifestyles, to raise citizens' environmental awareness and motivate them to act upon it.

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