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Opinion Leadership, Media Use, and Environmental Engagement in China

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This study examines predictors of environmental engagement among Chinese citizens, paying particular attention to their leadership qualities and their news and social media use. Using a measure of environmental engagement that incorporates both activist (petitions, protests) and consumerist behaviors (boycotting and buycotting), we find that self-perceived opinion leadership, news media use, and Weibo use are all significant predictors of environmental engagement, partially mediated by environmental knowledge. We also explore interactions between opinion leadership and media use, showing differential impacts of news and social media use on environmental knowledge and engagement in China. More specifically, we find that the use of social media benefits people with higher levels of opinion leadership, widening the knowledge and participation gap between them and those who are lower in leadership qualities. In contrast, the use of news media narrows the gap in environmental knowledge and engagement, allowing citizens who do not perceive themselves to be opinion leaders to catch up with those who do. The implications of these findings for promoting environmental engagement in authoritarian contexts are discussed.

Keywords: opinion leadership, news media, Weibo, environmental engagement, China

Several decades of rapid economic growth characterized by large-scale industrialization, infrastructure development, and urbanization have transformed China into the second-largest economy in the world. The cost of such dramatic pace of development is perhaps most evident when looking at the levels of environmental degradation and air and water pollution across the most populated urban centers of China. Not surprisingly, environmental protection has recently become one of the key governmental priorities, alongside the fight against corruption and financial recklessness. These changes coincide with an increasing environmental awareness among Chinese citizens and grassroots efforts to improve environmental conditions. One of the key enablers of proenvironmental activism has been the Internet, particularly social media

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platforms. Weibo, China's microblogging platform with almost 400 million users, has provided an alternative space for ordinary citizens to share information, exchange opinions, and even influence environmental policies (Xu, 2014). On Weibo, citizens can distribute information and participate in discussions with fewer political constraints compared with traditional media, creating a civic discourse that counterbalances the emphasis on rapid economic growth and mainstream societal values (Svensson, 2016).

This study examines how Chinese citizens' leadership qualities relate to their news media and social media use and whether this use predicts their environmental knowledge and participation. Research conducted in the United States shows that opinion leadership is predictive of the likelihood of engaging in civic action (e.g., Scheufele & Shah, 2000; Shah & Scheufele, 2006). Still, we know little about the role of opinion leadership in fostering environmental engagement in China, particularly about its potential to moderate the relationship between media use and proenvironmental engagement. More specifically, our goals are to examine whether citizens high in opinion leadership qualities are more likely to benefit from using news versus social media, and also to test for potential differences in the relationship between different types of media use and environmental knowledge and participation. In the context of China, news media are under strict control of the government and are tasked at serving specific educational and propagandistic goals, which in recent years have included raising environmental awareness among Chinese citizens. In contrast to the Western news media model, the major function of Chinese news media is to consolidate the state power—and serving the national interests is always the top priority for them (Luo, 2015). Chinese news media play an important part in building social consensus and maintaining social stability (P. Lee, 1994) and serve to educate citizens about the issues of national importance. In contrast, although not free from government censorship and control (G. King, Pan, & Roberts, 2013), social media in China still offer alternative discursive spaces in which citizens can voice their own concerns, engage in discussions of environmental issues, and even call for civic action. Given the distinct nature of these two media systems, it is important to understand how public service-oriented news media and social media can make a difference in fostering civic behaviors in an authoritarian context.

Literature Review

In this study, environmental engagement denotes both activist and consumerist behaviors. In China, environmental activism has been growing steadily in parallel with the rapid proliferation of digital media platforms. Although environmental activism is still under strict regulatory control by the state, digital technologies seem to provide new possibilities to circumvent political constraints and promote public participation (A. Yang & Taylor, 2010). A number of studies have highlighted the role of the Internet and social media networks in lowering the threshold of environmental engagement and facilitating a green public sphere in China (e.g., Deluca, Brunner, & Sun, 2016; He, Boas, Mol, & Lu, 2017; Ji, Harlow, Cui, & Wang, 2018; G. Yang & Calhoun, 2007). The repertoire of environmental actions in China has expanded from educational and volunteering activities to more confrontational ones, such as mass protests, petitions, and civil litigations (Xu, 2014). Moreover, with the advocacy of postmaterialistic values and green lifestyles, a softer form of participation—namely environmental consumerism—has been gaining ground among Chinese citizens (Zhu & Sarkis, 2016). As a form of lifestyle politics, environmental consumerism requires less effort and provides informal opportunities for involvement, offering a foundation for further formal environmental engagement (Bennett, 1998). Given its relatively open and interactive nature, Weibo provides an ideal

platform for citizens to get involved in environmental topics, facilitating the development of both environmental activism and green consumerism in China (He et al., 2017).

Opinion Leadership and Environmental Engagement

Opinion leadership is generally associated with a higher socioeconomic status and higher levels of education, knowledge, and social recognition (Rogers, 1983; Weimann, 1994). In addition, opinion leaders consume more media content, are more independent in developing personal judgements, and they more actively participate in civic and social life (Shah & Scheufele, 2006; Weimann, 1994). A number of studies examined the relationship between opinion leadership and participatory behaviors, most of which found a positive association (e.g., Park, 2013; Scheufele & Shah, 2000; Shah & Scheufele, 2006). For instance, opinion leaders are found to be more politically aware and more likely to be involved in public activities (Black, 1982). Compared with nonleaders, opinion leaders are more likely to attend political meetings, vote, and lead specific agendas. Stein and Heller (1979) explained that the role of opinion leaders requires high participation, which is also a way to help maintain their status. According to them, the relationship between leadership and participation can be attributed to several factors, such that opinion leaders have better skills and competencies to participate, and they can make task-related contributions to the group through participation. As mentioned by Weimann (1994), opinion leaders usually display higher levels of participation, through which they can get connected with more people and enlarge their social networks. Since environmental engagement is a form of civic engagement (Zhang & Skoric, 2018), we expect a positive association between opinion leadership and proenvironmental behaviors in the context of China. Furthermore, individuals with higher levels of opinion leadership often possess higher levels of self-perceived knowledge than those with lower levels of opinion leadership. Self-perceived knowledge refers to the amount of information people think they know about the environment (Lyons & Henderson, 2005). Since people who perceive themselves as opinion leaders are also more confident about their ability to understand environmental issues, a positive relationship between leadership and environmental knowledge is also expected in the study. Thus, the following hypotheses are proposed:

H1: Opinion leadership will have a positive relationship with (a) environmental knowledge and (b) environmental engagement.

Opinion Leadership and Media Use

It is well-documented that opinion leaders tend to use various media platforms to be informed and to get involved in public issues. For instance, studies found that the influential status of opinion leaders in their communities encourages them to surveil the environment and seek information from news media (Katz, 1957; Katz & Lazarsfeld, 1955; Shah & Scheufele, 2006). As Levy (1978) explains, opinion leaders tend to seek cognitive gratifications and to increase their exposure to news information and opinions, which enables them to (re)interpret social issues to their followers. Opinion leadership is also found to be positively related to social media use (F. Lee & Chan, 2015). On the one hand, as early adopters of innovations, opinion leaders are more likely to use new media technologies than nonleaders. On the other hand, the Internet provides a platform for both information seeking and opinion exchange without temporal and spatial

restraints, which motivates opinion leaders to use it for news acquisition and social issue involvement (Park, 2013). Focusing on the expressive and networking affordances of social media, Francis Lee and Joseph Chan (2015) highlighted the role of social media in facilitating interpersonal communication, through which opinion leaders can exert their influence on various topics. As some studies suggested, opinion leaders can reach their followers through opinion expression and news sharing on social media, which can be interpreted as efforts to diffuse information and persuade others (Weeks, Ardèvol-Abreu, & Gil de Zúñiga, 2017; Winter & Neubaum, 2016). Since social media networks have gone beyond private social connections, opinion leaders are increasingly using social media to reach politicians, activists, governments, and media organizations for news and opinions (Winter & Neubaum, 2016). Weibo, as one of the most popular social media platforms in China, has enabled opinion leaders to keep aware of real-world events and regularly voice their opinions (Zhang, Zhao, & Xu, 2016). Like Twitter, Weibo allows users to interact with others by retweeting, making comments, clicking "like," and mentioning others, constituting a public space for news sharing and opinion exchange (Tong & Zuo, 2014). Moreover, Weibo's real-name verification system has further enhanced the status of opinion leaders and increased their credibility. Through Weibo, opinion leaders are able to challenge the information monopoly and shape public opinions (Wang & Shi, 2018). More importantly, the follower networks formed on Weibo will help opinion leaders mobilize resources quickly and easily. Compared with other conventional recruitment methods, online mobilization through follower networks can reach many geographically dispersed users at low cost and high speed. Not surprisingly, Weibo has become one of the major mobilizing conduits in contemporary China (Tong & Lei, 2013). Svensson (2016) examined connectivity and civic engagement on Weibo, pointing out the growing importance of opinion leaders in dominating public debates. Equipped with digital skills and social and cultural capital, opinion leaders also play a crucial role in the evolution of online communities in China (Huang, Gui, & Sun, 2015, p. 275). Based on the above, this study proposes a positive relationship between opinion leadership and media use behaviors:

H2: Opinion leadership will have a positive relationship with (a) news media use and (b) Weibo use.

Environmental Knowledge as a Mediator in the Relationship between Media Use and Environmental Engagement

In general, research has found a positive relationship between news media use and participatory behaviors. For instance, newspaper use (Robinson & Levy, 1996) and television news use (Chaffee, Zhao, & Leshner, 1994) can facilitate political knowledge and promote people's engagement in public and political issues. Online news consumption is also found to contribute to increased civic participation (Shah, Cho, Eveland, & Kwak, 2005). In addition, social media use for interaction and information purposes can increase political participation both directly and indirectly (Gil de Zúñiga, Copeland, & Bimber, 2014; Östman, 2014). In fact, social media have changed how citizens engage in politics, lowering barriers and providing low-cost routes into political discussion and participation (Skoric, Zhu, Goh, & Pang, 2016). According to Warren, Sulaiman, and Jaafar (2015), the use of social media can accumulate social capital and engender trust, which promotes civic engagement. Although media consumption is closely associated with participatory behaviors, their relationship is usually not direct. Psychological variables, such as knowledge and efficacy, are found to be important mediators between communication and participation (Jung, Kim, & Gil de Zúñiga, 2011).

Environmental knowledge can be understood as a citizen's capacity to understand environmental issues (Roth, 1992). It is a measure of people's knowledge about environmental protection, which can be gained through formal education and interpersonal talk, as well as through news media consumption (Zareie & Navimipour, 2016). Studies have found positive relationships between the level of political knowledge and news media usage, in which knowledge is often treated as a consequence of media usage (e.g., Jung et al., 2011). According to them, news media serve as information sources for the general public to learn about environmental problems and provide suggestions on environmentally friendly behaviors, with social media further enabling users to acquire such information at any time and in any place. Environmental knowledge is also closely associated with participatory behaviors, as knowing basic facts about environmental protection helps individuals orient themselves within the field of environmental protection practice (Sotirovic & McLeod, 2001). Accordingly, news media and social media use can facilitate proenvironmental behaviors by enhancing individuals' levels of knowledge of environmental protection, so we propose that:

H3: Environmental knowledge will mediate the relationship between media use and environmental engagement, such that (a) news media use and (b) Weibo use will be associated with greater environmental knowledge, which will, in turn, (c) be predictive of the greater likelihood of participating in proenvironmental activities.

Moderating Role of Opinion Leadership

Although both traditional news media use and the civic use of social media are found to be positively associated with participation, there are fundamental differences in the two types of media platforms (Bennett & Segerberg, 2012), particularly as they may interact with contextual factors in very different ways (Zhang & Skoric, 2018). Compared with social media, traditional news media provided limited space for content selection and opinion expression. Although Lazarsfeld, Berelson, and Gaudet (1944) showed greater news media exposure among opinion leaders, other studies found no significant differences in general media exposure between opinion leaders and nonleaders (e.g., K. Chan & Misra, 1990; Levy, 1978). Instead, they pointed out that the quality of media-person interactions is more important than the sheer quantity of media exposure. Regarding news media use, the one-way communication pattern has historically limited the interaction between the media and audiences. As Weimann (1991) points out, the patterns of media consumption and personal sources are important factors affecting opinion leaders' decisions (p. 276). Further, Katz (1957) also pointed out that personal influence, rather than media exposure, is a major factor in influencing opinion leaders' decision-making process. More importantly, news media in China are increasingly used by the government to disseminate environmental information and to call for green actions among citizens, strengthening support for their environmental protection policies (de Boer, 2017; Mol, 2006). The news media ecology in China is indeed different from those in most other countries, as its news media are primarily driven by national development imperatives rather than commercial goals. As a result, exposure to news media may give those with lower levels of opinion leadership a second chance to be more informed about environmental issues even in the absence of personal interest, thus making them more motivated to engage proenvironmental behaviors. Therefore, it is likely that news media consumption may help narrow the gap in environmental knowledge that typically exists between individuals with higher levels of opinion leadership and those with lower levels, which is consequently expected to promote their environmental engagement. Based on the above, this study proposes the following hypotheses:

H4: Opinion leadership will moderate the relationship between news media use and (a) environmental knowledge and (b) environmental engagement. The relationship will be stronger for people with lower levels of opinion leadership.

One of the fundamental differences between social media and news media is that social media provide a platform for personal expression and information sharing among citizens (F. Lee, Chen, & Chan, 2017). Past research has suggested that the expressive use of social media would encourage deeper information processing and create a spiral of self-reinforcement, thus having a larger influence on expressers themselves than message receivers (Cho, Ahmed, Keum, Choi, & Lee, 2018; Nekmat, 2012; Pingree, 2007; Valkenburg, 2017). Furthermore, social media platforms make it easier for users to identify like-minded others who share common interests, which helps opinion leaders form discussion groups around certain issues (Huang & Sun, 2014). From the connective action perspective, opinion leaders can even connect directly with environmentalists via social media, thus spreading information from activists to their own networked publics (Bennett & Segerberg, 2012). In this sense, social media can benefit those with higher levels of opinion leadership by offering them a platform for information seeking, networking, and opinion expression. As a result, the use of social media may increase the gap in environmental knowledge and environmental engagement between individuals with higher levels of opinion leadership and those with lower levels by offering more resources to those who already know how to leverage them. This study thus focuses on the potential self-effects of Weibo use on opinion leaders themselves and proposes that:

H5: Opinion leadership will moderate the relationship between Weibo use and (a) environmental knowledge and (b) environmental engagement. The relationship will be stronger for people with higher levels of opinion leadership.

Given that we expect both moderated and mediated relationships, we aim to test whether opinion leadership moderates the indirect relationship between media use and environmental engagement via environmental knowledge, and we hold that:

H6: The indirect relationship between news media use and environmental engagement via environmental knowledge will be conditional on opinion leadership. The indirect relationship will be stronger among people with lower levels of opinion leadership.

H7: The indirect relationship between Weibo use and environmental engagement via environmental knowledge will be conditional on opinion leadership. The indirect relationship will be stronger among people with higher levels of opinion leadership.

Figure 1 presents the overall conceptual model for this study.

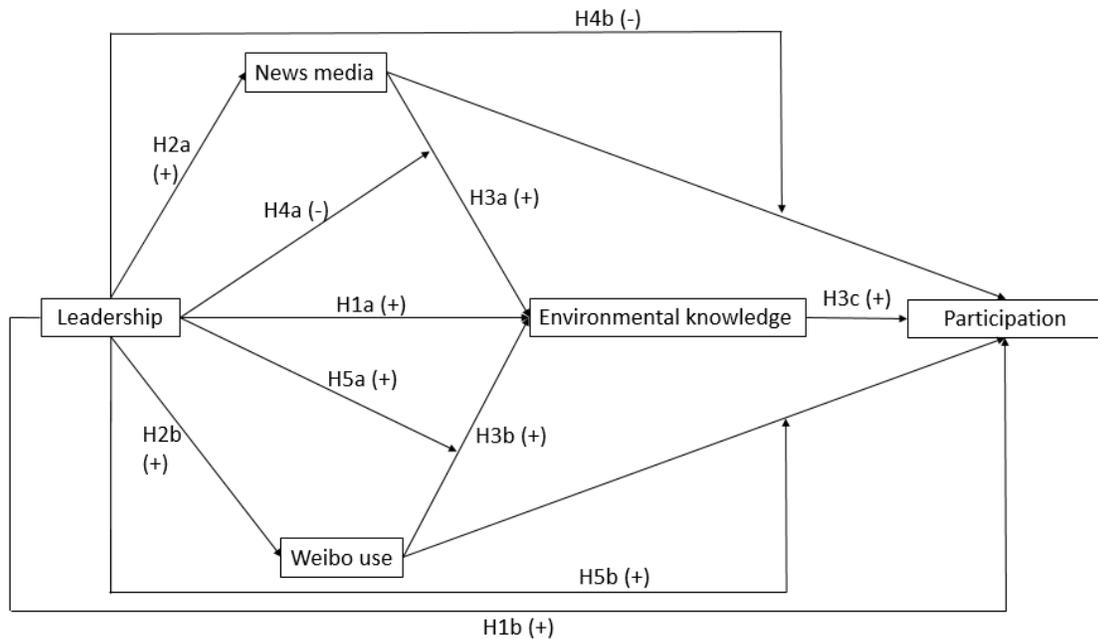


Figure 1. Conceptual model with hypotheses.

Method

Data

The data for this study is derived from an online, opt-in survey of Weibo users conducted in early 2018 by a reputable market research firm in mainland China. It surveyed Weibo users across 27 provinces in China, with Beijing, Shanghai, and Guangdong being the top three surveyed locales. The final sample size was 1,053 participants, consisting of 560 males (53.2%) and 493 females (46.8%). The average age was 33.9 ($SD = 11.7$), with 44.6% of the participants being in the 18 to 30 age range; 74.4% of the participants reported having a bachelor's degree or higher. According to Weibo Data Center (2017), there were 376 million active Weibo users by July 2017; 56.3% were male users, and 43.7% were female users. The majority of Weibo users were in the age between 18 and 30 (66.2%), and they were mainly from well-developed regions, with Beijing, Shanghai, and Guangdong being the three largest municipalities/provinces. In terms of their educational attainment, 77.8% of Weibo users have received at least a university education. Our sample is thus broadly representative of the population of Weibo users in China, in terms of gender, geographical distribution, and education; however, our survey excluded all Weibo users below 18.

Measures

Criterion Variables

Environmental engagement. In line with prior research, environmental engagement includes measures of both environmental activism and environmental consumerism. It was assessed by seven items, asking respondents' willingness of: (1) giving financial support to an ENGO, (2) signing a petition for an environmental issue, (3) writing a letter or calling government officials to support environmental protection, (4) participating in a protest or demonstration for an environmental issue, (5) buying household chemicals that are environmentally friendly, (6) buying products made from recycled materials, and (7) boycotting or avoiding buying products from a company that may harm the environment. Each item was based on a seven-point scale, ranging from 1 = strongly disagree to 7 = strongly agree. The responses were averaged to create an additive index (Cronbach's alpha = 0.913, $M = 4.87$, $SD = 1.23$).

Environmental knowledge. This study measured the perceived knowledge of environmental issues instead of factual environmental knowledge, since there are many disagreements on the actual environmental effect of a product (Mostafa, 2007). In detail, the environmental knowledge scale contains five items, asking participants how much they agreed with the following five statements (seven-point scale, ranging from 1 = strongly disagree to 7 = strongly agree): "I am very knowledgeable about environmental issues"; "I understand the environmental phrases and symbols on product package"; "I know that I buy products and packages that are environmentally safe"; "I know more about recycling than the average person"; and "I know how to select products and packages that reduce the amount of waste ending up in landfills." The responses were combined into an additional index (Cronbach's alpha = 0.937, $M = 4.92$, $SD = 1.22$).

Predictor Variables

Opinion leadership. The study adopted the self-designating approach to measure opinion leadership (King & Summers, 1970). Participants were asked to identify themselves as being influential among community members, and those who had higher scores were considered to have higher levels of opinion leadership (Hamilton, 1971). Although the self-identification method may contain biased responses, it can easily identify individuals' preexisting opinion leadership and thus stratify the degree of it (Park, 2013). Another advantage of this self-identification scale is that it can be used in various cultures and toward different populations (Childers, 1986), which suits the Chinese context in this study. In detail, it was adapted from generalized opinion leadership scale (Gnambs & Batanic, 2011) and includes 12 items. Respondents were asked how much they agreed with the statements: (1) Among my friends and acquaintances, I often decide which issues are current; (2) My friends and acquaintances often discuss subjects that I brought up; (3) I usually succeed if I want to convince someone about something; (4) It is easy for me to influence other people; (5) I am often the one among my friends and acquaintances who approves important decisions; (6) I am often asked to make decisions for friends and acquaintances; (7) People in my social circle frequently act upon my advice; (8) I have the impression that I am regarded by my friends and acquaintances as a good source for tips and advice; (9) I often use my persuasive powers during discussions to reach agreements quickly; (10) It is important for me that my friends and acquaintances agree on basic things; (11) Friends and acquaintances are often my sources of tips and advice; and (12) I often seek information from friends and acquaintances. The seven-point

response scale (ranging from 1 = strongly disagree to 7 = strongly agree) was adopted and an additive index was created (Cronbach's alpha = 0.976, $M = 4.44$, $SD = 0.940$).

Weibo use. This index was measured by both informational and expressive Weibo uses which have been most clearly linked with participatory behaviors in the literature (Skoric et al., 2016). To assess them, we asked respondents how often they used Weibo for the following purposes: (1) staying informed about their community, (2) getting news or opinions from families and friends, (3) expressing their opinion about political or social issues, and (4) convincing others to change their views on political and social issues. Each item was measured on a seven-point scale, ranging from 1 = not at all to 7 = very often, and responses were finally combined into an additive index (Cronbach's alpha = 0.932, $M = 4.46$, $SD = 1.59$).

News media use. This index was created based on three items asking participants to rate on a seven-point scale (ranging from 1 = never to 7 = all the time) how often they use the following media to get information on environmental issues: (1) TV, (2) online or traditional magazine, and (3) online or traditional newspapers. The three items were combined into an additive index (Cronbach's alpha = 0.881, $M = 4.90$, $SD = 1.25$).

Control Variables

The study controlled for the following demographic variables: age, gender, income ($Mdn = 5000$ – 5999 yuan), and education, which was operationalized as the highest level of education completed ($Mdn =$ Bachelor).

Psychological characteristics. They include (1) environmental interest, asking participants how interested they are in environmental issues, ranging from 1 = not interested at all to 5 = extremely interested ($M = 3.89$, $SD = 0.90$); and (2) environmental attitude, measured by respondents' agreement with the statement, "The quality of environment is declining in China," ranging from 1 = strongly disagree to 7 = strongly agree ($M = 4.73$, $SD = 1.58$).

Time on Weibo. This variable was measured by the average time spent on Weibo per day in the past week, choosing from "less than 10 minutes," "10–30 minutes," "31–60 minutes," "1–2 hours," "2–3 hours," and "more than 30 hours" ($Mdn = 10$ – 30 minutes).

Results

Descriptive Statistics

Table 1 shows descriptive statistics about the willingness to engage in proenvironmental activities. Not surprisingly, Chinese respondents were more willing to engage in consumerist behaviors than in activist behaviors. In particular, they were most supportive of buying environmentally friendly household chemicals ($M = 5.23$, $SD = 1.30$), while showing the least interest in participating in an environmental protest or demonstration ($M = 4.34$, $SD = 1.77$).

Table 1. Descriptive Statistics for Environmental Engagement. (N = 1053)

Participatory behaviors	<i>M</i>	<i>SD</i>	Disagree (%)	Neither agree or disagree	Agree (%)
1. Give financial support to an ENGO	4.80	1.52	15.7	22.4	61.9
2. Sign a petition for an environmental issue	4.74	1.57	18.6	20.9	60.5
3. Write a letter or call government officials to support environmental protection	4.59	1.64	22.6	21.4	56
4. Participate in a protest or demonstration for an environmental issue	4.34	1.77	27.5	20.6	51.9
5. Buy products made from recycled materials	5.08	1.37	9.02	20.1	70.8
6. Boycott or avoid buying products from a company that may harm the environment	5.16	1.33	8.1	18.6	73.2
7. Buy household chemicals that are environmentally friendly	5.23	1.30	7.12	17.4	75.5

Table 2 displays the correlations among main variables, indicating that psychological variables, opinion leadership, and media use variables were positively and significantly associated with environmental participatory behaviors.

Table 2. Zero-Order Correlations of Main Variables.

	1 Env. interest	2 Env. attitude	3 Env. knowledge	4 Weibo use	5 News media use	6 Opinion leadership	7 Env. engagement
1	1	0.318**	0.630**	0.550**	0.624**	0.577**	0.614**
2		1	0.493**	0.402**	0.434**	0.429**	0.510**
3			1	0.739**	0.809**	0.772**	0.819**
4				1	0.718**	0.802**	0.753**
5					1	0.771**	0.787**
6						1	0.809**
7							1

** $p < .01$.

Hypotheses Testing

H1 and H2 sought to test whether people with higher levels of opinion leadership are likelier to have higher levels of environmental knowledge and to be engaged in proenvironmental activities, and whether they are also more active media users. After controlling for demographics, time spent on Weibo, and psychological variables, opinion leadership was positively and significantly associated with environmental knowledge ($\beta = .264, p < .001$), environmental engagement ($\beta = .290, p < .001$), news media consumption ($\beta = .573, p < .001$), and Weibo use ($\beta = .823, p < .001$). Therefore, both H1 and H2 were supported (see Table 3).

Table 3. Regression Model for Direct and Indirect Effects. (N = 1033).

Variable	β	SE	t value			
News media use regressed on						
Opinion leadership	.573***	.023	24.6			
Weibo use regressed on						
Opinion leadership	.823***	.027	30.1			
Environmental knowledge regressed on						
Opinion leadership	.264***	.030	8.78			
News media use	.354***	.027	13.1			
Weibo use	.108***	.023	4.72			
Environmental engagement regressed on						
Opinion leadership	.290***	.030	9.78			
News media use	.158***	.028	5.73			
Weibo use	.085***	.022	3.89			
Env. knowledge	.260***	.030	8.74			
Age	-.000	.002	-0.127			
Gender (high: female)	-.037	.037	-1.03			
Education	-.019	.019	-0.996			
Income	.000	.008	0.007			
Time on Weibo	-.024	.018	-1.29			
Env. interest	.105***	.027	3.92			
Env. attitude	.084***	.013	6.29			
R^2		0.776***				
	Value	SE	LL 95% CI	UL 95% CI	Z	p
Indirect effect (news media use via env. knowledge on env. engagement)						
Sobel	0.154	0.016	0.102	0.212	9.67	0.000
Indirect effect (Weibo use via env. knowledge on env. engagement)						
Sobel	0.074	0.009	0.051	0.102	7.99	0.000

Note. β = unstandardized coefficient; LL = lower limit; CI = confidence interval; UL = upper limit. Bootstrapped at sample size = 5,000.

* $p < .05$; ** $p < .01$; *** $p < .001$.

H3 predicted that environmental knowledge will mediate the relationship between media use and environmental engagement. The mediation effect was examined using the PROCESS macro and by conducting the Sobel test. The data were bootstrapped to 5,000 resamples. As predicted, environmental knowledge significantly mediated the effects of news media use (Sobel $Z = 9.67$, $p < .001$) and Weibo use (Sobel $Z = 7.99$, $p < .001$), and it was positively related to news media use ($\beta = .158$, $p < .001$), Weibo use ($\beta = .085$, $p < .001$), and environmental engagement ($\beta = .260$, $p < .001$). The results thus support H3 (see Table 3).

With regard to H4 and H5, the interaction effects between opinion leadership and media use were examined in Table 4. The results show that opinion leadership negatively moderated the relationships between news media use and environmental knowledge ($\beta = -.035$, $p < .05$) and engagement ($\beta = -.090$,

$p < .001$), indicating that people with lower levels of opinion leadership gain more through news media consumption. In contrast, opinion leadership positively moderated the relationship between Weibo use and environmental knowledge ($\beta = .042, p < .01$) and engagement ($\beta = 0.095, p < .001$), indicating a widening gap between people with higher levels of opinion leadership and those with lower levels through Weibo use. Therefore, both H4 and H5 were supported.

Table 4. Predicting Environmental Knowledge and Engagement.

Variable	β	SE	t
Criterion: Environmental knowledge			
News media use	.354***	.027	13.2
Weibo use	.108***	.023	4.72
Opinion leadership	.264***	.030	8.78
News media use * Opinion leadership	-.035*	.015	-2.39
Weibo use* Opinion leadership	.042**	.013	3.12
Criterion: Environmental engagement			
News media use	.250***	.026	9.46
Weibo use	.113***	.023	5.04
Opinion leadership	.359***	.030	12.1
News media use * Opinion leadership	-.090***	.014	-6.27
Weibo use* Opinion leadership	.095***	.013	7.43
Age	-.004	.002	-1.74
Gender (high: female)	-.060	.054	-1.12
Education	-.034	.028	-1.21
Income	.014	.012	1.18
Time on Weibo	-.028	.018	-1.52
Env. interest	.141***	.033	.105
Env. attitude	.108***	.018	.139
R^2	0.786***		

Note. β = unstandardized coefficient.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 2 and Figure 3 show the interaction graphs when the relationships between media use and environmental engagement were tested at two levels of opinion leadership—at 1 *SD* above the mean (6.00) and at 1 *SD* below the mean (3.36).

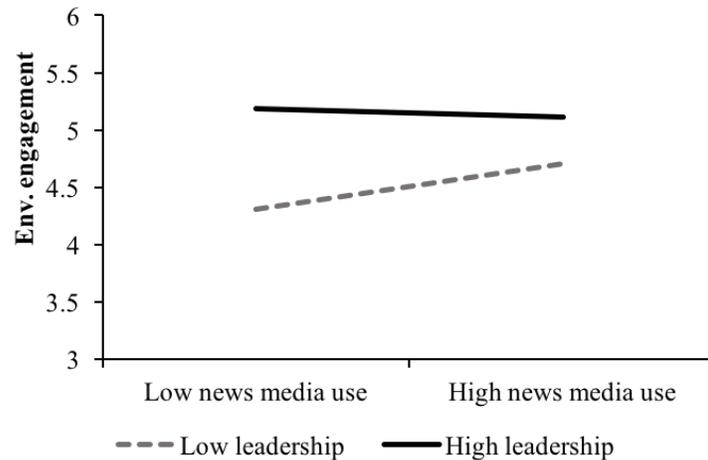


Figure 2. Moderation effects of news media use and opinion leadership on engagement.

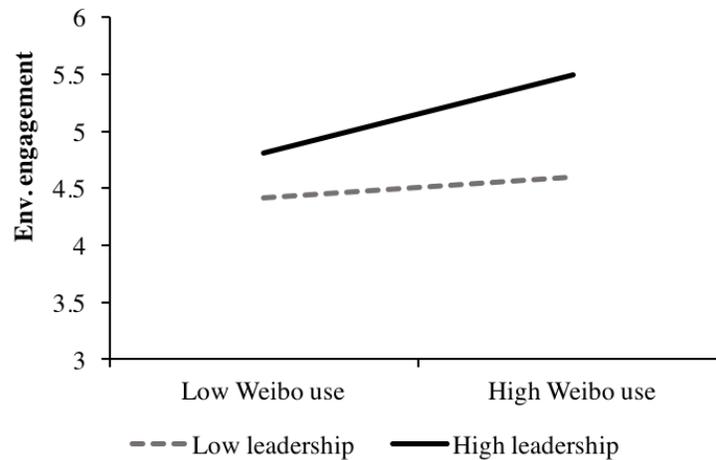


Figure 3. Moderation effects of Weibo use and opinion leadership on engagement.

Finally, Table 5 shows the bootstrapped indirect effects of media use via environmental knowledge on environmental engagement at three values of opinion leadership—at the mean (4.68), at 1 *SD* above the mean (6.00), and at 1 *SD* below the mean (3.36). The analysis is performed through the PROCESS macro by bootstrapping our samples to 5,000 resamples with 95% confidence intervals. According to Hayes (2017), a conditional indirect effect is significant in cases where the bootstrapped CIs do not contain zero. The results show that the overall significance for moderated mediation effects from news media use via environmental knowledge on environmental engagement was negative but not significant (boot 95% CI = [-0.014, 0.009]); thus, H6 was not supported. In addition, the conditional indirect effects from Weibo use

via environmental knowledge on environmental engagement was positive but not significant (boot 95% CI = [-0.004, 0.012]). Given that, H7 was not supported.

Table 5. Conditional Indirect Effects of Media Use on Environmental Engagement via Environmental Knowledge at Values of Opinion Leadership.

Media use	Opinion leadership	Indirect effect (Boot SE)	LL CI	UL CI
News media use				
Index of moderated mediation		-.002 (.006)	-0.014	0.009
	Low	.108 (.024)	0.066	0.161
	Medium	.106 (.022)	0.068	0.154
	High	.104 (.020)	0.068	0.148
Weibo use				
Index of moderated mediation		.004 (.004)	-0.004	0.012
	Low	.043 (.010)	0.025	0.065
	Medium	.046 (.009)	0.028	0.068
	High	.050 (.011)	0.030	0.074

Note. LL = lower limit; CI = confidence interval; UL = upper limit.
Bootstrapped at sample size = 5,000

Discussion

The study examined the relationship among opinion leadership, media use, environmental knowledge, and environmental engagement in the context of China. The findings show that Chinese citizens are likelier to engage in environmental consumerism than in activism, which is in line with previous studies (Zhang & Skoric, 2018; Gil de Zúñiga et al., 2014) and indicates the importance of consumerist politics in facilitating civic culture (Atkinson, 2012). Defined as the act of selecting products and brands based on environmental considerations, environmental consumerism is often conceptualized as a kind of personalized and lifestyle-oriented participation and is closely linked with the postmaterialist values (Bennett, 1998; Scherman, Arriagada, & Valenzuela, 2015). Since calls of collective action on social media are likely to be censored by the Chinese authorities (G. King et al., 2013), softer forms of engagement via consumer choices are likelier to be diffused and popularized among citizens.

Our findings support the positive relationships between opinion leadership and media use behaviors. In China, news media are controlled by the government, and they serve as the mouthpiece of the party and dictate the mainstream values of the society (Tang & Sampson, 2012). Since people with higher levels of opinion leadership are assumed to direct the attention and influence opinions of their followers, it is reasonable that they get information from news media and subsequently disseminate it to others. Moreover, opinion leadership is also found to be positively related to Weibo use. As mentioned before, Weibo is one of the very few media platforms for opinion expression and public discussion, which provides opinion leaders with an opportunity to reach their audience and exert influence (Tong & Zuo, 2014). Weibo also creates an alternative discourse space, where various actors can share news and views different from mainstream values (M. Chan, Wu, Hao, Xi, & Jin, 2012). In this sense, Weibo has allowed those with higher levels of opinion leadership to

seek out diverse information on environmental issues, particularly those about environmental pollution and environmental conflicts (Ji et al., 2018). Therefore, people with higher levels of opinion leadership tend to be more motivated to use Weibo for both information acquisition and opinion expression.

As expected, we find a mediating role of environmental knowledge in the relationship between news media use and environmental engagement, which is in accordance with the studies of news consumption and political participation. As previous studies demonstrate, news media are important sources of political information, and using news media can stimulate one's perception of being cognizant of the politics (Jung et al., 2011, p. 414). Therefore, news media consumption is positively related with greater knowledge, which further contributes to participatory behaviors (McLeod, Scheufele, & Moy, 1999). Since environmental protection has become one of the major tasks of Chinese government, environmental education has also been set as one of the major media agendas (de Boer, 2017; Mol, 2006; Yang & Calhoun, 2007). Therefore, by being exposed to news on TV, in newspapers, and on the radio, individuals may gain knowledge about environmental protection and feel more confident in their capacity to do something about the environment; consequently, they are likelier to engage in proenvironmental activities. Similarly, Weibo is also increasingly used by both central and local governments, media organizations, environmental groups, and even ordinary citizens to disseminate environmental information, launch public discussion on environmental issues, and advocate proenvironmental behaviors (Deluca et al., 2016; Ji et al., 2018). In this sense, using Weibo for either information seeking or exchanging opinions can contribute to the increase of one's environmental awareness and knowledge, and it can even prompt behavioral changes. Since effective participation is directly related to the cost of participating (i.e., time, money, and civic skills), environmentally knowledgeable citizens can select their activities better, therefore facing lower costs of engagement (Lubell, 2002). In this sense, environmental knowledge is an important personal, psychological variable that mediates the effect of media consumption on environmental engagement.

Finally, this study highlights the differential gains from news media use and Weibo use for people with higher levels of opinion leadership and those with lower levels. News media allows people with lower levels of opinion leadership to narrow the gap in knowledge and environmental engagement. In contrast, Weibo allows people with higher levels of opinion leadership to gain more and increase this gap. This is indicative of the distinct roles of news media and social media in promoting environmental outcomes within the authoritarian context. As mentioned before, news media in China are under strict control of the government, and they are required to follow the party line, serving to advocate state policies and consolidate the society (Tang & Sampson, 2012). Under the current Xi Jinping government, the concept of "building beautiful China" has been put forward, incorporating environmental protection into economic, political, cultural, and social development (de Boer, 2017, para. 5). Since protecting the environment is a critical component of the ecological civilization construction pursued by the current Xi administration, proenvironmental messages have been widely disseminated by news media. Indeed, Chinese news media still function as a platform for public education (Chang, Wang, & Chen, 1994; Robinson & Levy, 1996), particularly on the environmental issues advocated by the state. Furthermore, to better cater to the general public's diverse preferences and demographics, news media tend to present news content in an audience-friendly way. Therefore, news media could exert a social leveling influence on environmental knowledge and awareness, contributing to the narrowing of the socioeconomic gap (Chaffee & Kanihan, 1997; Gaziano, 1983).

The significant interaction effect between Weibo use and opinion leadership demonstrates the concern that the Internet can exacerbate the knowledge gap among citizens (Norris, 2001; M. Chan et al., 2012). In line with Gil de Zúñiga, Weeks, and Ardèvol-Abreu's (2017) findings, citizens who are motivated to seek information through social media are becoming more knowledgeable and thus are better equipped and more willing to engage in environmental activities. It is also likely that Weibo provides additional opportunities for environmental engagement via networking with environmental organizations and other civic groups. In contrast, for those who use Weibo for entertainment or other purposes, the opposite seems to be the case. Although some studies have found that serendipitous exposure on social media may lead to the "equalizing" effect (e.g., Valeriani & Vaccari, 2016), this study poses another possibility that the motivation for social media use also matters. Another explanation for the widening gap is that Weibo use can lead to the self-reinforcement effect, which means expressive behaviors having important political implications for expressers themselves rather than just for information receivers only (Valkenburg, 2017). Expression clarifies expressers' thoughts, aids them in organizing their ideas, and promotes the search for additional reasons to support their arguments. After the expression, senders tend to act in a way that is consistent with the expressed ideas to avoid cognitive dissonance. In this process, senders can better understand their own positions and preferences, which may lead to behavioral outcomes (Pingree, 2007; Valkenbrug, 2017). Opinion leaders, being more skilled and competent in using social media to express opinions and participate in discussions (Lyons & Henderson, 2005), are likelier to be influenced by their own expressive behaviors. As a result, Weibo use will have a stronger impact on people with higher levels of opinion leadership when compared with those with lower levels, thus widening the gap in environmental knowledge and engagement between them. However, the indirect effects of media use via environmental knowledge on environmental engagement were not significantly conditional on opinion leadership, which suggests that the mediation effects of environmental knowledge did not significantly differ among people with different levels of opinion leadership.

This study has several limitations. First, we relied on self-reports of opinion leadership and media use behaviors, which may contain over- or underestimations (Weeks et al., 2017). Second, the cross-sectional nature of our data does not permit clear, causal inferences related to the relationships among opinion leadership, media consumption, and environmental engagement. The notion that opinion leaders may spend more time on news consumption and are more engaged in public issues is based on the role of opinion leadership in both traditional media and social media contexts (e.g., Katz & Lazarsfeld, 1955; Park, 2013), so caution should be exercised when claiming a causal relationship. Finally, our studies did not analyze the content consumed by citizens on news and social media platforms; previous studies have found that the type of content consumed may impact the levels of political knowledge and participation (de Vreese & Boomgarden, 2006).

Conclusion

This study examined the predictors of environmental engagement among Chinese Weibo users, demonstrating the differential effects of news media and Weibo use on people with higher levels of opinion leadership and those with lower levels. It highlights the social-leveling influence of news media and the self-reinforcement effects of Weibo use in China, indicating the different roles of news media and social media play in an authoritarian context. The findings have important implications for understanding the functions of state-controlled news media in promoting environmental engagement and reaffirming the need to pay attention to individual differences when examining the civic implications of different media systems.

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