

Collectivism and Altruistic Behavior: A Third-Person Effect Study of COVID-19 News Among Wuhan Residents

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Abstract

This study examines the third-person effects of COVID-19 news among Wuhan residents during the peak of the outbreaks in the city. Using data collected in a telephone survey of 1,071 Wuhan residents, results show that respondents believed others were more influenced by the COVID-19 news. However, the more the respondents systematically processed the news through elaboration and the more they were oriented toward collectivist values, the smaller the self-other perceptual gap. Finally, results suggest the moderating effect of collectivism on the relationship between perceived effects of COVID news and altruistic behavior—collectivism enhances the influence of perceived effects on others on adoption of altruistic behavior. The influence of culture in shaping risk perception and behavioral responses is discussed.

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Keywords

COVID-19, third-person effects, elaboration, culture collectivism, promotional and altruistic behaviors

In Wuhan, China, the city where the COVID-19 initially broke out, a sudden lockdown was imposed during the Chinese New Year celebrations. Prior to the lockdown on January 23, 2020, there was little public information in official media about the outbreaks. Almost overnight, 11 million residents of Wuhan were ordered to stay home. Because COVID-19 was a newly emerged contagious disease hitting the city, incomplete information from local authorities on news media during the Wuhan outbreaks created a confusing and highly uncertain situation regarding the nature of the virus and the scale of the outbreaks (Zhang, Li, & Chen, 2020). Adding to the confusion was the onset of an “infodemic” along with the epidemic outbreaks (Ali, 2020); inaccurate or sensational news had spread together with beneficial information.

In previous public health crises such as SARS, MERS, and Ebola, the media were found to be an important source of social influence that impacted how people responded to outbreaks of infectious disease—for instance, whether they would take preventative actions largely depended on their differential perceptions of the news about such crises on themselves and on others. Past research (Lee & Park, 2016; Lim, Lee, Kim, & Chang, 2017; Liu & Lo, 2014; Wei, Lo, & Lu, 2007) suggests that people tend to believe such news would affect others more than themselves, a phenomenon known as the third-person effect. A growing body of evidence (Liu & Lo, 2014; Lo, Wei, Lu, & Hou, 2015; Wei, Lo, & Lu, 2008, 2010) shows that people tend to believe others are more influenced by media messages about a health crisis than they are themselves and they only take preventive measures if they think they are impacted as much as others.

Informed by past research, this study applies the third-person effect theory in examining Wuhan residents’ beliefs about the impact of COVID-19 news, and how their beliefs led to behavioral responses. Specifically, because the news about the lockdown was announced just before the Chinese New Year holiday, it sent a clear signal to Wuhan residents that the outbreak was severe enough to impose an unprecedented measure to avoid a public health disaster. Then, how did Wuhan residents process the news about the outbreaks? Previous research (Wei et al., 2010) further suggests that cognitive processing of news about threats to public health mitigates the third-person perceptual effect. Thus, we examine how elaboration of COVID-19 news affected Wuhan resident’s perception of the influence of that news.

Moreover, the sudden lockdown was viewed as a bid to contain the outbreak of the fast-spreading virus to China’s densely populated cities outside Wuhan. The success of the lockdown rested upon the collective responses of the 11 million Wuhan residents. Because China has a strong collectivist culture (Zang, Guida, Sun, & Liu, 2014), it is not surprising that collectivism was a highly promoted value during the outbreaks. According to a poll conducted by Glocalities (Lampert & Blanksma, 2020), a Dutch public opinion firm, the Chinese put a high value on collectivism and voiced a low degree of tolerance of individualistic behavior during the lockdown. Some 67% in the poll agreed or strongly agreed that the norm of reciprocity or mutual assistance, and law-abiding behavior were critical to their own hygiene and health. Accordingly, we are curious about the role of collectivism in affecting Wuhan residents’ judgements regarding the perceived impact of the COVID news. Will beliefs in collectivist values increase or decrease the self-other discrepancy of perceived effects of COVID news? More importantly, will collectivist values of Wuhan residents lead to behavior that is characteristically altruistic and beneficial to others? If so, how?

We focus on altruistic behavior because pro-community behavior such as helping others during a public health crisis seems to be under-researched. Although the role of collectivism has been examined as a moderator of the self-other perceptual gap (Lee & Tamborini, 2005), the effect of collectivism on the behavioral outcomes remains unclear. Further, existent epidemiologic research suggests that collectivist values serve as a psychological moderator that enhances prosocial behaviors (Kim, Sherman, & Updegraff, 2016). Therefore, we examine the role of collectivism as a moderator of the behavioral components of third-person effects in responding to the COVID-19 outbreaks.

In summary, by applying the third-person effect theory to news about COVID-19 outbreaks in Wuhan, we aim to examine how residents in lockdown evaluated the impact of the COVID news on themselves and on others. We focus on exploring the role of elaboration and collectivism in affecting the perceived impacts, and the moderating role of collectivism in the relationship between the perceptual and behavioral components of the third-person effect. Although focusing on Wuhan, the findings of this study will contribute to better understanding of the roles of media, culture, and individual perceptions in the world's responses to a pandemic that has struck 213 countries.

Literature Review

News Media and Public Health Crisis

News media play a pivotal role in containing public health risks. They not only provide timely news and updated information regarding public health risks (Lin & Lagoe, 2013), by framing a public health issue, they also shape the public's risk perception and decisions to cope with the crisis (Coleman, 1993; Smith, 2006; Tai & Sun, 2007). For example, a study by Chang (2012) reported that exposure to TV news about H1N1 flu affected people's perception of the epidemic. Choi, Yoo, Noh and Park (2017) found that use of social media was related to an increase of perceived risk posed by MERS.

Previous research on news about SARS in China showed that despite the positive framing of the epidemic by Chinese media, news coverage of SARS stimulated negative emotions such as anxiety and anger and more severe risk perceptions (Huang, 2004). Hong (2007) contrasted news framing of the SARS epidemic by Chinese national newspapers, regional newspapers, and online news sites, and found that despite minor differences, all types of news media were generally in line with government directives.

It is not surprising that the Chinese mainstream and official news media used similar strategies during the COVID-19 outbreaks by framing the process of fighting the outbreaks as a collective enterprise such as collective gains and losses and promoting the values of social cohesion and the collective interest over individual interests as well. Taking the party's official newspaper, *The People's Daily*, to illustrate, the most used words and phrases in its op-ed pieces concerning combating COVID-19 were "solidarity," "unity," "mutual help"; "being on the same boat," "united as one in fighting Coronavirus." The editorial on April 15, 2020, explicitly promoted collectivism as "shining on the road ahead" in combating COVID-19. In such a circumstance, we expected that news about COVID-19 outbreaks on Chinese media would influence Wuhan residents' judgments about the risk posed by COVID-19.

The Third-Person Effect Hypothesis

The broad influence of the media on society is theorized by Davison (1983) in his third-person effect hypothesis, which states that people tend to perceive a greater influence of mass communication on

others than on themselves. Previous research has validated the relationship between desirability of the message and third-person effects—Messages that are socially undesirable tend to lead to third-person perceptual bias, while desirable messages, such as pro-social public service announcements, lead to a reversed third-person effect (Golan & Day, 2008). As Wei et al. (2008) argued, although the social desirability of health-related news can be ambiguous, it is unequivocal that news about public health threats such as an epidemic or pandemic like COVID-19 would be disturbing to people because it presents a health threat to themselves.

Gunther and Mundy (1993) also argued that when a message is perceived to involve a large risk, the third-person perceptual effect (aka third-person perception) could be observed. Recent studies have tested the third-person effect hypothesis in the context of public health issues. Liu and Lo (2014) examined the influence of media coverage of the H1N1 swine flu pandemic and found that respondents perceived themselves to be less likely than others to be influenced by news about the pandemic. In another study of the third-person effect of news about the imported American beef controversy, Lo et al. (2015) found that respondents perceived news concerning the controversy to have a greater influence on others than on themselves. Based on the literature, we predicted the following:

H1: Respondents in Wuhan will perceive news about the coronavirus outbreaks in their city to have a greater impact on other Wuhan residents than on themselves.

Elaboration and Collectivism as Predictor of Perceived Effects

Although past research has observed the third-person effect as a robust phenomenon, the perceptual bias of other people as being influenced more by media messages than oneself can be mitigated by a number of cognitive and sociopsychological variables such as information processing and collectivism.

First, Petty and Cacioppo (1986) proposed that information processing is an important cognitive phase of behavioral formation. Empirical evidence shows that strategic or elaborative processing of information, which refers to how individuals access and carefully evaluate information based on its relevance to reach a judgment (Eagly & Chaiken, 1993) tends to narrow the self-other perceptual gap in the context of public health risks (Choi et al., 2017; Lo et al., 2015; Wei et al., 2010; Wei, Lu, & Hou, 2015).

Specifically, past research has examined the role of systematic processing mechanisms such as attention and elaboration (Eveland & Shah, 2003; Salwen, 1998) in mitigating the third-person perception. In a study of the third-person effect of news about the avian flu, Wei et al. (2008) found that attention to and elaboration of avian flu news was predicted perceived effects both on the self and others. In another study of news about food product recalls, Wei et al. (2010) reported a similar result—that elaboration of news about the recalls was related to perceived effects of such news on oneself and others. Similarly, Ryu and Kim (2015) reported that people who engaged in systematic processing of information about the Fukushima nuclear disaster tended to perceive a greater risk than those who did not. In a study of MERS outbreaks, Choi et al. (2017) found that systematic processing increased people's risk perception on MERS. On the other hand, research (Ho, Scheufele, & Corley, 2013) shows those who engage less in elaborative processing of information about an emerging technology are more likely to perceive the technology as a greater risk.

Wei et al. (2010) concluded that elaboration of media messages plays an important role in helping audiences relate incoming message to their existing knowledge about public health crises. In doing so, they tend to perceive a greater impact of message on themselves and other, hence reducing the

self-other perceptual discrepancy. David, Liu and Myser (2004) attributed such results to the increase in perceived self-accountability of the issue when individuals make more cognitive efforts to elaborate on the message. When more efforts are made, individuals perceive themselves as more accountable and connected to the issue, and thus the perceived effect of the media message on oneself increases, reducing the third-person perception gap.

In the context of the COVID-19 outbreaks, we expected that residents in Wuhan would be motivated to engage in the elaborative processing of news about the outbreaks in a crisis of high uncertainty. The more they engage in elaboration, the more likely they would perceive the crisis as a health risk to themselves and the public. Accordingly,

H2: Elaboration of news about the coronavirus outbreaks will be a positive predictor of perceived effects of such news on oneself and others.

Second, collectivism as an antecedent of third-person perceptual bias has received scholarly attention in studies of social behaviors during epidemics (Kim et al., 2016) and in past third-person effect research. Lee and Tamborini (2005) suggested that cultural values play a role in shaping third-person perception.

At the macro-cultural level, collectivism represents an orientation by which people's individualistic needs are subordinated to those of the group (Kim et al., 2016). At the micro-psychometric level, collectivism refers a cognitive predisposition as "the broad value tendencies in emphasizing the importance of the 'we' identity over the 'I' identity, group rights over individual rights, and in-group-oriented needs over individual wants and desires" (Ting-Toomey & Dorjee, 2018, p.67).

Hogg and Reid (2006) argued that collectivism mitigates third-person perception due to the adjustment that people make of the self-other social identity distance. The more they share the values of family and community over individuals, the less likely they will perceive that the large social group to which they belong would be impacted by the media. In a study of Internet pornography, Lee and Tamborini (2005) found that collectivism moderates the relative distance between perceived media effect on self and others.

Based on previous studies about independent self-construal (prevails among individualists) versus interdependent self-construal (prevails among collectivists), Markus and Kitayama (1991) suggested that collectivist orientation among Asian countries means that "they are less likely to view themselves as distinct or unique from others and as smarter or better than others" (Lee & Tamborini, 2005, p. 297). Therefore, we hypothesized that:

H3: Collectivism will be a significant and positive predictor of perceived effects of news about the coronavirus outbreaks on oneself and others.

Behavioral Responses to Third-Person Perception

Perloff (1999) delineated the outcomes of third-person perception into a behavioral component, arguing that audiences' perception about media effects could be associated with or lead to their behaviors in response to that biased perception of media power.

Past research on the behavioral component of the third-person effect has expanded to a range of behaviors, including behaviors that either seek to restrict or promote certain media messages. For beneficial health-related messages or other health-knowledge-promoting messages, people are more likely to engage in promotional behaviors about the message (Day, 2008; Gunther & Thorson, 1992). Gunther and Storey (2003) suggested that such behaviors are underpinned by their intention

to protect the presumably vulnerable others. In the context of pandemics, past research has reported promoting health-related information as a behavioral response to perceived impacts of media messages. [Wei et al. \(2015\)](#) found that perceived effect of news about the Fukushima nuclear crisis on others was related to respondents' intention to support promotional programs that educate people about nuclear fallout and protection.

Giving that the severity of the outbreak was unprecedented, and its harms were largely unknown in Wuhan, the link between perceived media effect and engagement in promotional behavior would be something similar to like a "coordinated reaction in addition to protective and corrective actions" ([Wei et al., 2015](#), p. 101). That is, people could be more likely to perceive others to be more influenced by the coronavirus outbreak news, as it could make people to overreact to the risk and become concerned for their own personal health, they might be motivated to protect the vulnerable others and themselves by promoting beneficial information about the total lockdown. This type of promotional action is meant to protect others, but in fact it also protects themselves from potential social chaos and even panic.

In addition, past research has also suggested that altruistic action should be incorporated in the behavioral component of the third-person effects ([Kim, 2013](#)). For instance, altruistic and other prosocial behaviors (*i.e.*, helping others) about health resources among residents in Wuhan were critical to ensure those who were in need could be taken care of by the medical staff.

The literature about altruistic motivations illustrates that at least two possible altruism mechanisms could apply in the Wuhan outbreak: the first is that third-person perception of media influence on others might create peer pressure that could lead to reluctant altruism ([Reyniers & Bhalla, 2013](#)), as people might become concerned of the negative social implications of not helping others; the second is that perceived media influence on others would make people more concerned about the negative outcomes if others are influenced by incorrect or misleading information about the virus (*i.e.*, reciprocal altruism, [Elster, 2006](#); [Trivers, 1971](#)). In either case, people could be motivated to engage in altruistic behavior because these behaviors (*i.e.*, helping with supplies, sanitation, or correcting rumors) during the pandemic might ultimately benefit themselves.

Therefore, during the strictest times of the lockdown, we expected that whether residents in Wuhan would willingly help others to comply with the lockdown measures would be influenced by their perception of the effect of news about the coronavirus outbreaks. To test these propositions, we advanced the following hypotheses:

H4: Perceived effects on oneself will be a positive predictor of promotional behavior.

H5: Perceived effects on others will be a positive predictor of altruistic behavior.

H6: Collectivism will be a positive predictor of altruistic behavior.

Collectivism as a Moderator of Altruistic Behavior

Furthermore, we propose that collectivist orientation serves not only as a potential suppressor of third-person perception, but also as a cultural predisposition that enhances the relationship between perceived effects of COVID news and adoption of altruistic behaviors.

There is concrete empirical evidence (see [Oyserman, Coon & Kemmelmeier, 2002](#)) that collectivism orientation influences patterns of social behaviors. ([Chen et al., 1998](#)) found that collectivism increases attachment to one's in-group, especially when one is needed by the in-group. In this sense, collectivism is not directly related to how in-group or out-group judgement is made, but rather, it adjusts one's relationship with the in-group and the extent to which an individual is collaborative within the in-group ([Earley, 1989](#); [Earley & Gibson, 1998](#)).

Guided by the studies on the pathogen prevalence hypothesis, which predicts that the more historical variations of disease-causing pathogen prevalence levels would explain cultural differences in conformity and obedience, epidemiologists emphasize the importance of collectivism. Fincher, Thornhill, Murray and Schaller (2008) found that pathogen prevalence is negatively associated with individualism while positively associated with collectivism. Murray, Trudeau and Schaller (2011) reported that pathogen prevalence is associated with behavioral conformity. These studies provide support for the idea that pandemic outbreaks are longitudinally associated with the formation of collectivist cultures. Kim et al. (2016) found that collectivism significantly reduces the effect of perceived vulnerability to Ebola on xenophobia, which positively influences restrictive-policy support.

Then, collectivism would moderate the relationship between culture and pro-social behaviors in the context of responding to the outbreak. Previous research has shown that East Asians and Chinese have largely, if not always, preferred in-group equality over equity norms (e.g., tit-for-tat gains) (Hui, Triandis, & Yee, 1991). In other words, we expect that a higher level of collectivism among Wuhan residents will not only reduce third-person perception about coronavirus news, but also affect their adoption of collaborative actions. To further explore whether collectivism moderates the relationship between perceived effects of news about the coronavirus outbreaks and pro-social behavior, a research question was raised:

RQ1. Will collectivism moderate the relationship between perceived effects of the coronavirus news on others and adoption of altruistic behavior?

Method

Sampling and Data

The target population of study is adult residents of Wuhan, China, the city where the COVID-19 initially broke out. The city of 11 million was under a lockdown from January 23 to May 18, 2020. The computer-assisted telephone interview system (CATI) was used to collect data from a sample generated by random digit dialing (RDD). A professional survey firm was hired to conduct the telephone interviews, which took place in a three-week period from February 20th to March 10th, 2020. This coincided with the peak number of people infected in the city.

The number of calls that were attempted to reach adults aged 18 or older totaled 70,164. Each completed interview lasted 25–30 minutes on average. A total of 1071 interviews were completed successfully after eliminating non-working and non-eligible numbers, yielding a response rate of 4.67%. Among the 1071 respondents, gender ratio was about even, with 51.5% being male and 48.5% being female. The mean age was 41.69 with a standard deviation of 13.4, ranging from 18 to 82 years old. Table 1 shows the profile of the sample.

Measurement

Media use for COVID-19 news: Respondents were asked to estimate the average of daily amount of time spent watching television, reading newspapers, and using the Internet, and social media such as WeChat for news about COVID-19.

Elaboration of COVID-19 news: Elaboration refers to issue-relevant thinking or the inclination to think about a media message (Petty & Cacioppo, 1986). To measure it, respondents were asked to indicate their agreement with these four statements: After reading/viewing news reports about the COVID-19, (1) I have thought about the consequences of COVID-19 on my life and work; (2) I

Table 1. Demographics of the Sample (N = 1071).

Demographics Variables	N	Percentage, %
Age		
18–24	88	8.22
25–34		28.01
35–44	230	21.48
45–54	206	19.23
>55	247	23.06
Gender		
Male	552	51.54
Female	519	48.46
Education levels		
Elementary or less	42	3.92
High school or less	447	41.74
Bachelor's degree	538	50.23
Master's degree	37	3.45
Doctoral degree	1	0.09
No answer	6	0.56
Monthly income		
\$1000 or less	801	74.79
\$1000 to \$2000	143	13.35
\$2000 or more	36	3.36
No answer	91	8.50

have considered the information comprehensively and drew my own conclusion; (3) I have compared and evaluated the information and found some was credible while some was not; and (4) I have assessed my own and families' likelihood of being infected. A 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used. The four items were averaged to form a composite measure of "elaboration of COVID-19 news" ($M = 4.01$, $SD = .57$, $\alpha = .68$).

Perceived effects of COVID-19 news on oneself: Respondents were asked to indicate whether news about the coronavirus outbreak made "you" concerned (1) that the outbreak would spread wider; (2) about getting infected with the virus; and (3) about family members getting infected with the virus. The response categories used a 5-point scale, where 1 meant "no influence at all" and 5 meant "a great deal of influence." A measure of "perceived effects on oneself" was created by averaging the three items ($M = 3.94$, $SD = .88$, $\alpha = .80$).

Perceived effects of COVID-19 news on others. The measures of perceived effects of COVID-19 news on others consisted of three parallel items with the same statement except replacing "you" with "others"). The three items were averaged to form a composite measure of "perceived effects on others" ($M = 4.19$, $SD = .80$, $\alpha = .87$).

Collectivism: Collectivism was measured with five items adapted from previous research (Yoo et al., 2011). Using a 5-point scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree"), respondents were asked to indicate their agreement with these statements: (1) Individuals should sacrifice self-interest for the group; (2) Group welfare is more important than individual rewards; (3) Group success is more important than individual success; (4) Individuals should only pursue their goals after considering the welfare of the group; and (5) Group loyalty should be

encouraged even if individual goals suffer. A composite scale of “collectivism” was created by averaging the five items ($M = 3.91$, $SD = .66$, $\alpha = .85$).

Promotional behavior under COVID-19 crisis: Using a five-point scale ranging from 1 (never) to 5 (always), respondents were asked to indicate how often they engaged in these behaviors: (1) promoting important information about COVID-19 prevention to people around them; (2) promoting public measures about COVID-19 prevention to people around them; and (3) promoting regulations and policies about COVID-19 prevention to people around them. A composite measure of “promotional behavior” was constructed by averaging the three items ($M = 3.72$, $SD = 1.09$, $\alpha = .88$).

Altruistic behavior under COVID-19 crisis: During the first round of city lockdown in Wuhan that made out-of-town trips impossible. Although inter-city, inter-community daily supplies were centrally managed by the government, a good number of people who lived in the same community could still have interactions that they deem necessary such as passing foods or supplies to neighbors. Under such circumstances, altruistic actions were possible. Using a five-point scale ranging from 1 (never) to 5 (always), respondents were asked to indicate how often they have (1) provided information to individuals or families in need; (2) provided supplies (e.g., masks) to individuals or families in need; (3) assisted individuals or families in need of health care supplies; and (4) assisted local communities or organizations in health care activities. A composite measure of altruistic behavior was constructed by averaging the four items ($M = 3.00$, $SD = 1.19$, $\alpha = .83$).

Control variables: Respondents were asked about their gender, age, education, and income. These variables were used as controls in regression analyses because previous studies indicated that they were related to news elaboration, and the third-person effects (Andsager & White, 2007; Lo et al., 2015).

Results

H1 predicted that respondents would perceive news about the coronavirus outbreaks to have a greater effect on others than on themselves. Table 2 presents the results of the paired *t*-tests [$t(1070) = -10.68$ at the $p < .001$]. As expected, respondents in Wuhan perceived that other residents were more influenced by the news about COVID-19 than they were. H1 was supported.

H2 predicted that elaboration of news about the coronavirus outbreaks would be a significant and positive predictor of perceived effects of such news on oneself and others. To test it, a hierarchical regression analysis was performed. As Table 3 shows, after controlling for the influences of demographics, media use and collectivism, elaboration turned out to be the strongest predictor of perceived effects of news about COVID-19 on oneself ($B = .22$, $p < .001$) and others ($B = .21$, $p < .001$). These results indicate that the more respondents engaged in elaboration of news about the

Table 2. Mean Estimates of the Perceived Effects of COVID-19 News on Oneself and Others.

Items	N	Self		Others		t-value
		M	SD	M	SD	
Concerned about the spread of the virus	1071	4.13	.96	4.27	.89	-4.90***
Concerned about being infected	1071	3.68	1.11	4.13	.92	-13.79***
Concerned about family members being infected	1071	4.02	1.04	4.16	.88	-4.68***
Combined index	1071	3.94	.88	4.19	.80	-10.68***

*** $p < .001$.

Table 3. Hierarchical Regression Analyses Predicting Perceived Effects of News about COVID-19 on Oneself and Others.

Independent variables	Perceived effects	
	On oneself	On oneself
Block 1: Demographics		
Gender	-.04	-.05
Age	.01	.01
Education	-.03	.02
Income	-.01	.07*
Adjusted R ²	0.2%	0.1%
Block 2: Collectivism		
Collectivism	.10**	.12***
Incremental adjusted R ²	2.0%	1.7%
Block 3: Media use		
Television	-.05	-.05
Newspaper	-.03	.03
Internet	.10**	-.00
Weibo	-.01	.03
WeChat	-.02	.02
SNS	.00	.01
Incremental adjusted R ²	0.8%	0.1%
Block 4: Elaboration		
Elaboration	.22***	.21***
Incremental adjusted R ²	4.2%	4.8%
Total adjusted R ²	6.7%	6.7%

Notes: Beta weights are from final regression equation with all blocks of variables in the model. * $p < .05$; ** $p = .01$, *** $p < .001$; $N = 977$.

infectious disease, the greater the perceived effects of such news on themselves and others. H2 was supported.

H3 predicted that collectivism would be a significant and positive predictor of perceived effects of news about the coronavirus outbreaks on oneself and others. To test it, another hierarchical regression analysis was performed. As Table 3 further shows, collectivism was a significant and positive predictor of both perceived effects of COVID news on oneself ($B = .10, p < .01$) and others ($B = .12, p < .001$). These results indicate that a higher level of collectivism was associated with greater perceived effects of such news on oneself and others. H3 was supported.

H4 predicted that perceived effects of news about the coronavirus outbreaks on oneself would be a significant and positive predictor of adoption of promotional behavior. To test it, a hierarchical regression analysis, which treated adoption of promotional behavior was performed as the dependent variable, was run. As shown in Table 4 (column 1), perceived effects of COVID news on oneself were a significant and positive predictor of promotional behavior ($B = .09, p < .05$) with the influences of gender, age, education, income, collectivism, media exposure, perceived effects on others, and news elaboration being controlled. H4 was supported.

H5 predicted that perceived effects of news about the coronavirus outbreaks on others would be a significant and positive predictor of adoption of altruistic behavior. To test it, a separate hierarchical

Table 4. Hierarchical Regression Predicting Adoption of Altruistic and Promotional Behaviors.

Independent variables	Perceived effects	
	On oneself	On oneself
Block 1: Demographics		
Gender	-.01	.04
Age	-.06	-.06
Education	.13**	.05
Income	.05	.20***
Adjusted R ²	3.5%	4.0%
Block 2: Collectivism		
Collectivism	.15**	.11***
Incremental adjusted R ²	3.6%	1.9%
Block 3: Media use		
Television	.01	-.07*
Newspaper	.07*	.05
Internet	.02	-.06
Weibo	.10**	.05
WeChat	-.01	.07*
SNS	-.02	.01
Incremental adjusted R ²	1.1%	1.0%
Block 4: Perceived effects		
Self	.09*	-.02
Others	.05	.06
Incremental adjusted R ²	2.1%	0.2%
Block 5: Elaboration		
Elaboration	.15***	.08*
Incremental adjusted R ²	1.8%	0.4%
Total adjusted R ²	6.7%	6.7%
Block 6: Interaction		
Others * Collectivism	.07*	.09**
Incremental adjusted R ²	0.4%	0.6%
Total adjusted R ²	12.5%	8.1%

Notes: Beta weights are from final regression equation with all blocks of variables in the model. * $p < .05$, ** $p < .01$, *** $p < .001$; $N = 977$.

regression analysis was performed. As shown in Table 4 (column 2), with the influences of gender, age, education, income, collectivism, media exposure, perceived effects on oneself, and elaboration being controlled, perceived effects on others was not significantly related to adoption of altruistic behavior ($B = .06, p > .05$). H5 was not supported.

H6 predicted that collectivism would be a significant and positive predictor of altruistic behavior. As results of previous hierarchical regression analyses in Table 4 (column 2) show, collectivism was indeed a significant and positive predictor of adoption of altruistic behavior ($B = .11, p < .01$) after the influences of demographics were taken into consideration. H6 was supported.

Taken together, these findings suggest that the relationship between perceived effects of COVID news on others and adoption of altruistic behavior became stronger as the level of collectivism

increased. Conversely, the relationship between perceived effects of COVID news on others and adoption of the altruistic behavior became weaker as the level of collectivism decreased. Thus, the stronger the respondents' disposition toward collectivist values, the more they would perform altruistic acts for others whom they believed to be impacted more by COVID-19 news than themselves.

Finally, RQ1 explored whether collectivism would moderate the relationship between perceived effects of news about COVID-19 on others and adoption of altruistic behavior. Results of previous hierarchical regression analyses shown in Table 4 were used to address the research question. As shown in Table 4, there was a significant and positive interaction between collectivism and perceived effects on others ($B = .09, p < .01$), indicating the relationship between perceived effects on others and adoption of altruistic behavior was moderated by collectivism.

To assess the direction of the moderation effect, we used the bootstrapping method, which showed that the level of collectivism enhanced the impact of perceived effects on others on adoption of altruistic behavior. As Table 5 shows, when the level of collectivism equaled or surpassed 3.92, perceived effects on others significantly predicted adoption of altruistic behavior. When the level of collectivism fell to 3.80 or lower, perceived effects on others was no longer significantly related to adoption of altruistic behavior.

Conclusions and Discussion

Previous research has examined a range of factors that mitigate or moderate the third-person effects. However, few studies have examined factors such as cultural values that moderate the relationship between perceptual effects of media messages and behavioral outcomes. This study expands the literature by examining collectivism as a moderator of the relationship between perceived effects and behavioral consequences in the context of news about the coronavirus outbreaks in Wuhan, China.

Findings show that third-person perceptual bias existed in appraising the impact of news about the coronavirus outbreak. Respondents believed that others were more affected by the outbreak news than themselves, indicating the third-person effect was robust during this unprecedented public health crisis. Also, consistent with the literature (Wei et al., 2008); news about public health risks, unlike pornography or persuasive messages, still triggers third-person perception.

On the other hand, our findings show that both elaboration and collectivism mitigate the third-person perception because they are positively related to perceived effects of COVID-19 news on oneself. That is, the more the respondents internalized the news through elaboration and the more they were oriented toward collectivist values, the more they believed the news impacted others as

Table 5. Conditional Effects of Perceived Effects on Others on Altruistic Behavior.

Collectivism	B	SE	T	P	CI
3.74	0.08	0.05	1.75	0.08	[-.001, .172]
3.80	0.09	0.05	1.96	0.05	[.000, .180]
3.92	0.13	0.05	2.33	0.02	[.017, .197]
4.01	0.13	0.05	2.75	0.00	[.038, .228]
4.28	0.16	0.05	2.97	0.00	[.054, .265]

Notes: When level of collectivism was 3.80 (or surpassed 3.80), perceived effects on others significantly predicted adoption of altruistic behavior.

well as themselves. Further, the more they believed themselves to be impacted by the news, the more likely they would engage in promoting beneficial information about the outbreaks to others around them. Previous research (Choi et al. 2017) suggests that news media are important sources of information about outbreaks of contagious diseases. Our findings further show that the news media are also an important source of social influence.

More importantly, the more that respondents' cultural values were anchored on collectivism, the less the respondents were biased to think they would be unaffected by the news. Consistent with past research (Lee & Tamborini, 2005), this result makes sense because residents of Wuhan live in a society where collectivist values are deeply rooted and were strongly advocated during the outbreaks. We also found that collectivism leads to prosocial behavior. Specifically, collectivism not only predicts perceived effects of COVID-19 news on oneself and others, but also influences altruistic and promotional behaviors. Our findings thus expand understanding of the third-person effect by addressing an area—altruism—that has otherwise received little attention in the literature.

Our findings also show that collectivism significantly moderates the relationship between perceived effects on others and altruistic behavior—higher levels of collectivism correspond to stronger relationships between perceived effect of COVID-19 news on others and altruistic behavior. As the level of collectivism goes up, the relationship between perceived effects on others and adoption of altruistic behavior becomes stronger. Thus, our findings suggest that the impact of perceived effects on others on altruistic behavior depends on the level of collectivism.

Research in individualism and collectivism has indicated that collectivists are more concerned with group rights and group goals. They are primarily motivated by the norms and duties imposed by society and are willing to self-sacrifice for group interests. Thus, more collectivistic individuals are more likely to behave according to prevailing social norms and are more likely to adopt altruistic behavior. In the case of Wuhan's total lockdown to contain the spread of COVID-19, respondents who were highly collectivist were motivated to adopt pro-social measures because they believed that news about the COVID-19 outbreaks would impact others as well as themselves.

The current study has several limitations. Our measure on the third-person effects is based on questions that asked how concerned people perceived themselves and others to be about the outbreaks in Wuhan. Other aspects of perceived news influence, such as senses of safety, social stability, panic, disorientation, etc., are possible influences of the COVID-19 news. However, due to the time limit for telephone interviews, these aspects were not included. Another limitation is the low response rate of the telephone survey. Although it is consistent with rates of similar telephone surveys, it may limit the generalizability of the results to the general public in Wuhan and other Chinese cities. Thus, our results should be interpreted within these limitations.

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