

Dimensions of effective government pandemic-crisis communication in the context of COVID-19: A public-centric perspective

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Abstract

Drawing on two representative online surveys in Hong Kong (HK) and the United States (US) during the COVID-19 pandemic, this study investigates, from a public-centric perspective, public expectations of effective government pandemic-crisis communication. The study looks specifically at what the publics want to be communicated in times of a global pandemic and how. In each region, the findings identify four significant dimensions. Three are culturally universal dimensions—basic responsibility, locus of pandemic-crisis responsibility, and disfavour of promotional tone. The fourth is culture-specific—personal relevance for HK and frequency for the US. Among the significant dimensions, the most highly expected is what people consider to be the government's basic responsibility in pandemic communication, that is, a basic responsibility dimension. This includes providing instructing and adjusting information and securing accuracy, timeliness, and transparency in pandemic communication. In both regions, respondents preferred by far traditional media and nongovernmental sources to social media and governmental sources.

KEYWORDS

basic responsibility of government, COVID-19 pandemic, dimensions of effective government crisis communication, public expectations, transparency

1 | INTRODUCTION

Given the mobility of people and the mutability of viruses, it seems inevitable that after coronavirus disease-2019 (COVID-19) is but a memory humanity will encounter still more pandemics. COVID-19 has underscored how important it is for governments to have effective crisis communication so as to protect public health and safety. If a company fails to properly manage its crisis communication, it faces financial, reputational losses, and sometimes injuries and fatalities (Coombs, 2007; Kim, 2014). If during a pandemic, a government fails in this regard, the consequences are more extensive. A virus can spread rapidly and death tolls can mount, putting the public and society at high risk (Bavel et al., 2020). During

the COVID-19 pandemic, some governments seem to have done a better job than others with their communication. There has yet to be a great deal of systematic examination of what makes government pandemic-crisis communication effective in a large-scale pandemic like COVID-19. To protect human life during future pandemics, there is an imminent need to understand what makes government pandemic-crisis communication effective. To that purpose, this study attempts to identify the predictors/dimensions of effective government pandemic-crisis communication based on what the publics expect from their government(s).

Scholars have examined government communication, generally focusing on specific opportunities and constraints faced by the public sector (e.g., Liu & Horsley, 2007). What we lack currently are

theoretical frameworks that can address the unique characteristics of government pandemic-crisis communication. In fact, a good deal of previous crisis communication research has been rooted in the private sector. This sort of research generally tries to determine effective reputation management crisis-response strategies or to understand the existing organizational crisis communication practice (Benoit, 1997; Coombs, 2007; Huang & Bedford, 2009; Kim, 2014). Despite the stakes being much higher when government crisis communication fails, the amount of scholarly attention given to this problem suggests that its importance is underappreciated (Liu & Horsley, 2007). However, without a thorough understanding of when and how government pandemic-crisis communication works, humanity as a whole cannot adequately and effectively manage public dangers and concerns that arise from pandemics and cannot accurately plan or measure effective government pandemic-crisis communication.

To fill the research gap and address the imminent need, this study argues that for government pandemic-crisis communication to be effective (i.e., protecting public lives and health by increasing government trust and message acceptance, Siegrist & Zingg, 2014; Smith, 2006), it should meet or exceed public expectations of government crisis communication. Built on expectation-confirmation theory (ECT—when expectation is confirmed or met by the performance of a target, people tend to reveal better reactions to it, Oliver, 1980), this research attempts to identify eminent factors that make government pandemic-crisis communication effective based on publics' expectations—public-centered perspectives. By identifying these predictors, it intends to provide insights into what and how to communicate during pandemics for effective government pandemic-crisis communication. This study investigates public expectations of governments in the context of the current COVID-19 pandemic in Hong Kong (HK) and the United States (US). In doing so, it contributes to global perspectives of pandemic-crisis communication. This is done by comparing the two culturally different regions and by highlighting the importance of social pressure (i.e., public pressure resulting from public expectations toward the government) in bringing about effective government pandemic-crisis communication. The study sheds light on culture-specific and universal dimensions of government pandemic-crisis communication, advancing the current knowledge of pandemic-crisis communication.

2 | LITERATURE REVIEW

2.1 | Effective government pandemic-crisis communication

Government pandemic-crisis communication is defined in this study as communication that is designed and distributed by government itself to prepare, respond to, and manage threats to public health and safety throughout a pandemic crisis; such communication may include information collection, message development, and disseminating information (Coombs & Holladay, 2010; Reynolds &

W. Seeger, 2005). The differences between the government and corporate sectors have yet to be clearly delineated. However, existing literature generally agrees that the primary objective of government crisis communication is different from that of corporate crisis communication. During pandemics, the primary government concern is public safety while not all corporate crises involve public safety (Helm et al., 1981; Lee, 2009). Prior research (Lee, 2009; Liu & Horsley, 2007) has identified some other unique characteristics of government crisis communication. Government is, compared to the private sector, subject to (1) higher public and media scrutiny on how effectively it contains a crisis and (2) stricter evaluation by publics on how much it prioritizes public health and safety in conducting its crisis communication (Helm et al., 1981; Lee, 2009). Thus, governments should be more sensitive to meeting and exceeding public expectations and needs for successful pandemic-crisis communication (Lee, 2009).

During a pandemic, the ultimate goal for effective government crisis communication is to persuade the public to adopt protective health practices that help reduce the human death toll by protecting public lives and health (Smith, 2006). Such a goal can be achieved often by increasing public acceptance of government communication through improving public trust of government (Siegrist & Zingg, 2014; Smith, 2006). By meeting and exceeding public expectations and needs, the increase of government trust and public acceptance of government message can be achieved according to ECT (Oliver, 1980). Given this, there is a clear need to identify public expectations of a government's pandemic-crisis communication.

ECT (Oliver, 1980) posits that publics tend to develop or possess certain expectations toward an entity. When their expectations are met by their perception of the entity's performance, people tend to express higher satisfaction with the entity (Oliver, 1980). When an entity fails to meet expectations, people tend to express lower satisfaction with it. ECT has been widely adopted to explain human psychology and behaviours in many different contexts including consumer research (Oliver, 1980), information science (Bhattacharjee, 2001), or CSR communication (Kim, 2019). Although ECT has been applied mainly to consumer contexts, it is applicable to the public sector and pandemic-crisis contexts. Indeed, publics hold expectations of governments and their pandemic communication. When governments fail to meet public expectations, negative reactions can be assumed to ensue, such as a lowering of government trust and an ignoring of government policies. By applying ECT to government pandemic communication, we thus speculate that when a government successfully secures pandemic-crisis communication factors that are expected by publics (i.e., meeting public expectations and needs in carrying out its pandemic communication management), its communication will prove more effective and beneficial because it increases publics' pandemic knowledge, government trust, and adoptions of protective measures and policies. As an initial step to uncover the mechanism that facilitates effective crisis communication, this study intends to identify public expectations of government pandemic-crisis communication—potential predictors of effective government pandemic communication.

Public expectations of government pandemic-crisis communication can also vary by culture. Public expectations are formed and influenced by social norms and collective values about appropriateness and acceptability, and such social norms and values may differ by culture and social system (Helm et al., 1981; Lee, 2009). However, to date, there has been little framework development for culturally specific or general dimensions of effective government pandemic-crisis communication. This study begins to fill this void by investigating public expectations of government pandemic communication in the East (HK) and the West (the USA).

2.2 | Dimensions of government pandemic communication

In seeking out what contributes to effective government pandemic-crisis communication, we can draw on previous crisis literature to come up with potential factors (Coombs, 2007; Kim, 2019; Reddick et al., 2016; Seeger et al., 2003; Sturges, 1994). These factors would likely include the following: instructing information, adjusting information, transparency, accuracy, timeliness, locus of pandemic-crisis responsibility, personal relevance, frequency, consistency, message tone, and type of media channels and communication sources (Fairbanks et al., 2007; Lee, 2009; Reddick et al., 2016; Sturges, 1994).

Crisis literature has suggested the importance—regardless the organization or crisis type—of providing basic crisis responses such as instructing and adjusting information as part of organizations' ethical and basic responsibilities (Coombs, 2007; Sturges, 1994). Instructing information focuses on sharing with publics what has happened (i.e., basic crisis status information) and information on how to protect oneself. In this manner, organizations attempt to protect publics, and publics can judge the recommended action (Sturges, 1994). Especially when there emerges a risk to public health and safety, publics need to know how to protect themselves. Adjusting information helps facilitate publics' psychological coping with the crisis, provides information about corrective actions taken, and shows concern for people affected by the crisis (Coombs, 2007; Sturges, 1994). Prior research has suggested that when an organization includes instructing and adjusting information, publics' crisis knowledge and message reception tend to increase (Kim, 2014).

However, previous crisis research has suggested that organizations tend to adopt reputation-management strategies for image repair rather than strategies intended to ensure public safety (Kim et al., 2011). Crisis scholars have argued how problematic this tendency is. In fact, it sends public the message that their health and safety are not a top priority (Lee, 2009; Kim et al., 2011). The publics often evaluate government crisis communication based on the degree to which the government prioritizes public safety and health (Lee, 2009). Given this, the importance of providing instructing and adjusting information (what has been called the ethical base crisis responses) can be much greater in government communication than in communication from the private sector.

Public expectations of transparency in government pandemic communication, compared to that from for-profit organizations, tend to be greater (Fairbanks et al., 2007; Liu & Horsley, 2007). Government transparency in general refers to sharing information with the public regarding what the government is doing (Reddick et al., 2016). This study then defines transparency in government pandemic communication as candid and full disclosure of all information including good and bad regarding a pandemic crisis (Kim & Ferguson, 2018; Seeger et al., 2003). With the rise of social media, transparency in government pandemic communication has become increasingly important. For governments, maintaining transparency is considered an effective policy instrument to combat misinformation (i.e., false information with no harm intended) and to improve public trust (OECD, 2020; Wu et al., 2022). Prior research has also broadly supported the idea that, in organization-public relationships, transparency of communication is essential to building trust and credibility (Coombs & Holladay, 2010; Seeger et al., 2003).

In addition, during a pandemic lives can be saved with timely communication that is accurate, but if inaccurate it is meaningless (Reddick et al., 2016) and can in fact give rise to fake news and misinformation on social media (Bavel et al., 2020). Especially in a pandemic like COVID-19, accurate communication can help societies handle uncertainty and fear much more effectively (Bavel et al., 2020; Reddick et al., 2016). Crisis scholars have also emphasized the importance of timeliness and accuracy in fostering public confidence and trust in government (Fairbanks et al., 2007; Wang et al., 2021).

When facing uncertainty and risk in crisis, people first try to make sense of what caused the crisis and to whom they should attribute crisis responsibility (Weiner, 1995). Since people are motivated to understand and control their environments in a crisis, they seek (out of a fundamental psychological need) information concerning the locus of crisis responsibility (Klein & Dawar, 2004; Weiner, 1995). Thus, publics are likely to expect from the government information about the locus of crisis responsibility that indicates who and/or what may be accountable for a crisis. This information often serves as a basis for people to shape their attitudinal and behavioural responses to a crisis (Weiner, 1995).

In terms of crisis communication, personal relevance concerns messages that make a personal connection to people's daily life and interests (Kim & Ferguson, 2018). This aspect is considered an expected factor, as people find the personal-relevance factor important when it comes to accepting related messages and recommended behaviors (Garcia-Marques & Mackie, 2001). Messages with personal relevance tend to attract more positive public reactions such as higher knowledge, trust, and supportive behaviour (Kim, 2019). Another factor identified as important in affecting public responses is communication consistency (Glik, 2007; Seeger, 2020). Consistency of government pandemic communication refers to how similar government messages are; regardless of the media channel or target audience, all citizens should hear similar messages (Glik, 2007). This consistency in messages is widely identified as a key factor for effective health communication during pandemics such as SARS and COVID-19 (Seeger, 2020). Indeed, how well the publics perceive the

risks and adopt protective measures depends largely on information they receive from the government. Hence, when the government fails to be consistent with their messages on risk assessments and recommended behaviours, publics feel more uncertain and adopt fewer protective measures (Seeger, 2020; Wang et al., 2021).

Frequency is defined as the number of occurrences of government's pandemic communication attempts through various media channels (Kim & Ferguson, 2018). In emergent crises where the levels of real-time risks and uncertainty continually change, publics may expect government to share information as frequently as possible (Bavel et al., 2020; Glik, 2007). Frequent crisis communication can increase levels of public awareness of pandemic risks and threats and increase adoption of preventative measures. Yet it may also become tiresome to some, mitigating its effectiveness. Thus, this aspect should be more carefully examined based on public expectations.

In the context of organizational communication such as CSR, message tone has been identified as an important factor to shape recipients' attitudinal and behavioural responses (Kim, 2019; Schlegelmilch & Pollach, 2005). Research suggests that a self-congratulatory or self-aggrandizing tone (as opposed to a factual tone) often invokes public skepticism regarding organizational motives for doing CSR (Schlegelmilch & Pollach, 2005). Increased skepticism in turn leads to negative public reactions (Kim, 2019). Although there is a need to make sure that successes in crisis management should be noted and praised accordingly, a government in the midst of a pandemic that adopts a self-congratulatory tone may only antagonize publics (Andrew et al., 2018). When President Trump, for example, adopted a self-congratulatory tone, the media and publics had a broadly negative reaction (Peters et al., 2020). Hence, we regard message tone (e.g., self-congratulatory or factual tone) in crisis communication as a potentially important factor of effective government pandemic-crisis communication.

2.3 | Public preferences of communication source and media channels

The types of communication channels and sources affect how publics communicate in times of crisis such as information-seeking behaviours (Austin et al., 2012) and public acceptance of crisis communication (Liu et al., 2011; Park et al., 2019). Prior crisis research has investigated the effects, during times of crisis, of varying communication sources and media channels (Liu et al., 2011; Liu et al., 2013). Public acceptance of crisis communication seems to be better when it is communicated through traditional media than interpersonal (e.g., word-of-mouth) or social media, but such acceptance varies depending on communication source (organization vs. third-party) and crisis responses (Liu et al., 2011). Liu et al.,'s study (2013) interviewed college students and found that most preferred communicating with one another via offline interpersonal communication channels, followed by text messaging or Facebook, and lastly traditional media. However, their research context was not a

pandemic situation and applicable insight could be limited to college students, not necessarily generalizable to all age groups.

A recent survey study (i.e., Park et al., 2019) investigating the relationships between media channels and public responses in a Zika virus outbreak could provide additional insight into public usage of communication channels and responses in a pandemic. Their research found that the most frequently used media and information sources by Americans were TV news, followed by health department websites, medical professionals, Facebook, and radio news. People relying on interpersonal sources such as medical professionals or friends/family tended to reveal lower perceived risks to Zika. People with higher intentions to adopt protective measures most frequently used TV news, health department websites, and Facebook. Those with lower intentions still used the top two channels the most but used friends/family over Facebook (Park et al., 2019). Research on environmental hazards and disasters, specifically protective-action-decision-model- (PADM-) based research (e.g., Lindell & Perry, 1987, 2012), has also suggested that information source and channel access and preferences play important roles in affecting threat perception and protective action decision making. Governments should seek out credible sources, as these can bring about immediate compliance from the public. PADM also suggests that people vary in their preferences and types of access to hazard warning messages. As each media channel has advantages and disadvantages, governments should consider a variety of them in their disaster communication (Lindell & Perry, 1987, 2012). As such, it is important to mix a variety of media channels during pandemics. Understanding public preferences of varying media channels can further help the strategic implementation of media tactics.

Although these studies certainly provide meaningful insights, they are limited in providing a holistic understanding of public preferences to media channels and sources specifically in a global pandemic and cross-national context. Thus, to identify significant dimensions of effective government pandemic-crisis communication and explore public expectations in terms of what and how to communicate in a pandemic (i.e., information, communication channels, and source preferences), this work proposes the following research questions:

- RQ1:** What are the significant dimensions of effective government pandemic communication expected by publics in HK and the US?
- RQ2:** Do publics in HK and the US differ in what they identify as significant dimensions of government pandemic-crisis communication?
- RQ3:** What do publics in HK and the US expect from their governments in terms of "what and how to communicate" about the pandemic crisis such as (a) communication content, (b) media channels, and (c) source preferences?
- RQ4:** Do publics in HK and the US differ in what they expect from government pandemic communication in terms of (a) communication content, (b) media channels, and (c) source preferences?

3 | METHODS

3.1 | Data collection and samples

HK and the US were considered to be representatives of the Eastern and Western worlds respectively. They were each an exemplar for relatively low (HK) and high (US) numbers of COVID-19 cases. HK adopted one of the strictest COVID-19 policies, and the US adopted one of the most relaxed (Policy Responses to COVID-19, July 2, 2021). HK has been recognized as a lodestar for its ability to keep COVID-19 cases at bay (approximately 5000 cases by September 2020), whereas the US led the by-country count with more than 6.7 million COVID-19 cases and, as of mid-September of 2020, had the most deaths (WHO, 2020). Given all these differences considered, the two regions were deemed appropriate for a comparative study. Data were collected in September 2020 through two equivalent representative online surveys in HK and the US after IRB approval.

To secure the representative samples in each region, the study employed research panels managed by an international market research company, Dynata, which has local branches in HK and the US. HK panels were invited based on the gender and age ratio of HK Government Census 2020, and US panels were invited based on the gender, age, and ethnicity ratio of the US Census 2020. After screening for speeders and straight liners, 1035 were included in the HK sample, and 1033 in the US sample. In exchange for their participation, participants received rewards (approx., US \$4 on average for both samples; higher for the elderly). Qualifying to participate in the surveys were Hong Kongers and Americans residing in their respective regions at the time of data collection. Respondents were asked to answer questions concerning their expectations regarding government pandemic communication, media channels, and sources in addition to demographic questions. On average, the survey took approximately 13 min to complete.

For the HK sample, females accounted for 55% ($n = 569$). The average age was 40.79 ($SD = 11.52$), and those over 40 made up 53.6% ($n = 555$). A majority (67.1%, $n = 695$) were college graduates or had completed some graduate work. Approximately 82.8% ($n = 857$) were employed full-time. The annual household income for a majority (68.3%, $n = 707$) was less than US\$100,000. For the US sample, 52.2% ($n = 539$) were female, and a majority of the sample were White/Caucasian (77%), followed by Black/African American (13.5%), Asian American (6.7%), and other (2.1%). The average age was 41.94 ($SD = 12.99$), with those over 40 making up 53.2% ($n = 550$). Approximately 57.9% ($n = 598$) were employed full-time. A majority (59.1%, $n = 611$) were college graduates or had completed some graduate work. The annual household income for a majority (69%, $n = 713$) was less than US\$100,000.

3.2 | Survey instruments

To measure public expectations of pandemic communication, survey instrument items were developed based on previous crisis

communication and public expectations research (e.g., Coombs, 2007; Coombs & Holladay, 2010; Kim & Ferguson, 2018; Wixom & Todd, 2005). A total of 48 items were included, and these concerned instructing and adjusting information, transparency, accuracy and timeliness, frequency, consistency, message tone, and so forth (see Appendix for items). Cronbach α reliability coefficients of all identified factors were satisfactory, higher than 0.90 (see Tables 1 and 2 for details). To measure public preference to communication sources and media channels, 10 sources (see Table 3) and 27 media channels (see Table 4) were included (Kim & Ferguson, 2018; Park et al., 2019). All items were measured on a 7-point, Likert-type scale anchored by (1) strongly disagree and (7) strongly agree.

4 | RESULTS

4.1 | Exploratory factor analyses (EFAs)

4.1.1 | HK sample

An exploratory factor analysis (EFA) was performed with all items, using principal axis factoring extraction and oblique rotation to identify significant dimensions of effective government pandemic-crisis communication based on public expectations (RQ1 and RQ2). From this EFA, ten items were eliminated (see Appendix for removed measure items) due to low factor loadings (<0.50) and cross-loadings onto two or more factors (Hair et al., 2006). The EFAⁱ identified eight factors with Eigenvalues greater than 1 and factor loadings larger than 0.50. The eight factors were the following: 1) instructing information of pandemic status (i.e., Instructing Info1), 2) instructing information about protective measures (i.e., Instructing Info2), 3) accuracy/timeliness (accuracy and timeliness items were loaded onto a single factor in this EFA), 4) adjusting information (i.e., Adjusting Info), 5) transparency, 6) locus of pandemic-crisis responsibility, 7) disfavour of promotional tone, and 8) personal relevance. Factors of frequency, consistency, and factual tone were not identified as significant dimensions of government pandemic communication due to high cross-loadings. Of the eight identified factors, the accuracy/timeliness factor explained the largest total variance (45.3%, see Table 1).

4.1.2 | US sample

Another EFA was conducted for the US sample. The EFA results were significantly different from those of the HK sample. Fourteen items were eliminated (see Appendix) based on the same EFA criteria (Hair et al., 2016). The EFAⁱⁱ identified six factors: 1) instructing information about pandemic status and protective measures (i.e., Instructing Info 1 & 2: the items of instructing information were loaded onto a single factor, different from HK), 2) accuracy/timeliness, 3) adjusting information and transparency (i.e., Adjusting Info/Transparency: the items of the two factors were loaded onto a

TABLE 1 The EFA results of the United States and Hong Kong samples

US sample							HK sample								
Items*	1	2	3	4	5	6	Items	1	2	3	4	5	6	7	8
Inst5	.96						AC3	.97							
Inst4	.92						AC1	.96							
Inst3	.87						AC2	.93							
Inst1	.84						TL1	.88							
Inst9	.80						TL2	.87							
Inst8	.80						TL3	.87							
Inst2	.79						Inst8		.83						
Inst6	.73						Inst14		.82						
Inst13	.73						Inst13		.82						
Inst10	.72						Inst9		.78						
Inst7	.69						Inst7		.78						
Inst11	.68						Inst15		.76						
AC2		.88					Inst6		.74						
AC1		.86					Inst11		.70						
TL3		.84					Inst12		.67						
AC3		.80					Locus1			.95					
TL2		.76					Locus2			.90					
TL1		.66					Locus3			.88					
Adj2			.84				Adj2				.93				
Adj3			.80				Adj3				.90				
Trans5			.79				Adj1				.85				
Trans2			.74				PT2					.94			
Trans1			.73				PT3					.91			
Adj1			.60				PT1					.78			
Trans3			.57				Rel2						.91		
Locus2				.94			Rel1						.85		
Locus3				.87			Rel3						.70		
Locus1				.86			Rel4						.68		
PT2					.91		Inst5							.75	
PT1					.84		Inst3							.71	
PT3					.84		Inst4							.70	
Freq. 2						.92	Inst2							.69	
Freq. 3						.80	Inst1							.60	
Freq. 1						.68	Trans2								.80
							Trans3								.76
							Trans5								.71
							Trans1								.70
							Trans4								.64

TABLE 1 (Continued)

US sample							HK sample								
Eigen V	21.0	2.9	2.4	2.2	1.9	1.2	Eigen V	23.4	4.7	2.8	2.1	1.8	1.7	1.5	1.2
Variance	59.8	6.2	3.4	3.0	2.3	1.8	Variance	45.3	8.7	5.0	3.6	2.8	2.4	2.0	1.8
α	.97	.96	.95	.93	.90	.90	α	.97	.93	.94	.94	.93	.92	.91	.92
Means	5.75	5.99													

*Inst = Instructing Information, AC/TL = Accuracy/Timeliness, Trans = Transparency, Adj = Adjusting Information, REL = personal relevance, Freq = frequency, and PT = disfavour of promotional tone.

TABLE 2 Discriminant/convergent validities and reliabilities of all constructs and correlations matrices

US sample factors*	CR**	AVE	MSV	ASV	FREQ	LOCUS	PT	BasicResp
FREQ	0.902	0.754	0.548	0.345	0.868			
LOCUS	0.933	0.824	0.461	0.282	0.545	0.908		
PT	0.898	0.747	0.361	0.213	0.438	0.295	0.864	
BasicResp	0.956	0.879	0.548	0.457	0.740	0.679	0.601	0.938
HK sample factors	CR	AVE	MSV	ASV	REL	LOCUS	PT	BasicResp
REL	0.915	0.730	0.430	0.201	0.854			
LOCUS	0.940	0.839	0.312	0.238	0.336	0.916		
PT	0.932	0.821	0.312	0.183	0.247	0.559	0.906	
BasicResp	0.902	0.651	0.430	0.299	0.656	0.538	0.420	0.807

*BasicResp = Basic Responsibility (2nd-order factor with sub-dimensions), LOCUS = locus of pandemic crisis responsibility, PT = disfavor of promotional tone, FREQ = Frequency, REL = personal relevance.

CR = composite reliability, AVE = average variance extracted, MSV = maximum shared variance, ASV = average shared variance. *The square roots of AVE are on the diagonal.

TABLE 3 Public preference on government crisis communication source

US sample (N = 1033)					HK sample (N = 1035)				
Rank	Type	Communication Sources	M	SD	Rank	Type	Communication Sources	M	SD
1	G	The central government's health agency like Centers for Disease Control (CDC)	5.62	1.58	1	G	Hong Kong government's health agency like the Centre for Health Protection (CHP)	5.49	1.36
2	NG	Experts on the pandemic (e.g., Doctors)	5.61	1.51	2	NG	Experts on the pandemic (e.g., Doctors)	5.48	1.26
3	G	Local governments (e.g., state, city)	5.56	1.49	3	NG	Recovered patients of the pandemic	5.10	1.28
4	NG	WHO (World Health Organization)	5.21	1.78	4	NG	Citizens who are affected by the pandemic, just like me	5.04	1.33
5	NG	Recovered patients of the pandemic	5.20	1.56	5	NG	WHO (World Health Organization)	4.76	1.67
6	G	Head of local governments (e.g., governor, mayor)	5.20	1.60	6	NG	Non-profit organizations	4.67	1.41
7	NG	Citizens who are affected by the pandemic just like me	5.09	1.61	7	G	HK Government spokesperson	4.47	1.64
8	G	US government Spokesperson	4.96	1.63	8	G	Government of China like Chinese Center for Disease Control and Prevention (CDCP)	4.32	1.86
9	NG	Non-profit organizations	4.88	1.60	9	G	Chief Executive of Hong Kong**	3.76	1.98
10	G	President of USA	4.46	2.15	10	G	Chinese President, Xi Jinping	3.67	1.95

*G = governmental sources, NG = nongovernmental sources.

**The highest office of the Hong Kong Special Administrative Region (HASAR).

TABLE 4 Consumer preference on media channels for government pandemic-crisis communication

US sample (N = 1033)					HK sample (N = 1035)			
Rank	Type*	Media channels	M	SD	Type	Media channels	M	SD
1	C/TM	Gov. pandemic websites	5.29	1.59	U/TM	TV news	5.49	1.33
2	U/TM	TV news	5.17	1.73	U/TM	Online news	5.45	1.35
3	C/TM	Gov.'s daily briefing	5.09	1.61	C/TM	Gov.'s daily briefing	5.44	1.36
4	U/TM	Online news	5.00	1.75	U/TM	Radio news	5.09	1.47
5	U/TM	Radio news	4.82	1.82	C/TM	Gov. pandemic websites	5.08	1.45
6	U/TM	Offline newspapers	4.66	1.87	U/SM	YouTube channels by pandemic experts	4.94	1.44
7	C/TM	Gov. emails	4.43	1.93	U/SM	Experts' social media (Twitter/FB)	4.85	1.44
8	U/SM	YouTube channels by pandemic experts	4.39	1.93	U/TM	Offline newspapers	4.84	1.52
9	C/TM	Local offices of Gov.	4.34	1.91	C/SM	Mobile app. of Gov.	4.67	1.62
10	C/SM	Mobile app. of Gov.	4.32	1.95	U/SM	Experts' blogs	4.59	1.48
11	C/TM	Annual reports of Gov.	4.25	1.94	C/TM	Gov.'s mobile texts	4.57	1.64
12	U/SM	Experts' blogs	4.20	1.94	U/SM	YouTube channels by fellow citizen/citizen journalists	4.45	1.54
13	U/SM	Experts' social media	4.16	2.01	U/SM	Friends' social media	4.39	1.46
14	C/TM	Gov.'s direct mails	4.11	1.98	C/SM	Gov.'s YouTube channels	4.37	1.67
15	C/TM	Gov.'s newsletters	4.09	1.95	C/SM	Gov.'s Facebook	4.30	1.64
16	C/TM	Gov.'s offline brochures or flyers	4.07	1.96	C/SM	Gov.'s mobile messenger (e.g., Whatsapp, Wechat)	4.26	1.72
17	U/SM	YouTube channels by fellow citizen/citizen journalists	4.00	1.95	C/TM	Gov.'s emails	4.21	1.74
18	C/TM	Gov.'s mobile texts	3.98	2.00	C/TM	Gov.'s newsletters	4.20	1.71
19	C/SM	Gov.'s YouTube channels	3.97	2.01	C/SM	Gov.'s Instagram	4.18	1.65
20	C/SM	Gov.'s Facebook	3.78	2.16	C/TM	Local offices of Gov.	4.16	1.67
21	C/SM	Gov. blogs	3.76	2.09	U/SM	Friends' blogs	4.07	1.54
22	C/SM	Gov.'s Instagram	3.62	2.16	C/SM	Gov. Twitter	4.05	1.71
23	U/SM	Friends' social media	3.62	2.02	C/TM	Annual reports of Gov.	4.02	1.72
24	C/SM	Gov. Twitter	3.58	2.13	C/TM	Gov.'s offline brochures or flyers	3.99	1.71
25	U/SM	Friends' blogs	3.54	2.03	C/TM	Gov.'s direct mails	3.87	1.77
26	C/TM	Gov. phone calls	3.52	2.10	C/SM	Gov. blogs	3.83	1.72
27	C/SM	Gov.'s mobile messenger (e.g., Whatsapp)	3.45	2.08	C/TM	Gov. phone calls	3.38	1.85

*C = controlled media channels; U = uncontrolled media channels; TM = traditional media; SM = social media.

single factor, again different from HK), 4) locus of pandemic-crisis responsibility, 5) disfavour of promotional tone, and 6) frequency. In the US, factors of personal relevance, factual tone, and consistency were not identified as significant dimensions. Of the six identified factors, that explaining the largest total variance was Instructing Info 1 & 2 (59.8%, see Table 1 for the EFA results).

4.2 | Confirmatory factor analyses (CFAs)

CFAs were performed with each sample separately with all factors identified from the EFAs to examine the efficacy of the significant dimensions and the difference between the two regions (RQ1 and RQ2). Initial CFA measurement models revealed inadequate

discriminant validities due to high correlations among some of the identified factors. This indicated the presence of a 2nd-order factor, producing high associations among the 1st-order factors. Following a general strategy for testing 2nd-order factor models recommended by Brown (2006), this study identified for each sample a 2nd-order factor—Basic Responsibility of government pandemic communication (hereafter Basic Responsibility). For HK, the CFA measurement model revealed an appropriate fit after creating the 2nd-order factor of Basic Responsibility with five sub-dimensions (1st order factors: Instructing Info1, Instructing Info2, Adjusting Info, Accuracy/Timeliness, and Transparency): $\chi^2 = 2,022.04$ with 632 *df*, $\chi^2/df = 3.1$, CFI = 0.96, GFI = 0.95, Root Mean Square Error of Approximation (RMSEA) = 0.04. For the US, the CFA measurement model revealed an appropriate fit after creating the 2nd-order factor of Basic Responsibility with three sub-dimensions (i.e., 1st-order factors: Instructing Info 1&2, Adjusting Info/Transparency, and Accuracy/Timeliness): $\chi^2 = 1,748.63$ with 508 *df*, $\chi^2/df = 3.4$, CFI = 0.97, GFI = 0.95, RMSEA = 0.04.

For the HK sample, the final dimensions of pandemic-crisis communication included the following: 1) Basic Responsibility (2nd-order factor with five sub-dimensions), 2) locus of pandemic-crisis responsibility, 3) personal relevance, and 4) disfavour of promotional tone. For the US sample, the four factors included the following: 1) Basic responsibility (2nd-order factor with three sub-dimensions), 2) locus of pandemic-crisis responsibility, 3) disfavour of promotional tone, and 4) frequency (see Figures 1 and 2). Finally, the final measurement models were examined for discriminant and convergent validities and reliability tests. The results revealed no concerns for validity and reliability issues (see Table 2).

4.3 | Public expectations of government pandemic-crisis communication

To explore what publics expect from their governments in terms of “what and how to communicate” in a global pandemic (RQ3s and RQ4s), we examined the mean scores of all factors identified in both samples. Among the identified factors in HK, the most highly expected dimensions were the factors of accuracy/timeliness ($M = 5.78$, $SD = 1.26$) and instructing information about protective measures (i.e., Instructing Info2; $M = 5.78$, $SD = 0.95$), followed by the factors of instructing information of pandemic status (i.e., Instructing Info1; $M = 5.76$, $SD = 1.02$), transparency ($M = 5.73$, $SD = 1.07$), Adjusting Info ($M = 5.41$, $SD = 1.31$), locus of crisis responsibility ($M = 5.35$, $SD = 1.37$), personal relevance ($M = 5.30$, $SD = 1.02$), disfavour of promotional tone ($M = 5.28$, $SD = 1.50$). As to pandemic communication content (RQ3a), HK publics most highly expected instructing information about protective measures and pandemic status, followed by adjusting information and locus of crisis responsibility.

The accuracy/timeliness factor was also the most expected one among the US public ($M = 5.99$, $SD = 1.26$). It was followed by instructing information of pandemic status (i.e., Instructing Info1; $M = 5.77$, $SD = 1.02$), instructing information about protective

measures (i.e., Instructing Info2; $M = 5.73$, $SD = 1.30$), transparency ($M = 5.71$, $SD = 1.32$), personal relevance ($M = 5.59$, $SD = 1.28$), adjusting information ($M = 5.56$, $SD = 1.35$), locus of crisis responsibility ($M = 5.43$, $SD = 1.47$), disfavour of promotional tone ($M = 5.31$, $SD = 1.48$), and frequency ($M = 5.19$, $SD = 1.43$). As to communication content, the US public also most highly expected instructing information about pandemic status and protective measures, followed by adjusting information and locus of crisis responsibility (RQ3a). In both samples, what the public most expected was Basic Responsibility (HK: $M = 5.69$, $SD = 0.92$; US: $M = 5.76$, $SD = 1.20$).

Among demographic characteristics, age, gender, and education level made significant differences in public expectations of certain factors in HK. The elderly expected more for the locus of crisis responsibility info ($F(4, 1030) = 4.05$, $p < .005$, $\eta_p^2 = 0.02$) and disfavoured a promotional tone ($F = 9.38$, $p < .001$, $\eta_p^2 = 0.04$) to a greater extent than did the young; females expected more for Instructing Info of protective measures ($F(1, 1034) = 5.49$, $p < .05$, $\eta_p^2 = 0.01$) and transparency ($F = 3.98$, $p < .05$, $\eta_p^2 = 0.004$) than did their male counterparts; in HK, more highly educated people expected Instructing Info1 more (pandemic status: $F(7, 1027) = 2.53$, $p < .05$, $\eta_p^2 = 0.02$) and disfavoured the promotional tone ($F = 2.10$, $p < .05$, $\eta_p^2 = 0.014$) than those with a lower education. Neither employment status nor income level made a difference in HK. In the US, the elderly expected significantly more than did the young for all identified factors. We found higher disfavour of the promotional tone among more educated people ($F(7, 1025) = 2.25$, $p < .05$, $\eta_p^2 = 0.02$). In the US, gender, ethnicity, employment, and income levels made no difference for any of the factors.

4.4 | Public preference on government crisis communication source (RQ3b) and media channels (RQ3c)

The most preferred communication source (RQ3b) by HK people were Hong Kong government's health agency, Centre for Health Protection (CHP, equivalent to the US's CDC) and experts on the pandemic (e.g., doctors). Moreover, HK people preferred these two sources by a significant margin over any other source ($p < .0001$, Table 3). At a significantly higher rate than other sources ($p < .0001$, see Table 3), US people preferred the central government's health agency, CDC, experts on the pandemic, and local government sources (RQ3b). In both samples, people preferred as a source individuals who had recovered from COVID-19. HK people preferred this source significantly more to WHO, non-profit organizations, government spokespersons, Chinese government's health agency (CDCP), Chief Executives of HK, and Chinese President ($p < .001$). In the US, patients who had recovered were significantly preferred to regular citizens, government spokespersons, non-profit organizations, and the US President ($p < .001$). The least preferred sources in both samples were the Presidents (i.e., Trump and Xi Jinping; $p < .001$). HK people ranked Chief Executive of HK at the bottom just above the Chinese President (9th out of 10 sources).

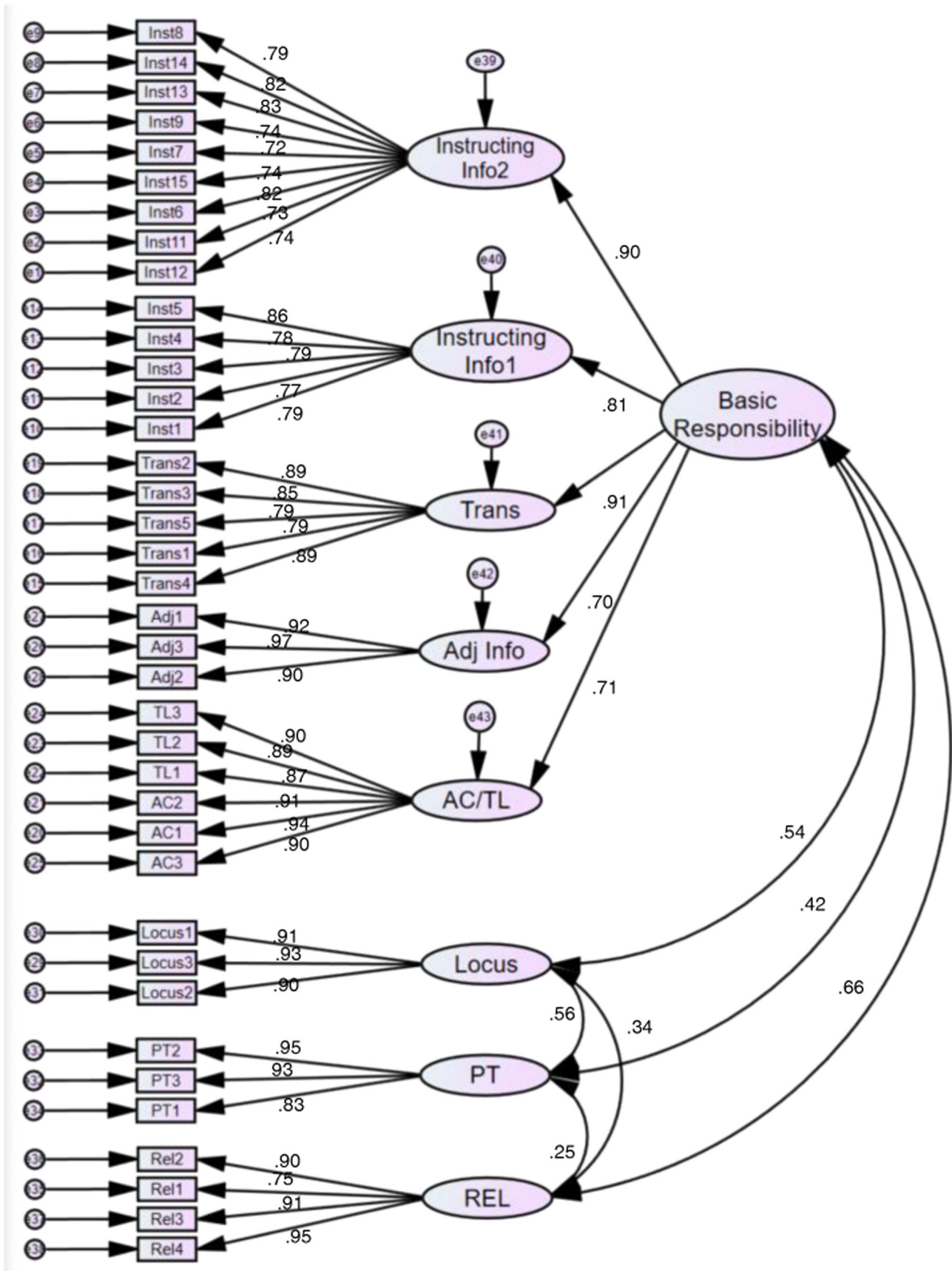


FIGURE 1 HK confirmatory factor analyses (CFA) results for the dimensions of government pandemic-crisis communication.

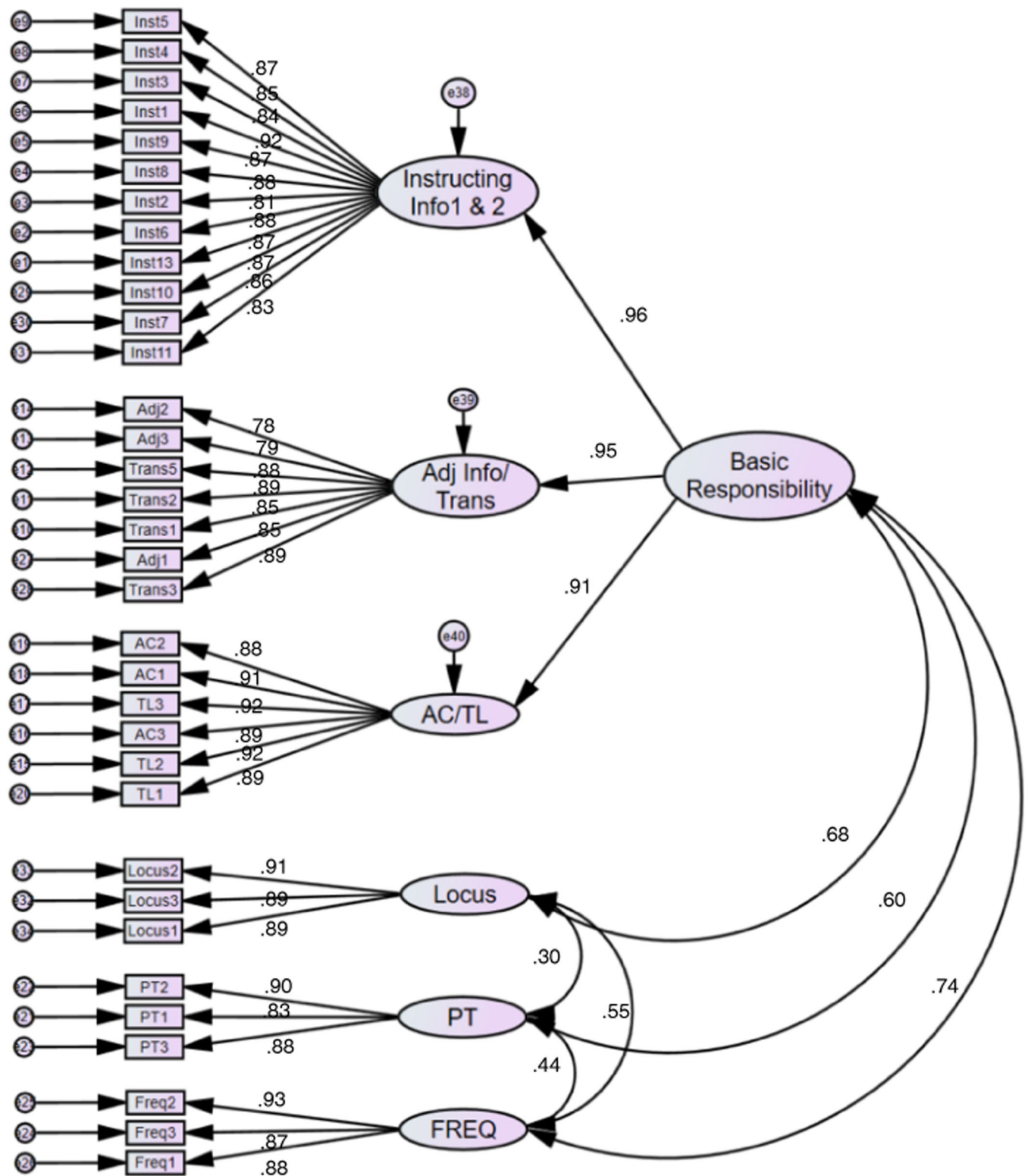


FIGURE 2 US confirmatory factor analyses (CFA) results for the dimensions of government pandemic-crisis communication.

To provide a holistic understanding for preferred communication source, we created composite variables of governmental (e.g., government agency, President) and Nongovernmental sources (e.g., recovered patients; see Table 3). Nongovernmental sources ($M = 5.01$, $SD = 1.01$) were significantly more preferred to governmental

sources ($M = 4.34$, $SD = 1.44$) in HK ($t = 17.464$, $p < .001$), but in the US no significant difference was found between governmental ($M = 5.16$, $SD = 1.22$) and nongovernmental sources ($M = 5.20$, $SD = 1.29$). As to demographic differences in source preferences, HK females ($M = 5.10$, $SD = 0.98$) preferred nongovernmental sources

more than males did ($M = 4.93$, $SD = 1.03$; $F(1, 1,033) = 4.15$, $p < .05$, $\eta_p^2 = 0.01$), while in the US no gender difference emerged. Young people (under 25; $M = 4.90$, $SD = 1.22$) revealed a significantly lower preference for governmental sources than their older counterparts (age over 45: $M = 5.21$, $SD = 1.21$; Tukey HSD $ps < .05$). A similar tendency was found in HK; the young age group (under 25, $M = 3.72$, $SD = 1.56$) revealed a significantly lower preference for governmental sources than any other age groups (Tukey HSD $ps < .05$ with the age group of 26–35 ($M = 4.18$, $SD = 1.42$); $ps < .001$ with all other older age groups ($M = 4.55$, $SD = 1.38$). As for employment status, in HK full-time employees preferred nongovernmental sources more than non-full-time employees (e.g., unemployed, $p < .05$); no such tendency was found in the US. Neither sample exhibited differences for education and income levels, and in the US ethnicity made no difference.

In HK, the most preferred media channels (RQ3c) were TV news, online news, and government's daily briefing, at significantly higher rates than any other channel ($ps < .001$); the least preferred was government phone calls (see Table 4). US people, by contrast, preferred the government-run pandemic website, at significantly higher rates than any other media channel ($p < .05$ for the difference with TV news, $ps < .001$ for all other media channels). The least preferred was the government-run mobile messenger (see Table 4), which HK people ranked much higher ($F(1, 2066) = 92.07$, $p < .001$). To put together a holistic understanding of preferred channels, we created two new categorizations—1) government-controlled (i.e., media channels fully controlled by government(s), e.g., government websites) vs. uncontrolled media (e.g., TV news) and 2) traditional versus social media (see Table 4 for classifications). Overall, both samples (HK: $t = 15.18$, $p < .001$; US: $t = 8.59$, $p < .001$) preferred by far uncontrolled media (HK: $M = 4.82$, $SD = 1.02$; US: $M = 4.36$, $SD = 1.44$) than government-controlled media (HK: $M = 4.27$, $SD = 1.32$; US: $M = 4.09$, $SD = 1.52$). Traditional media were much more preferred to social media in both samples (HK: $t = 15.55$, $p < .001$; US: $t = 20.85$, $p < .001$). Among government-controlled media options, both samples (HK: $t = 2.33$, $p < .05$; US: $t = 16.95$, $p < .001$) significantly preferred the traditional media types to social media. The same tendency was found among uncontrolled media channels for both samples (HK: $t = 17.70$, $p < .001$; US: $t = 18.86$, $p < .001$).

Older people (over 45) revealed a much lower preference to uncontrolled media channels than younger ones, but no age difference was found for the preference of controlled media ($F = 3.93$, $p < .005$; Tukey HSD $ps < .05$) in HK. In the US, the older (over 56) revealed a much lower preference for both uncontrolled and government-controlled media than did their younger counterparts ($F = 10.68$, $p < .001$; Tukey HSD $ps < .001$). In both samples, respondents employed full-time revealed much higher preferences for both government-controlled (HK: $F = 3.40$, $p < .05$; US: $F = 6.42$, $p < .05$) and uncontrolled media (HK: $F = 2.68$, $p < .05$; US: $F = 5.34$, $p < .05$) than did non-full-time employed counterparts. Americans with higher education levels revealed a much lower preference for government-controlled media channels than those with lower education levels ($F = 2.15$, $p < .05$); among Hong Kongers, no

difference was observed by education level. Ethnicity made no difference in the US. Neither sample showed a difference by income.

As to who preferred social media to traditional, among HK people, age made no differences. However, younger groups (age up to 45) showed a significantly higher preference for uncontrolled social media channels (e.g., YouTube channels by pandemic experts) than older groups (over 46; $F(4, 1035) = 8.368$, $p < .001$, Tukey HSD $ps < .005$). No differences were found in preferences for traditional media. For the US sample, age had significant differences in all types of media preferences aside from uncontrolled traditional media channels (e.g., TV news). Younger people preferred social media significantly more than did older people ($F = 35.76$, $p < .001$). More specifically, younger groups preferred by far government-controlled social media (e.g., government's Twitter channels; age groups over 56; $F = 36.24$, $p < .001$; Tukey HSD $ps < .01$) and uncontrolled social media channels (age over 46, $F = 26.19$, $p < .001$; Tukey HKD $ps < .008$). No difference was found for any other demographic aspects.

5 | DISCUSSION

5.1 | Dimensions of expected government pandemic-crisis communication

Working within the two culturally disparate regions of HK and the US, this study identified, based on publics' expectations, four dimensions of effective government pandemic-crisis communication. Among the four, three emerged as culturally universal dimensions—basic responsibility, locus of pandemic-crisis responsibility, and disfavour of promotional tone. The fourth dimension for each was culturally specific; for HK, it was the personal relevance dimension, and for the US it was frequency. The findings suggest that publics, regardless the region, expected their governments to provide information on the basic responsibility dimension (e.g., instructing and adjusting, accuracy/timeliness) and the locus of pandemic responsibility and to not adopt a self-congratulatory tone. A direct implication from this finding is that government officials should take care to ensure their pandemic communication contains these significant indicators. Findings regarding the culture-specific dimensions—personal relevance and frequency—do not necessarily mean that Americans care nothing about personal relevance or that Hong Kongers care nothing about frequency. What this tells us is that in the US personal relevance aspect is not a stand-alone significant factor, as it is highly covariate with other identified dimensions; the same applies for the frequency factor in HK. This culture-specific dimensional difference can be explained by the differences in environmental characteristics and COVID-19-related policies between the regions (Fung et al., 2011). Closer social and geographical proximity among HK people may have affected the emergence of the personal relevance factor (Fung et al., 2011). That is, HK people may care more about personal relevance than the US people due to this particular environmental characteristic. In addition, US people may care more about the frequency of pandemic communication due

to its government's relatively relaxed COVID-19 policies (Policy Responses to COVID19, July 2, 2021). This stark contrast may have contributed to less frequent crisis communication from the US governments, and in turn may have increased public expectations for more frequent pandemic communication.

Among the significant dimensions, the most highly expected dimension was the second-order factor of basic responsibility. People in both regions most expected their governments to take on basic responsibility. Doing so with pandemic communication entails providing instructing and adjusting information and to secure accuracy, timeliness, and transparency. The findings suggest that these sub-dimensions are highly correlated and constitute the basic responsibilities of a government carrying out pandemic-crisis communication. Prior crisis research has produced recommendations that, regardless of organization or crisis type, instructing and adjusting information be considered a basic responsibility of crisis communication (Coombes, 2007; Kim et al., 2011; Sturges, 1994). Given this, the current study extends the existing knowledge by identifying additional components of basic responsibility in government pandemic communication. The dimensions of accuracy, timeliness, and transparency should be additionally considered as the basic responsibility of governments in their pandemic-crisis communication along with the pre-identified dimensions of instructing and adjusting information (Bavel et al., 2020; Kim et al., 2011; Reddick et al., 2016).

This study also suggests that government communication officials should carefully consider priority among the factors in the basic responsibility dimension. Indeed, the findings indicate that in both regions the most highly expected sub-dimensions of basic responsibility are accuracy/timeliness and instructing information. Given this, most critical to a government trying to meet public expectations in a pandemic is securing accuracy and timeliness and providing instructing information such as pandemic updates and what publics should do to protect themselves. Government officials and practitioners should consider this when planning and executing pandemic communication. In addition, when securing the significant dimensions in either region, practitioners should consider people's age and education levels. Practitioners should focus on communicating with the elderly, as this audience expects much more of the significant dimensions; spokespeople should avoid using a promotional tone, as the elderly and more educated tend to strongly disfavor that.

5.2 | Public preference of media channels and information source during pandemic

As for preferred communication sources during a pandemic, this study identifies for both regions the top two—government health agency (i.e., CDC for the US, CHP for HK) and medical professionals (experts on the pandemic). The least preferred are the countries' heads of state. The two regions are similar concerning preferred communication sources. Both prefer people who have recovered from COVID-19 to other sources (including non-profit organizations and government spokespersons). However, Hong Kongers much

prefer nongovernmental communication through other fellow citizens while Americans show no such preference. This difference may also be explained by the closer social and geographical proximity among HK people (Fung et al., 2011). Hong Kongers may have easier access to other fellow citizens and recovered patients and prefer them as information sources.

In terms of preferred pandemic-communication channels, in both regions the top five all belong to traditional media channels, three of which are uncontrolled traditional media such as TV, the internet, and radio news, and two of which are government-controlled traditional media (i.e., governments' daily briefings and health websites). It is somewhat surprising that social media channels are not among the most preferred communication given recent media research's greater emphasis on social media in health communication. Health-crisis scholars have in fact suggested there is greater public dependence on social media in seeking and using health information (Li et al., 2018; Reuter & Kauffhold, 2018). A recent study on Zika also identified a social media channel of Facebook as one of the most-used crisis-information channels, albeit their study also finds a traditional media channel of TV news as the most important channel (Park et al., 2019). In the current study, somewhat contrary to existing knowledge, the most preferred one among social media channels was YouTube channels operated by pandemic experts, but it did not belong to the most preferred channel group when including traditional media channels, ranking as only 8th in the US and as 6th in HK. This finding implies that despite their drastic increase in social media usage people still expect, in times of a pandemic, to get information from traditional communication channels (Park et al., 2019). It may also imply that due to their experience of a great exposure to misinformation via social media during the COVID-19 pandemic, they may expect to get information more from traditional media channels (Dredze et al., 2016).

Specifically, practitioners should be aware that traditional media channels such as TV news (uncontrolled traditional media) and government health websites (government-controlled) remain consistently critical tool to government pandemic-crisis communication. Value is added through a government health agency (e.g., CDC) and medical experts serving as communication sources. Certainly not be the best communication source is a country's head of state (due perhaps to political interpretations; Bavel et al., 2020; Peters et al., 2020). Practitioners should also consider age to be an important factor in selecting communication sources and channels. Practitioners should acknowledge that young people in both regions are less receptive to government sources and that in the US old people are less receptive to social media channels. The impact of age on channel preferences is much more profound in the US than in HK. This could be due to the differences in each region's social media penetration rate: Hong Kong-82% (Hong Kong: Social Network Penetration, 2019) and US-70% (United States: Social Network Penetration, 2019).

These findings provide useful insights into how governments proactively incorporate nongovernment sources (e.g., recovered patients) and uncontrolled media channels (e.g., experts'

YouTube channel) in their communication planning. PADM-based risk research (Lindell & Perry, 1987, 2012) has suggested that in building risk-communication programs, all available information sources and channels should be identified and utilized including informal communication networks. Echoing what PADM proposed in disaster contexts, our research adds new insights into PADM research by suggesting that in times of pandemics, proactive adoption and utilization of nongovernmental sources and channels, especially perceived to have high credibility (e.g., experts YouTube channels) should be incorporated, and it is what people in both regions expect from their governments.

5.3 | Theoretical implications

The findings of this study offer several useful applications to the development of theoretical frameworks that can help improve government pandemic communication. First, this study identifies theoretically and methodologically useful dimensions of government pandemic-crisis communication by applying ECT (Oliver, 1980). Although more work is required to validate ECT's applicability to pandemic contexts, the dimensions/predictors identified in this study can serve as a basis to examine the role of government pandemic communication. By testing the impacts of the identified predictors on public responses such as adoption of preventative measures and policies (Siegrist & Zingg, 2014; Smith, 2006), we can further demonstrate what happens when government meets and exceeds public expectations in its pandemic communication. If we can demonstrate that more positive outcomes are achieved through implementing the four dimensions of government pandemic communication, we can further confirm ECT's applicability to pandemic contexts. Crisis scholars should also investigate relative effectiveness among the identified dimensions of government pandemic communication on public responses—that is, which dimension would generate the greatest success in its pandemic communication. By testing relative effectiveness of these identified dimensions, crisis scholars can provide more detailed directions for pandemic communication.

Second, another useful application to theory development is the ability to test relationships between the effective pandemic communication dimensions and other potential mediating or moderating factors such as publics' pandemic knowledge, resistance to fake news, and government trust. To develop a theoretical process framework of government pandemic communication based on ECT (Oliver, 1980), it is important to understand the relationships between the identified dimensions and other cognitive, affective, and behavioural aspects of people. The significant dimensions of effective government pandemic communication proposed herein and their measurements will facilitate further theory testing such as explicating how people's pandemic knowledge, government trust, and resistance to fake news are affected by securing the identified dimensions of government pandemic communication. Further empirical work will help us clearly identify ECT's applicability and limitations to crisis communication.

Lastly, this study suggests that global public expectations of effective pandemic communication are more similar than different, particularly concerning the identified dimensions and source and channel preferences. Despite this commonality, the current study offers useful insights into further theory development by identifying unique differences such as the culture-specific dimension for each region (personal relevance for HK and frequency for the US) and the HK preference for nongovernmental sources. Examination of whether the culture-specific dimensions are applicable to other regions that share similar environmental characteristics and strictness in pandemic policies can extend our understandings of why public expectations feature culture-specific dimensions. This helps us better plan and implement culture-universal and -specific needs of the public into government pandemic communication.

5.4 | Limitation, future research, and conclusion

This study is limited by several factors that may affect how applicable the findings are in practice. Data collected for the study were specifically pertinent to the COVID-19 pandemic, and thus its findings may not be generalizable to other pandemic crises. This is because, regarding its scope of impact and consequences, the COVID-19 pandemic is unprecedented and may differ from other pandemic situations (Bavel et al., 2020). In addition, it should be noted that the specific timing of data collection—September 2020 (relatively a waning period in COVID-19 infection numbers, Zaiets et al., 2020)—may have also affected public needs for and expectations of pandemic communication. Given public expectations and preferences can change over time, our finding should thus be interpreted with caution. Second, although this study identifies demographic differences in public expectations and preferences of pandemic-crisis communication, it is limited in providing insights into how political ideology can affect varying expectations. Given public responses to the COVID-19 pandemic have been largely affected by political ideology (Bavel et al., 2020), future research should also incorporate political ideology into demographic differences to see whether there emerge varying public expectations and preferences. Third, though this study identifies culturally universal and unique dimensions by adopting two disparate cultures, the findings may not be applicable to other cultures. To confirm and validate culturally universal and unique aspects in government pandemic communication, future research should investigate cultures other than the US and HK. Lastly, it is important to note that effective government pandemic communication in this study mainly concerns public health and safety (i.e., protecting public lives and health), not necessarily socioeconomic concerns (e.g., protecting small businesses). Given the scope of effective pandemic-crisis communication goes beyond public health and safety, future research should consider expanding its scope and definition to include other aspects such as socioeconomic issues and policies.

Despite all these limitations, this study offers several future research directions. Future research should focus on developing a

theoretical framework that delineates the relationships between the four identified predictors of effective government pandemic-crisis communication and its outcomes such as cognitive, affective, and behavioural public responses of pandemic knowledge, trust, and adoption of protective measures. This helps address the current lack of theoretical frameworks regarding government pandemic-crisis communication.

Taken as a whole, this study provides meaningful guidelines for what governments should do to achieve effective government pandemic communication. The findings offer a theoretical and methodological basis for scholars and practitioners to further test the success of government pandemic-crisis communication in the future.

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CONFLICT OF INTEREST

The author has no other relevant financial or nonfinancial interests to disclose.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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ENDNOTES

ⁱ The Kaiser–Meyer–Olkin (KMO) measures of sampling adequacy was 0.97, and Bartlett's test of sphericity was significant ($p < .0001$).

ⁱⁱ The KMO measures of sampling adequacy was 0.98, and Bartlett's test of sphericity was also significant ($p < .0001$).

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APPENDIX A

Table A1

TABLE A1 Measurement items for expected government pandemic-crisis communication

Label*	Measures	HK sample M (SD)	US sample M (SD)
In times of Pandemic crisis like COVID19, I expect GOVERNMENT to share information about_____			
1	Inst1	what happened or is happening in the US (replaced by HK) such as how many new pandemic cases have been confirmed, the number of deaths, etc.	5.91 (1.17) 5.85 (1.43)
2	Ins2	what happened or is happening in my residential area such as how many new pandemic cases have been confirmed, the number of deaths, etc.	5.84 (1.24) 5.63 (1.51)
3	Inst3	who is vulnerable to a pandemic like COVID-19	5.57 (1.24) 5.81 (1.39)
4	Inst4	who is being affected by a pandemic.	5.62 (1.17) 5.75 (1.41)
5	Inst5	what specific symptoms can be considered the signs of pandemic infection.	5.88 (1.17) 5.83 (1.43)
6	Inst6	what I should do to protect myself/family from a pandemic.	5.80 (1.12) 5.76 (1.55)
7	Inst7	what I should do to avoid any negative consequences of a pandemic	5.50 (1.20) 5.77 (1.44)
8	Inst8	what to do when I have symptoms.	5.95 (1.12) 5.86 (1.43)
9	Inst9	where to go for getting tested for a pandemic (i.e., designated testing centers/hospitals nearby).	5.79 (1.21) 5.79 (1.46)
10	Inst10 ^a	Where and how to get protective products of face masks and hygiene products	5.50 (1.28) 5.64 (1.52)
11	Inst11	pandemic vaccine development and progress.	5.72 (1.17) 5.72 (1.48)
12	Inst12 ^b	the government's emergency financial support for the general public related to a pandemic.	5.81 (1.23) 5.60 (1.53)
13	Inst13	the government's quarantine and isolation policies and rules.	5.85 (1.15) 5.74 (1.46)
14	Inst14 ^b	the government guidelines for the prevention of a pandemic crisis.	5.79 (1.16) 5.74 (1.46)
15	Inst15 ^b	the government guidance for protecting students of K12 schools, colleges, and universities.	5.78 (1.24) 5.67 (1.51)
16	Locus1	Who/what is responsible for a pandemic crisis	5.29 (1.47) 5.45 (1.56)
17	Locus2	Who/what is accountable for a pandemic crisis	5.41 (1.39) 5.46 (1.56)
18	Locus3	Who/what should hold responsibility for a pandemic crisis	5.37 (1.47) 5.39 (1.58)
I WANT TO KNOW WHAT THE GOVERNMENT HAS BEEN DOING			
19	Adj1	to reduce uncertainty related to the pandemic	5.49 (1.35) 5.69 (1.42)
20	Adj2	to address psychological stress the public may have related to the pandemic.	5.36 (1.41) 5.43 (1.53)
21	Adj3	to mitigate fear the public may have related to the pandemic	5.39 (1.42) 5.56 (1.51)
I EXPECT GOVERNMENT_____			
22	Trans1	to share its pandemic response failures, not just successes.	5.46 (1.38) 5.60 (1.54)
23	Trans2	to inform both good and bad information about its pandemic responses	5.78 (1.19) 5.74 (1.44)
24	Trans3	to be transparent in sharing both positive and negative information about its pandemic responses	5.77 (1.20) 5.80 (1.39)
25	Trans4 ^b	to openly provide pandemic crisis updates such as the numbers of confirmed cases, test performed, and deaths <i>from the beginning</i>	5.90 (1.16) 5.73 (1.46)
26	Trans5	to inform the public about its mistakes in pandemic responses if there is any	5.74 (1.24) 5.69 (1.48)
THE Government's crisis communication on the pandemic should _____			
27	AC1	be accurate	5.82 (1.34) 5.97 (1.40)
28	AC2	be correct	5.74 (1.42) 5.98 (1.37)

(Continues)

TABLE A1 (Continued)

Label*	Measures	HK sample M (SD)	US sample M (SD)
29 AC3	be reliable	5.81 (1.42)	6.02 (1.33)
30 TL1	be current.	5.70 (1.39)	5.98 (1.35)
31 TL2	be timely.	5.82 (1.32)	6.01 (1.31)
32 TL3	be up-to-date.	5.79 (1.30)	5.99 (1.35)
33 REL1 ^b	be relevant to me.	5.24 (1.29)	5.59 (1.43)
34 REL2 ^b	be personally relevant.	5.22 (1.33)	5.50 (1.41)
35 REL3 ^b	contain how the pandemic will affect my daily life.	5.33 (1.32)	5.60 (1.45)
36 REL4 ^b	include how its response policies to the pandemic will affect me.	5.42 (1.26)	5.67 (1.42)
37 PT1	I don't like the government messages on the pandemic that are too promotional.	5.07 (1.65)	5.32 (1.63)
38 PT2	I don't like the government messages on the pandemic that are too self-congratulatory.	5.37 (1.58)	5.36 (1.64)
39 PT3	I don't like self-promotional messages from the government about its pandemic responses	5.41 (1.56)	5.27 (1.61)
40 Freq. 1 ^a	I like the government's crisis communication on the pandemic appearing often	5.36 (1.21)	5.28 (1.54)
41 Freq. 2 ^a	I like to see pandemic information from the government as frequently as possible	5.34 (1.22)	5.22 (1.53)
42 Freq. 3 ^a	I want to receive messages about how the government is responding to the pandemic as often as possible	5.41 (1.23)	5.09 (1.62)
43 Cons1 ^{a,b}	What the government is communicating about the pandemic should be consistent	5.53 (1.34)	5.68 (1.49)
44 Cons2 ^{a,b}	Consistency in the government's pandemic crisis communication is important to me	5.57 (1.21)	5.74 (1.42)
45 Cons3 ^{a,b}	A lack of consistency in the government's crisis communication on the pandemic is problematic	5.72 (1.22)	5.64 (1.50)
46 FT ^{a,b}	I like the government's pandemic messages to focus on factual information	5.84 (1.19)	5.76 (1.47)
47 FT ^{a,b}	The government messages on the pandemic should be based on facts	5.92 (1.21)	5.87 (1.42)
48 FT ^{a,b}	I like the government's pandemic messages that are based on factual info	5.88 (1.19)	5.76 (1.51)

^adenotes the removed items from the EFA for HK.

^bindicates the removed items for the United States.

*Inst = Instructing Information, Adj = Adjusting Information, Tran = transparency, AC = accuracy, TL = timeliness, REL = personal relevance, PT = disfavor of self-promotional tone, FT = factual tone, Cons = consistency, Freq = frequency.