Pandemic Communication: Information Seeking, Evaluation, and Self-Protective Behaviors in Vietnam and the Republic of Korea

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Saliou (Eur J Epidemiol, 1994, 10 (4), 515–517) argued that pandemics are special kinds of crises and requires the public health sector to focus on: 1) reducing uncertainty, 2) rumor mitigation, and 3) ensuring the public reduces their risk of contracting the disease. With this as a backdrop, the central aim of this research is to better understand the connections between public information seeking, evaluation, and self-protective behaviors in the COVID-19 pandemic and focuses on a comparison between the Republic of Korea and Vietnam to provide insights into the influence of the individual, institutional, and information factors influencing people's experience with COVID-19. Thus, there are two major contributions of this study. First, it provides a cross-theory evaluation of the factors that contribute to information seeking, evaluation, and self-protective behaviors. Second, the study identifies potentially critical differences in information seeking, evaluation, and self-protective behaviors based on acute disease reproduction in countries with a successful pandemic suppression history. Findings suggest that in countries where there are high levels of trust and satisfaction even small changes in the infection rates lead to different information seeking and self-protective behaviors.

Keywords: pandemic communication, information seeking, self-protective behavior, Vietnam, Republic of Korea

INTRODUCTION

The COVID-19 pandemic has been very different from previous pandemics (e.g., the Zika virus, Ebola, H1N1, or MERS) because of the magnitude of its effects on global health, politics, business, and people's daily lives. Around the world, most people's lives have been disrupted and in too many cases forever changed. With more than 125,000 COVID-19 scientific articles published in the first 10 months of the first confirmed case (Fraser et al., 2021) there has been a tsunami of research from around the world already published on COVID-19. Within an applied health and crisis communication context, research has explored topics like perceived vulnerability to the disease and preventative behaviors (Papageorge et al., 2021; Rui et al., 2021; Yildirim et al., 2021), the effects

and impact of misinformation related to COVID-19 (Love et al., 2020; Salvi et al., 2021; Sun et al., 2021), and critiques of different approaches to communication and pandemic response (Stolow et al., 2020; Maak et al., 2021). This has also been a global research endeavor with both single-nation and cross-national comparisons of COVID-19 experiences from Asia (Azadeh et al., 2020; Dai et al., 2020; Jin et al., 2020; Nguyen et al., 2020), to Europe (Betsch et al., 2020; Meier et al., 2020; Breakwell et al., 2021), and to the Americas (Bruine de Bruin et al., 2020; Glenn et al., 2020). This research is providing vital intelligence regarding the factors that must be considered to improve public health outcomes during pandemics. There are, however, some limitations in the extant body of research.

Though the research emerging is genuinely global, there remains a disproportionate amount of research reflecting a United States (US) perspective, which potentially sets the agenda to those nations that largely failed in their initial COVID-19 response overemphasizing "fake news" (Balarabe and Kumar, 2020; Cheng and Luo, 2020), political polarization of the pandemic (Bruine de Bruin et al., 2020; Salvi et al., 2021), and improving the public's willingness to adopt self-protective behaviors (Sun et al., 2020; Papageorge et al., 2021). These concerns, while important to the nations like the United States, United Kingdom, Brazil, and India, should not overwhelm the theoretical and applied lessons that can be learned from nations like New Zealand, Australia, the Republic of Korea (RoK), and Vietnam where public health efforts have been much more successful.

Second, previous interdisciplinary research on health crises and the current research on the COVID-19 pandemic clearly demonstrates that communication serves a central role in a modern global digital environment to improve health outcomes (Bennet and Glasgow, 2009) and minimize the risks of pandemics (Guidry et al., 2017). Moreover, the World Health Organization (WHO) highlights that the role of communication cannot be understated (Diers-Lawson, 2020b; Diers-Lawson and Qureshi, 2020) and have created a strategic communication framework that guides their work (WHO, 2017). However, this body of work does not provide a perspective on how communication in a pandemic may differ from other health crises or other types of crises. For example, when public health organizations like the WHO responds to a health crisis their focus is typically on localized containment and treatment emerging after evidence of the disease is present and not necessarily the prevention of spread or cross-borders containment (Longstaff and Yang, 2008; Avery and Kim, 2009). This suggests that pandemics differ from typical health crises; in fact, Saliou. (1994) argued that pandemics are a "special" kind of crisis that highlights collective responsibility, requires rapid deployment of communication, and elevated levels of interagency and international collaboration.

Similarly, traditional thinking in crisis communication views crises as untimely but predictable events that carry risk and potentially affect several different types of stakeholders (Heath and Millar, 2004). The critical element being that they are "events" like accidents, hurricanes, shootings, or customer complaints, which means that from either the risk management or crisis response perspectives, there is a punctuated and often narrowly defined moment of crisis preceded by risk mitigation (Heath et al., 2009; Diers-Lawson and Pang, 2021) and followed up with crisis recovery and organizational learning (Sellnow and Seeger, 2001; Tambo et al., 2017). Moreover, crisis communication often favors the organizational perspective (Coombs, 2014) and not necessarily the stakeholder experience or perspective. Even stakeholder centered models in crisis communication, like the IDEA model that focuses on developing self-protective messaging presently emphasize a crisis as an event (Sellnow et al., 2017). This does not reflect the reality of a pandemic, as the world has witnessed with COVID-19, that has multiple crisis "events", multiple cycles of surge and containment, and has lasted for a prolonged period.

Therefore, we suggest that analyses of COVID-19 should begin with the assumption that pandemic communication is unlike traditional health and crisis communication. Our starting point for exploring information seeking, evaluation, and self-protective behaviors during the pandemic adopts (Saliou's, 1994) premise that pandemics are special kinds of crises and requires the public health sector to focus on: 1) reducing uncertainty, 2) rumor mitigation, and 3) ensuring the public reduces their risk of contracting the disease. With this as a backdrop, the central aim of this research is to better understand the connections between public information seeking, evaluation, and self-protective behaviors in the COVID-19 pandemic. In so doing, our objectives are to:

(1) focus on pandemic experiences from non-Western perspectives not only to improve the global dialogue on pandemic communication (Zhao, 2014),
(2) focus on countries who have been largely successful in their pandemic response, and
(3) critically reflect on (Saliou's, 1994) standards for evaluating the effectiveness of pandemic communication to initiate an academic and applied communication conversation about what pandemic communication is, ought to be, and how it might differ from traditional health and crisis contexts.

PANDEMIC COMMUNICATION IN THE REPUBLIC OF KOREA AND VIETNAM

In moving beyond the broad conceptual concerns grounding the present study, it is also important to contextualize this comparative case study between the RoK and Vietnam. During the first two waves of the COVID-19 pandemic, the RoK and Vietnam had among the lowest infection and death rates in the world (Ritchie et al., 2020) (see **Figure 1**). There are three reasons that a comparative case study between these two countries provides critical insights for applied communication.

First, both countries demonstrate the importance of learning lessons from previous infectious disease experiences by implementing active pandemic mitigation plans. Early descriptive research from Vietnam confirmed a high degree of adherence to public health recommendations for self-protective
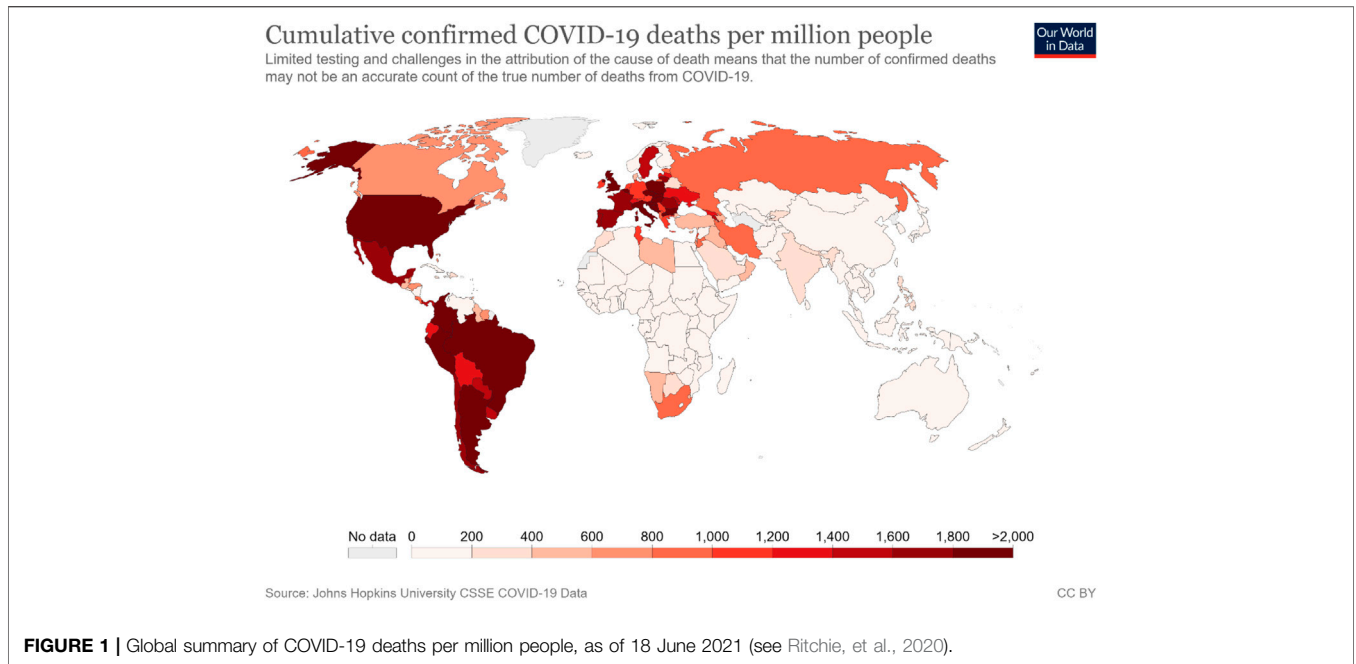
FIGURE 1 | Global summary of COVID-19 deaths per million people, as of 18 June 2021 (see Ritchie, et al., 2020).
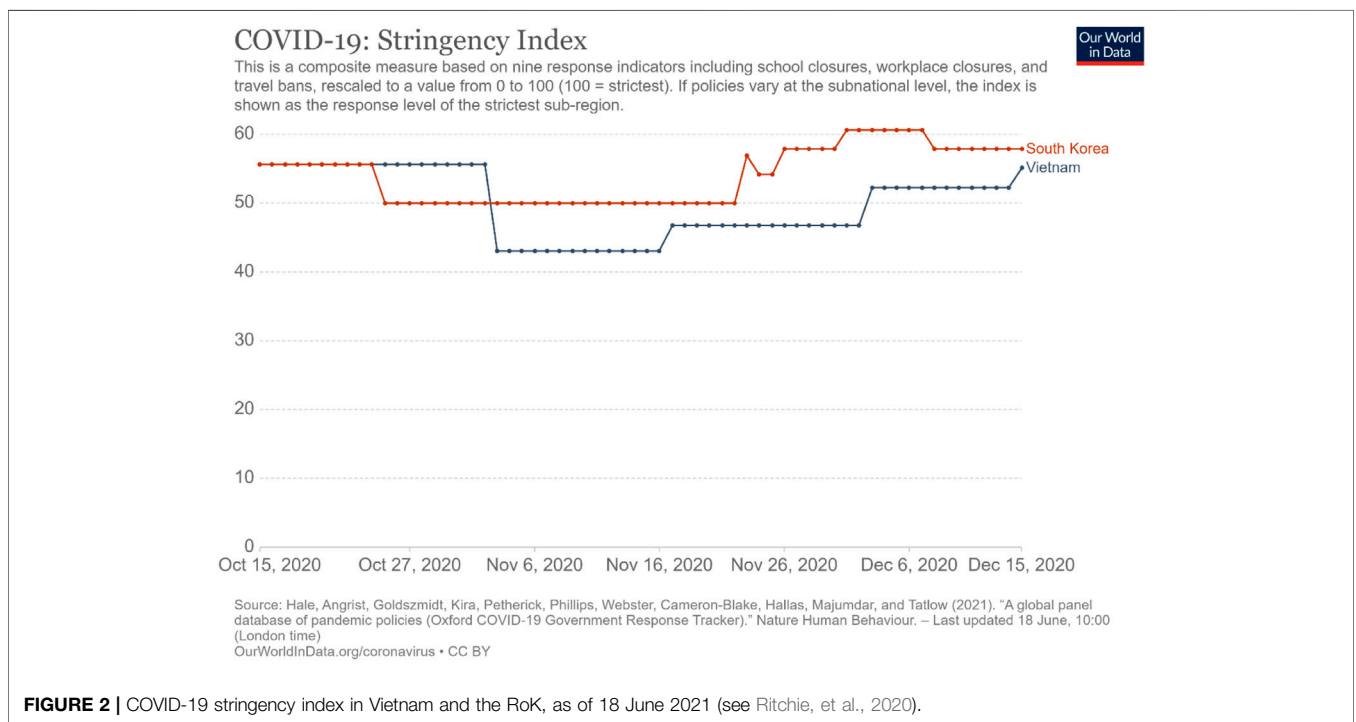
FIGURE 2 | COVID-19 stringency index in Vietnam and the RoK, as of 18 June 2021 (see Ritchie, et al., 2020).

behaviors that demonstrated consistence with the epidemiology of the disease in the country (Nguyen et al., 2020). Furthermore, Nguyen, et al. (2020) suggest that because of recent experiences with SARS, swine flu, the H1N1 virus, and Avian influenza, the government and public health agencies had pandemic preparedness and control plans in place and the public were educated on the importance of self-protective behaviors.

Similarly, in the RoK (Choi, et al., 2015) found that previous experience along with critical reflection on successes and failures in pandemic communication not only could improve health outcomes but also underlined the importance of effective communication from the government and public health agencies to contain the spread of infectious diseases. This suggests that both the RoK and Vietnam view communication

Daily new confirmed COVID-19 cases
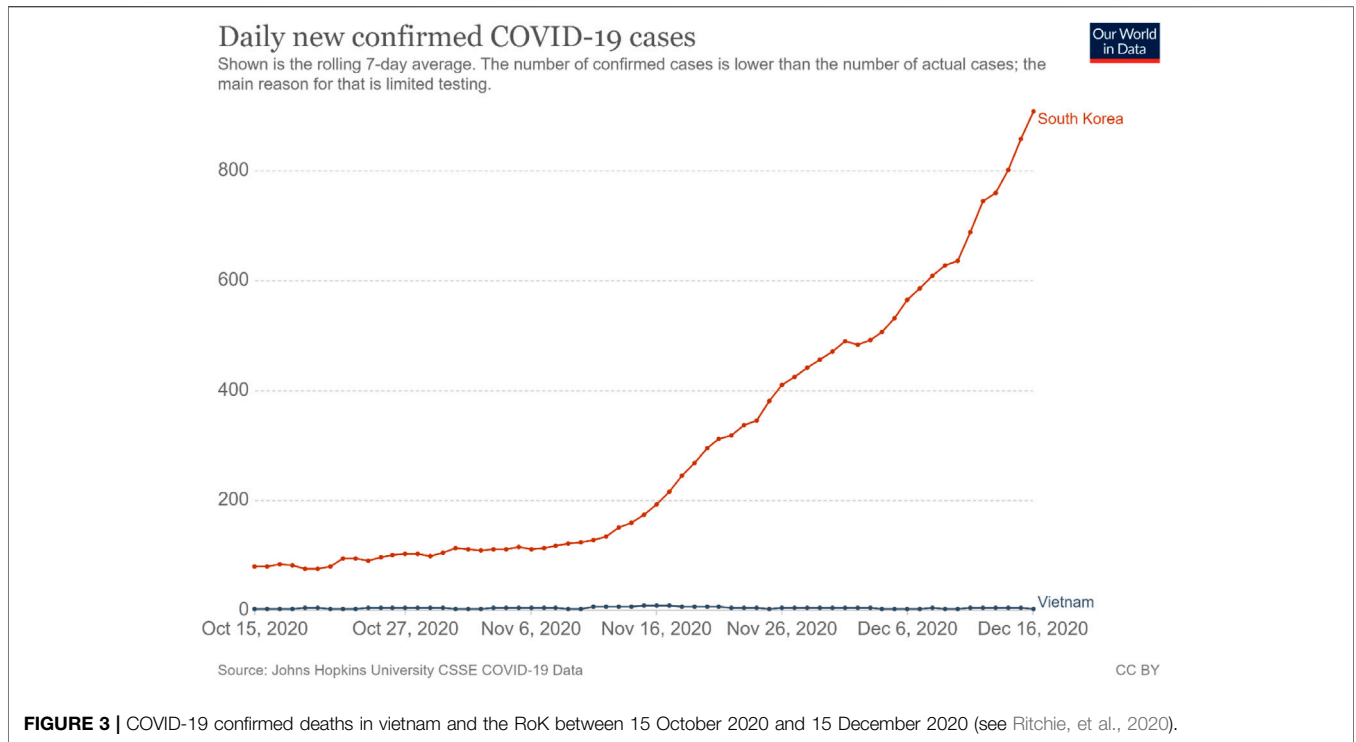
Shown is the rolling 7-day average. The number of confirmed cases is lower than the number of actual cases; the main reason for that is limited testing.

FIGURE 3 | COVID-19 confirmed deaths in vietnam and the RoK between 15 October 2020 and 15 December 2020 (see Ritchie, et al., 2020).

Daily new confirmed COVID-19 deaths

Shown is the rolling 7-day average. Limited testing and challenges in the attribution of the cause of death means that the number of confirmed deaths may not be an accurate count of the true number of deaths from COVID-19.
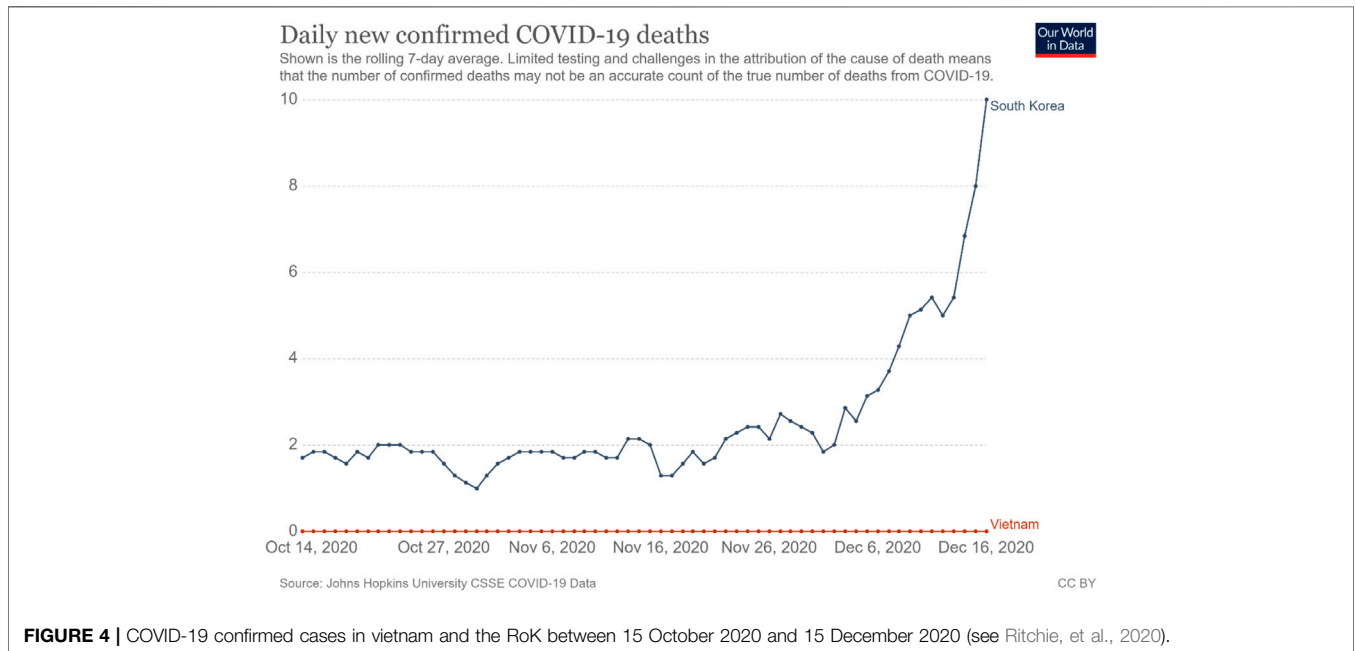
FIGURE 4 | COVID-19 confirmed cases in vietnam and the RoK between 15 October 2020 and 15 December 2020 (see Ritchie, et al., 2020).

as a critical part of government and public health strategy to manage pandemics.

Second, regardless of the type of crisis, there are two components of response–the material response (i.e., preparedness and control plans) and communication with the public (Diers-Lawson, 2020b). Both countries are comparable in terms of the rigor and type of material pandemic response enacted, despite differences in types of government. The government stringency index (see **Figure 2**) is

calculated across measures of restrictions placed on school and workplace closures, public gatherings, transportation, and stay-at-home requirements (Ritchie, et al., 2020). In both cases, the level of restrictions were significant.

Third, what makes a case comparison between the two countries particularly interesting is that during the second wave, there were meaningful differences in numbers of confirmed cases and deaths in the ROK and Vietnam (see **Figures 3**, **4**). In Vietnam, there were

TABLE 1 | Factors influencing information seeking and information evaluation in self-protective behavior.

Factor	Description	Theory (ies)	Example Author(s)	Country evaluated	Health related	Pandemic related	Covid-19 related
Demographics	Who the person is can affect information processing. For example, gender, language, age, culture	BCT[j]	Lachlan, et al. (2014)	US	✓		
			Pierre. (2019)				
		IDEA[l]	Sellnow, et al. (2019)	Sweden	✓		
			Spitzer and Denzin. (1965)	US			
Efficacy	Belief both in the ability to perform a behavior and/or by performing the action, protecting self from the hazard/risk (i.e., self and response efficacy)	RISP[a]	Ahn and Noh (2020)	South Korea			
		RISP[a]	Gutteling and de Vries (2017).	Netherlands			
		RPA[e]	Denga and Liu (2017).	US	✓		
		RPA[e] and	Grasso and Bell (2015).	US	✓		
		EPPM[f]	Zheng, et al. (2021).	China	✓	✓	✓
		SPEM[g]	Lim, et al. (2016).	US			
		PMT[i]	Liu and Jiao (2018).	China			
		PRISM[m]	Willoughby and Myrick (2016)	US	✓		
			Frisby et al. (2014)	US	✓		
		EPPM[f]	Rui, et al. (2021)	China	✓	✓	✓
			Valecha, et al. (2020)	US			
Negative affect	Emotions including anxiety, fear, uncertainty, or anger towards risk issue	RISP[a].	Ahn and Noh (2020)	South Korea			
		TPE.	Cheng and Luo (2020)	US	✓	✓	✓
		Appraisal.	Chiu and Oh. (2021)	US			
			Dillard, et al. (2020)	US	✓	✓	
			Zheng, et al. (2020)	China	✓	✓	✓
			Lachlan, et al. (2014)	US			
		SMCC[h].	Liu, et al. (2016)	US			
		BCT[j].	Pierre. (2019)		✓		
		PRISM[m.]	Willoughby and Myrick (2016)	US	✓		
			Gesser-edelsburg, et al. (2015)	Israel	✓	✓	
		EPPM[f]	Rui, et al. (2021)	China	✓	✓	✓
			Valecha, et al. (2020)	US	✓	✓	
			Zhang, et al. (2015)	US	✓		✓
Perceived risk (threat appraisal)	A combination of problem recognition, susceptibility, and severity in judging risky behavior or issues	RPA[e].	Denga and Liu. (2017).	US	✓		
		RPA[e] and EPPM[f].	Grasso and Bell. (2015).	US	✓		
		RISP[a].	Gutteling and de Vries. (2017).	Netherlands			
			Zheng, et al. (2020).	China	✓	✓	✓
			Lachlan, et al. (2014).	US			
		SPEM[g].	Lim, et al. (2016).	US			
		PMT[i].	Liu and Jiao. (2018).	China			
		BCT[j].	Pierre. (2019).		✓		
		IDEA[l].	Sellnow, et al. (2019).	Sweden	✓		
		PRISM[m].	Willoughby and Myrick. (2016).	US	✓		
			Gesser-edelsburg, et al. (2015).	Israel	✓		
		EPPM[f]	Rui, et al. (2021).	China	✓	✓	
			Valecha, et al. (2020)	US	✓	✓	✓
Social support	Resources exchanged through social ties. It is comprised of tangible, emotional, esteem, and appraisal support. It also includes social distance	RPA[e].	Denga and Liu. (2017).	US	✓		
		CCT[k]	Rains and Ruppel. (2016).	US	✓		
			Walter, et al. (2020).		✓		
			Valecha, et al. (2020)	US	✓	✓	
Self-other gap (Third person effect)	Assumption that media messages, issues have greater effect on others, not themselves	TPE[b]	Cheng and Luo (2020)	US	✓	✓	✓
Institutional trust	Trust in agencies responsible for managing harms related to technology, environment, and public health; making decisions to protect public	RISP[a].	Ahn and Noh (2020).	South Korea			
		Game.	Chiu and Oh (2021).	US			
		SPEM[g].	Lim, et al. (2016).	US			
		BCT[j].	Pierre (2019).		✓		
			Walter, et al. (2020).		✓		
		EPPM[f]	Rui, et al. (2021).	China	✓	✓	✓
			Valecha, et al. (2020)	US	✓	✓	
Epistemic mistrust		BCT[j]	Pierre. (2019)		✓		

(Continued on following page)

TABLE 1 | (*Continued*) Factors influencing information seeking and information evaluation in self-protective behavior.

Factor	Description	Theory (ies)	Example Author(s)	Country evaluated	Health related	Pandemic related	Covid-19 related
	Combination of trust violation, threat/uncertainty/trauma, xenophobia, and suspiciousness						
Subjective knowledge	What people think/believe they know	PMT[i]. BCT[j]. IDEA[l]. PRISM[m]	Liu and Jiao. (2018). Pierre. (2019). Sellnow, et al. (2019). Willoughby and Myrick (2016).	China Sweden US.	✓ ✓ ✓		
			Zhang, et al. (2015)	US	✓	✓	
Cognitive elaboration/ Uncertainty discrepancy	Extent to which people think about a message depends on association with prior knowledge about health crises and emotional arousal–it can be a way to manage threat	TPE[b]. SPEM[g]. SMCC[h]. CCT[k]. PRISM[m].	Cheng and Luo (2020). Chiu and Oh (2021). Lim, et al. (2016). Liu, et al. (2015). Rains and Ruppel (2016). Ryan and Dunwoody (1991). Willoughby and Myrick (2016).	US US US US US US US	✓ ✓ ✓ ✓	✓	✓
		EPPM[f]	Rui, et al. (2021). Valecha, et al. (2020). Zhang, et al. (2015)	China US US	✓ ✓ ✓	✓ ✓ ✓	✓
Source accessibility	Ease of access of the information by information seekers	MRM[d]. SMCC[h]. BCT[j]. CCT[k]	Christensen and Bailey (1997). Liu, et al. (2015). Pierre (2019). Rains and Ruppel (2016). Zhang, et al. (2015)	US US US US	✓ ✓ ✓	✓	
Information insufficiency	Degree to which person lacks information about a risk issue	RISP[a]. CIP[c]. SMCC[h]. BCT[j]. CCT[k]. IDEA[l]. PRISM[m]	Ahn and Noh (2020). Chiu and Oh (2021). Lachlan, et al. (2014). Liu, et al. (2016). Pierre (2019). Rains and Ruppel (2016). Ryan and Dunwoody (1991). Sellnow, et al. (2019). Willoughby and Myrick (2016).	South Korea US US US US US Sweden US	✓ ✓ ✓ ✓ ✓		
			Frisby, et al. (2014). Gesser-edelsburg, et al. (2015)	US Israel	✓ ✓		
Information equivocality	Degree to which multiple conclusions can be reasonably drawn from information presented	MRM[d]. BCT[j]	Christensen and Bailey (1997). Pierre (2019)	US	✓		
Misinformation processing	Combination for certainty, uniqueness, biases (confirmation, attribution, and perceptual), with lack of analytic thinking, science illiteracy	BCT[j]	Pierre (2019)		✓		

[a]*Risk Information Seeking and Process Model.*
[b]*Third Person Effect.*
[c]*Cognitive Information Processing.*
[d]*Media Richness Model.*
[e]*Risk Perception Attitude Framework.*
[f]*Extended Parallel Process Model.*
[g]*Situational Public Engagement Model.*
[h]*Social-Mediated Crisis Communication Model.*
[i]*Protection Motivation Theory*
[j]*Belief in Conspiracy Theories.*
[k]*Channel Complementarity Theory*
[l]*Internalization, Distribution, Explanation, and Action Model*
[m]*Planned Risk Information Seeking Model.*

virtually no new cases or deaths each day between October 15, 2020 and December 15, 2020 whereas in the RoK during the same time there was a meaningful rise in the infection and death rates. Though the WHO classified the outbreaks in both countries as "cluster" outbreaks, the question of whether the substantial rise in infections in the RoK triggers different public attitudes and reactions in countries that previously had a similar steady and low rate of infection and death to Vietnam should provide insights into how a change in the context affects information seeking and self-protective behaviors, particularly in an Asian context (Ahn and Noh, 2020; Dillard et al., 2020; Jin et al., 2020). Therefore, a direct comparison of public attitudes about information seeking, evaluation, and self-protective behaviors in Vietnam and the ROK supports this study's aim and objectives.

LITERATURE REVIEW

With the hundreds of thousands of academic articles already and likely soon-to-be published on COVID-19 (Fraser et al., 2021), one of the critical challenges is the translation of the scientific or technical information found in these articles to information that can be readily applied in campaigns and by public health or government officials (Burns et al., 2003; VanDyke and Lee, 2020). Because academic research typically focuses on theory development and advancement, another challenge is that there are often overlapping theoretical perspectives that can complicate the interpretation of the practical guidance that theory can provide practice. In a field like communication where practitioners often demonstrate a reluctance to embrace theoretical frameworks, overlapping and complex theoretical perspectives may inhibit the development of practice (Moncur, 2006).

Within the context of a global pandemic, we argue that it is important to ensure that applied research is accessible and usable. Recent global research evaluating the relationships between information seeking, evaluation, and self-protective behaviors apply more than a dozen theories; however, across those theories a cohesive list of factors emerge providing insight into what triggers people to seek and avoid information, evaluate information (and misinformation) effectively, and translate those judgments into self-protective behavior (see **Table 1**). Much of the research is related to health, some to pandemics, and some specifically to the COVID-19 pandemic. Borrowing from the stakeholder relationship management model (SRM), these factors can be organized into three categories–the individual, the organization, and the issue (i.e., self-protective behavior and information-seeking, evaluation behaviors related to COVID-19). The cumulative understanding of the stakeholder perspective based on these three categories can provide insight into how the public understands their risk, their judgments of institutions and sources of information discussing the pandemic, and then this is likely to explain their own self-protective behaviors (Diers-Lawson, 2020a).

Information Seeking, Evaluation and Self-Protective Behavior

Generally, previous research and theories like (Witte's, 1992) extended parallel process model, the IDEA model (Sellnow et al.,

2017), or protection motivation theory (Cummings et al., 2021) have demonstrated that individual and organizational factors influence information seeking, evaluation, and self-protective behaviors. In fact, the body of research has developed a relatively sophisticated understanding of several aspects of information seeking and evaluation behaviors (see **Table 1**). A starting point for better understanding and evaluating information seeking and self-protective behaviors is evaluating the public's subjective knowledge (see e.g., Liu and Jiao, 2018; Sellnow, et al., 2019; Willoughby and Myrick, 2016) because it informs an interpretation of the public's confidence and understanding of the situation. Previous research then establishes that source accessibility likely reduces perceptions of uncertainty by raising confidence in the information seeker's ability to find information when they want it (see e.g., Christensen and Baily, 1997; Liu, et al., 2015; Rains and Ruppel, 2016). Previous research also suggests that when there are perceptions of information insufficiency, it can increase uncertainty and change information seeking behaviors (see e.g., Ahn and Noh, 2020; Lachlan, et al., 2014; Liu, et al., 2015; Pierre, 2019; Ryan and Dunwoody, 1991; Gesser-Edelsburg, et al., 2015).

However, the literature base also identifies three challenges in information seeking and evaluation that can lead to maladaptive threat reduction behaviors (i.e., avoiding the problem or managing fear) instead proactive risk reduction behaviors (i.e., self-protective behaviors). First, the evaluation of information itself may reflect their management of threat and not lead to self-protective behavior (see e.g., Cheng and Luo, 2020; Lim, et al., 2016; Rui, et al., 2021). Second, when there are potentially multiple conclusions that can reasonably be drawn from the information presented, it can limit the enactment of self-protective behavior (Christensen and Bailey, 1997). Finally, while misinformation or fake news will always be present during pandemics (Laato et al., 2020; Valecha et al., 2020), the degree to which people process filter for misinformation versus disregarding it reflects a desire for certainty combined with a unique mix of biases (Pierre, 2019).

Individual Factors

Across the research, several individual factors emerge like demographics (e.g., country), efficacy, negative affect towards the health issue, perceived risk or threat appraisals, social support, and the self-other gap–have all been found to significantly influence individual's choices in how, when, and to what extent they engage with information and enact self-protective behaviors (see **Table 1**). For example, perceived risk and efficacy were significantly found to motivate office workers in crowded offices in Iran to improve steps self-protective behaviors during COVID-19 (Azadeh et al., 2020). These types of findings have been replicated across countries during the pandemic (Bruine de Bruin and Bennett, 2020; Jørgensen et al., 2020; Pasion et al., 2020) and are certainly grounded by previous research on varied topics like other pandemics (Sellnow-Richmond et al., 2018), natural disasters (Verroen et al., 2013), and sexual health (Poppen and Reisen, 1997).

However, as **Table 1** demonstrates, most of this research focuses on the United States and more generally the West opening it to (Zhao's, 2014) critique that it is time to

challenge "American exceptionalism" in research. Yet we would also argue that substituting one global power for another (China) is also insufficient in developing a clearer narrative on the relationships between individual factors, information seeking and evaluation, and self-protective behaviors. Previous research does suggest that individual factors are relevant in countries like the RoK and Vietnam (see e.g., Ahn and Noh, 2020; Nguyen, et al., 2020). Given the differing conditions in Vietnam and the RoK during the second wave of COVID-19 and the importance of evaluating public understanding, managing information loops, and success in reaching out to different groups (Saliou, 1994), we posit the following research questions:

RQ1: Are there differences in attitudes about self-protective behaviors during the second wave of the COVID-19 pandemic in the RoK compared to Vietnam?

RQ2: Are there differences in attitudes about information seeking and evaluation during the second wave of the COVID-19 pandemic in the RoK compared to Vietnam?

RQ3: In what ways do other individual factors influence attitudes about the pandemic during the second wave of the COVID-19 pandemic in the RoK compared to Vietnam?

Organizational Factors

As is the case with the individual factors, as **Table 1** suggests, there is a United States and Chinese bias in the research connecting organizational factors to information seeking and self-protective behaviors. Despite the bias, previous research applying several different theories emphasizes the importance of institutional trust–that if pandemic communication is to be successful, the public must trust the messages and actions from the governments and public health agencies responsible for managing the pandemic (see e.g., Ahn and Noh, 2020; Chiu and Oh, 2021; Lim, et al., 2016; Valecha, et al., 2020; Walter, et al., 2020). These findings are consistent with research across crisis communication suggesting that positive public evaluations of the credibility or trustworthiness of the source lead to increased effectiveness in the organizational response to the crisis (Longstaff and Yang, 2008; van Zoonen and van der Meer, 2015). In the case of health crises and pandemics, health agencies are typically viewed as the most trustworthy source (Freberg et al., 2013); yet trustworthiness cannot be merely assumed to exist as there is increasing evidence of public suspicion of institutions (Reynolds and Quinn, 2008; Pierre, 2019). In a crisis, let alone a pandemic, the stakes are high because when governmental and health agencies fail to meet public expectations for information or violate public trust, the results can be catastrophic (Cheng, 2013; Diers-Lawson, 2020b). Therefore, to apply (Saliou's, 1994) standards evaluating the coordination of information between authorities and the perceived competence of the authorities in each country, we posit the following research question:

RQ4: In what ways are relative levels of institutional trust related to information seeking, evaluation, and self-protective behaviors during the second wave of the COVID-19 pandemic in the RoK compared to Vietnam?

METHODS

To meet the study's aim, objectives, and answer the research questions posed, the primary methodology was a scheduled questionnaire technique with a mix of closed and open-ended questions (Croucher and Cronn-Mills, 2014). Participants responded online to maintain COVID-19 safety, which also served to reduce the risk of social desirability bias in highly collectivist cultures where conformity to social expectations is important (Paunonen and LeBel, 2012). A total of 54 participants ($n = 24$ in Seoul, Korea, and $n = 30$ in Hanoi, Vietnam) were recruited by the Asia-Europe Foundation (ASEF) via a purposive sample using the researchers existing networks (Guest et al., 2006) during the second wave of the COVID-19 pandemic. Participants in the RoK were recruited between 19–30 November 2020 and those in Vietnam were recruited between 8 and 15 December 2020. The questionnaires and responses were conducted in the participants' native language with teams in each country translating and cross-checking the translations to English prior to data analysis. Participants were asked 24 questions (see **Supplementary Appendix S1**) including closed and open-ended questions across three categories–1) demographic information (e.g., age, gender, education, income); 2) COVID-19 information seeking and evaluation behaviors (i.e., ease of information, describing the nature of challenges, sources, types of material most useful, most important information received, information gaps, misinformation and source evaluation, and what the health authorities should do better); and 3) about their COVID-19-related behaviors and experiences (i.e., level of worry about COVID-19, susceptibility, future concerns, self-protective behaviors, and concerns about visiting healthcare facilities). Once the data were collected and translated, the ASEF recruited an academic team from a member country in Europe to independently analyze the data and write the findings.

Participants

Because of the aim and objectives for study, purposive sampling is appropriate for the identification and recruitment of similar types of participants who can provide personal experiences about the phenomenon studied (Francis et al., 2010; Acharya et al., 2013). Based on Chi-square analyses, the participants recruited in both countries (see **Table 2**) had similar gender and education profiles but different age (X^2 3) = 23.79; $p < 0.00$) and income (X^2 2) = 7.05; $p < 0.05$) profiles. All presently live in the capital cities in their respective countries. Generally, the participants in this study were most likely to be female and well-educated.

Moreover, in data collection, an objective is to achieve thematic saturation for the open-ended questions in each of the country samples (see e.g., Guest, et al., 2006). In the Korean sample this was achieved within 13 participants and in the Vietnamese sample it was achieved within 23 participants.

Data Analysis

The open-ended questions in this data set were analyzed from a grounded theory perspective employing (Strauss and Corbin's, 1990) constant comparative method approach to analysing the data with a focus on coding the data throughout (Richards and

TABLE 2 | Study demographics.

		RoK	Vietnam	Total
Gender	Male	11	7	18
	Female	13	23	36
Highest education attained	Did not finish primary school	1	0	1
	Completed high school	0	5	5
	University and above	23	25	48
Income[a]	Low	3	10	13
	Medium	12	17	29
	High	9	3	12
Age group	18–29	5	19	24
	30–39	7	7	14
	40–49	0	4	4
	50+	12	0	12

[a]Note: Based on thirds distribution.

Morse, 2012). This method focuses on analysing data using three coding processes together. The use of open, axial, and selective coding allows researchers to use methodological triangulation with data sets to more thoroughly analyze the data and provide different types of validity support for conclusions drawn from the thematic analysis in the open coding process (Human and Provan, 1997; Croucher and Cronn-Mills, 2014). First, open coding was conducted. In open coding critical themes emerging from each response were identified to compare, conceptualize, and categorize the data. Next, axial coding was used to interrogate the conditions, context, and interaction of attitudes emerging within the categories established by the literature review and sample quotations were identified. During the axial coding process, open-ended responses were also quantitatively coded and entered into SPSS for content analysis. Two independent coders were used producing an overall 93% of intercoder reliability with intercoder reliability over 90% for all categories of open-ended coding. Finally, selective coding was used to match the emergent themes in the axial coding process to the individual, organizational, information seeking and evaluation, and self-protective behaviors discussed in the literature review. To identify reliable patterns in the relationships between information seeking, evaluation, self-protective behaviors correlations were run. ANOVA's and Chi-squares were used to analyze significant differences between ROK and Vietnamese samples and ANOVA's were used to analyze significant differences in risk perception between ROK and Vietnamese samples.

RESULTS

The comparison between information seeking, evaluation, and self-protective behaviors between the RoK and Vietnam provides critical insights into the influence of the individual, institutional, and information factors influencing people's experience with COVID-19. These data clearly suggest that even in countries where there is trust and satisfaction in the government and health authoritie's response to a pandemic, that even minor changes in the infection rates lead to different information seeking and self-protective behaviors.

RQ 3–Comparing Risk Perception Between the Republic of Korea and Vietnam

To better explain how participants in both countries understand their level of risk and the decision-making behind information seeking, evaluation, self-protective behaviors, it is important to understand the insights provided by motivations to act. In this study, these were operationalized as individual factors like level of worry about COVID-19, personal susceptibility, future concerns. These data provide context for the direct answers to RQ3.

Country and Present COVID-19 Worry

The one-way ANOVA on the rating of worry showed no significant differences on the overall level of worry ($m = 2.81$); all participants were generally worried about COVID-19, despite the low reproduction rate of the disease in both countries. However, the reasons that participants offered for their worry revealed meaningful differences in the type of concern in the RoK compared to Vietnam (see **Table 3**). For example, while both countries generally view COVID-19 as a risk to the economy, demonstrate concern with the stress it places on the healthcare system, and risk of mutations or long-term effects participants in Vietnam were more concerned with its risk to people's lives–especially their friends and family members–as well as the global impact of COVID-19. By contrast, participants in the RoK focused more on individual concerns like the lack of freedom in their daily lives and mental stress caused by the restrictions and uncertainty as well as the fact that treatment and vaccines are still being developed.

Country and COVID-19 Susceptibility and Efficacy

The ANOVA found a main effect for country on personal susceptibility to get COVID-19 ($F(1, 48) = 19.85$; $p < 0.00$, $\eta = 0.29$, $R^2_{adj.} = 0.28$). Participants from Vietnam ($m = 1.67$) articulated beliefs they were personally more susceptible to COVID-19 than those from the RoK ($m = 1.38$). The reasons participants listed for their personal susceptibility or lack thereof reflected efficacy judgments (see **Table 3**). Those who believed they were not at risk rationalized their susceptibility evaluation

TABLE 3 | The influence of country on reported risk and severity assessment of COVID-19.

Risk Perception	Emergent Themes	RoK (N)	VN (N)
Present worry about COVID-19	COVID-19 represents a credible risk to people's lives	6	19
	Harm to the economy	6	7
	Concern for friends, family members	1	10
	Treatment, vaccines are still being developed	5	1
	Lack of freedom in daily life	5	1
	Stress on the healthcare system	3	2
	Even w/vaccines, risk of mutations, long-term effects	3	2
	Mental stress b/c of restrictions, uncertainty	4	1
	Global impact of the COVID-19 pandemic	0	4
Overall COVID-19 Risk	I Believe I am at risk to get COVID-19	9	20
Why NOT at risk?	I Follow the prescribed preventative measures	11	9
	I Practice social distancing	9	4
	I Can keep myself safe from the disease	6	4
	The country's strict preventative regulations	2	4
	There are few cases in my city/region	1	3
	I am able to work from home	4	0
	I am typically healthy/don't catch cold	2	1
Why AT risk?	COVID-19 spreads rapidly, easily	9	9
	Anyone can catch COVID-19 at any time	3	11
	Asymptomatic spread of COVID-19	4	3
	I have to leave my home for work	2	5
	I have to use public transportation, commute to work	2	6
	Inaccurate information, people unaware of prevention	2	1
	The vaccine isn't ready/distributed yet	1	0
	I don't like wearing a mask	0	1
Concern about the future	Not worried, treatment/vaccines solve the problem	6	1
	Not worried, our country is doing great	3	3
	Not worried, we follow the rules, it will be fine	1	1
	Not worried, people show responsibility for prevention	0	2
	Worried, negative economic impact	5	20
	Worried, impact on our daily lives	6	11
	Worried, restrictions on daily life hard to cope with	4	4
	Worried, no permanent solution yet available	1	5
	Worried, local, regional infections rising now	3	2
	Worried, not sure vaccines are safe, effective yet	2	2
	Worried, getting infected is inevitable	1	2
	Worried, shows risk for future diseases like COVID-19	1	1
	Worried, social unrest and society harmed	0	2
	Worried, medical system will collapse	1	0

based on following prescribed preventative measures. Participants from both countries also cited their country's strict preventative regulations as a reason they were not worried about getting COVID-19.

Alternatively, those participants who believed they were at risk for getting COVID-19 report low efficacy in preventative measures. For example, the two most cited reasons were COVID-19's rapid and easy transmission and the belief that anyone can catch it anytime. Participants from both countries also cited concerns about asymptomatic spread as a reason. In their explanations of these common reasons, participants gave examples of their own risk coming from having to go to work use public transportation–factors that were outside of their personal control.

Country and Concern for the Future

As a way of understanding participant's negative affect towards COVID-19, they were asked about whether they were afraid for the future because of the pandemic. The ANOVA found ($F_{(1, 48)} = 7.70$; $p = 0.01$, $\eta = 0.14$, $R^2_{adj} = 0.11$) country

significantly influenced future concern. Participants from Vietnam were significantly more worried about their future ($m = 2.67$) compared to those from the RoK ($m = 2.04$).

In the qualitative responses, participants were asked to explain their reason for the concern and about the changes to their daily lives (see **Table 3**). Those who were not worried at all were in the minority but explained three reasons for their lack of concern: 1) that vaccines and COVID-19 treatment would solve the problem; 2) that their country was handling the pandemic effectively; and 3) that people following the rules and showing personal responsibility for prevention was working. The majority, however, were worried and the most cited reason was that COVID-19 was having a negative economic impact. The second most common types of reason was the impact that COVID-19, including the restrictions on daily life were taking a toll. Third, other worries focused largely on the present state of COVID-19 transmission and treatment and whether vaccines would be safe and effective. However, these concerns were reported much less often than the primary reasons for concern.

RQ1–Self-Protective Behaviors in the Republic of Korea and Vietnam

These data largely verify contemporary understandings of individual factors like country, efficacy, negative affect, and perceived risk are critical in understanding self-protective behaviors. All participants in both the RoK and Vietnam reported taking actions to protect themselves from contracting COVID-19–with no variance. However, there were differences in the number and variety of actions participants in each country reported taking. For example, self-protective behaviors participants reported in Vietnam were largely confined to the country's 5K information campaign guiding their self-protective behaviors (Khẩu trang–Khử khuẩn–Khoảng cách–Không tập trung–Khai báo y tế–Wear a Mask–Disinfect–Keep Distance–Not gathering people–Medical report). Similarly, people from the RoK cited examples of actions recommended or supported by a similar public health campaign. However, there were several other examples of self-protective behaviors enacted by Koreans including: not meeting people outside the home, staying in their homes, avoiding public transportation, avoiding crowded places, and cooking at home (versus take-away or restaurant dining). As one respondent mentioned working from home, he also cited his company's actions as well: "My company strictly follows preventative measures, and most people work from home including me." Thus, to answer RQ1, there are meaningful differences in attitudes and reported self-protective behaviors when comparing the RoK and Vietnam; participants in the RoK enacted a wider variety of self-protective behaviors compared to those in Vietnam during the second wave of COVID-19.

RQ 2–Information Seeking and Evaluation in the Republic of Korea and Vietnam

These data found differences in information seeking and evaluative behaviors when comparing the RoK and Vietnam during the second wave of the COVID-19 pandemic. Overall, Vietnamese participants were not only higher information consumers but also significantly more satisfied with the information available to them. The variable, high information consumers, was calculated based on the number of channels participants reported regularly using to get information about COVID-19. As part of evaluating RQ3 on the other individual factors affecting attitudes about the pandemic, the analyses also tested for any influence of key demographics (e.g., age and gender). In this case, there was a significant interaction effect for country * age in these data (F $(1, 48) = 4.57$; $p = 0.04$, $\eta = 0.09$, $R^2_{adj.} = 0.19$). The RoK demonstrates significantly lower information consumption overall ($m = 8.63$) compared to Vietnam ($m = 9.47$). The RoK demonstrates a linear relationship between age and information seeking with younger populations generally seeking more information whereas Vietnam had a curvilinear relationship with 30–39 year-olds consuming as the highest information seekers ($m = 10.57$). However, 18–29 year-olds in both countries were nearly identical in their information consumption (RoK $m = 9.20$; Vietnam $m = 9.21$). In consuming more information, Vietnamese participants ($m = 1.53$) were also

significantly more satisfied (F $(1, 48) = 4.38$; $p = 0.04$, $\eta = 0.08$, $R^2_{adj.} = 0.17$) with the information they had available on COVID-19 compared to Korean participants ($m = 1.08$). To provide a more detailed answers to RQ2, we explored the different aspects of information seeking and evaluation.

Ease of Information Access

Though the Vietnamese participants consumed more information and were more satisfied with it compared to the Korean participants, participants in Vietnam ($m = 1.63$) perceives significantly less information about COVID-19 readily available to them (F $(1, 48) = 5.34$; $p = 0.03$, $\eta = 0.10$, $R^2_{adj.} = 0.20$) compared to those from the RoK ($m = 2.00$). Participants from Vietnam reported four reasons for this: 1) uncertainty on which information was trustworthy or accurate ($n = 6$); 2) that they believed there were barriers to access (e.g., political or a lack of a dedicated information channel) ($n = 5$); 3) that there was simply too much information available from too many different sources ($n = 3$); and 4) one respondent from Vietnam felt that too much information was available only in English. All participants from the RoK believed information was easy to access.

Source or Channel Differences

There were no differences between participants from the RoK and Vietnam on three channels–newspapers ($m = 1.80$), television news ($m = 1.68$), and word of mouth (WOM) ($m = 1.33$). In both countries newspapers and television news were highly favored sources of information about COVID-19 and WOM was not favored. However, there were significant differences in three other channels explored. First, participants from Vietnam ($m = 1.93$) preferred information from the national health authority (F $(1, 48) = 6.12$; $p = 0.02$, $\eta = 0.11$, $R^2_{adj.} = 0.18$) compared to those from the ROK ($m = 1.58$). Similarly, participants from Vietnam ($m = 1.53$) also significantly preferred information from international health authorities (e.g., WHO) (F $(1, 48) = 13.36$; $p < 0.00$ $\eta = 0.22$, $R^2_{adj.} = 0.24$) compared to those from the RoK ($m = 1.13$). In fact, for Korean participants, international health authorities were their least preferred source of information about COVID-19. Finally, when participants were asked about which other channels they used for information seeking, they predominantly identified social media channels like YouTube, Facebook, or local platforms. There was also a significant difference with participants from the RoK ($m = 1.29$) significantly preferring these other information channels (F $(1, 48) = 9.36$; $p < 0.01$, $\eta = 0.16$, $R^2_{adj.} = 0.30$) compared to those from Vietnam ($m = 1.07$). In fact, other sources were participants from Vietnam's least preferred source of information about the pandemic.

Country and Most Useful Information Evaluations

In an open-ended question, participants were asked what information they had found had been the most useful during the pandemic. Twelve types of information were identified across the RoK and Vietnam (see **Table 4**). Once the responses were coded, correlations were run to evaluate which types of information co-varied together and for which country.

These data reveal different strategies for providing information that is most desirable to people in each of the

TABLE 4 | Types of Information Judged to be Most Useful During COVID-19.

	RoK	Vietnam	Total
Importance of wearing face masks	20	9	29
Washing hands/Good hygiene	14	4	18
Social distancing	9	6	15
Vaccine development	4	3	7
Ease of spread of COVID-19, importance of track and trace	0	16	16
Local infection rates, lockdown zones	0	13	13
Long-term health, personal impact of COVID-19	0	9	9
Global impact of COVID-19, global prevention	0	5	5
Impact of COVID-19 on the economy	0	1	1
Learning about COVID-19 from personally knowing someone who was ill	0	1	1
How nations are collaborating to address pandemic	1	0	1
Good eating habits as prevention	1	0	1

TABLE 5 | Combined RoK and Vietnam correlations on most useful information during COVID-19.

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1 Wearing masks	—	—	—	—	—	—	—	—	—	—	—	—
2 Good eating habits	0.13	—	—	—	—	—	—	—	—	—	—	—
3 Good hygiene	0.42[b]	−0.10	—	—	—	—	—	—	—	—	—	—
4 Social distancing	0.49[b]	−0.09	0.35[b]	—	—	—	—	—	—	—	—	—
5 Vaccine development	−0.08	−0.05	−0.04	0.01	—	—	—	—	—	—	—	—
6 Nations collaborating	−0.15	−0.02	0.19	−0.09	0.36[b]	—	—	—	—	—	—	—
7 Knowing someone w/COVID–19	−0.15	−0.02	−0.10	−0.09	−0.05	−0.02	—	—	—	—	—	—
8 Long–term impact of COVID–19	−0.38[b]	−0.06	−0.32[a]	−0.17	−0.03	−0.06	−0.06	—	—	—	—	—
9 Global impact and prevention	−0.34[b]	−0.04	−0.23	−0.20	0.07	−0.04	−0.04	0.03	—	—	—	—
10 Ease of spread, track and trace	−0.29[a]	−0.09	−0.29[a]	−0.04	0.11	−0.09	−0.09	0.36[b]	0.07	—	—	—
11 Local infection rates	−0.35[a]	−0.08	0.12	−0.06	0.17	−0.08	−0.08	0.10	0.27[a]	0.30[a]	—	—
12 Impact COVID–19 on economy	−0.15	−0.02	−0.10	−0.09	−0.05	−0.02	−0.08	0.31[a]	−0.04	0.21	0.24	—

[a]= significant at the 0.05 level.
[b]= significant at the 0.01 level; n = 54.

countries. When analyzing responses from the RoK and Vietnam together, two distinctive information paths emerged. Information Strategy 1 demonstrated a somewhat mutually exclusive relationship–self-protective instructions versus disease information (see **Table 5**). When taken in combination with the information type identified in each country (see **Table 4**), there is a clear delineation in information preferences between the RoK and Vietnam. Participants in the RoK found self-protective instructions the most useful including wearing masks, practicing good hygiene, and social distancing. Participants in Vietnam found information about the disease itself the most useful including the long-term impact of the disease, global impact and prevention efforts, the ease of spread, and local infection rates. However, one of the critical differences between the RoK and Vietnam was that while Vietnamese participants also viewed self-protective instructions as useful, they seemed to prefer information about the disease where Korean participants only found self-protective instructions useful and did not classify information about the disease as the "most useful". Information Strategy 2 represents how participants prefer vaccine information to be delivered and was relevant to both the RoK and Vietnam. These data found that information about vaccines was viewed as most useful when combined with some type of international collaboration or global focus.

Country and Information Insufficiency Evaluations

As we discussed in **section 5.3**, participants in Vietnam were significantly more satisfied with the information they had available compared to those from the RoK. When asked what topics participants wanted more information about, 13 topics emerged (see **Table 6**). Once the responses were coded overall correlations were run and then separate correlations were run for the RoK and Vietnam (see **Table 7**) to evaluate which types of information co-varied together and for which country. When both countries are considered, three information paths emerge. Information Sufficiency Strategy 1 is risk management. Risk management represents a danger control process (see e.g., Witte, 1992). When participants believed they had insufficient information about COVID-19 risk management, they indicated they wanted more information about asymptomatic spread, risks related to underlying conditions that increase the risk of contracting or having a more severe case of COVID-19, emerging best practices for how the disease is being treated, and long-term prognosis. Information Sufficiency Strategy 2 is long-term solutions. When participants believed insufficient information about long-term solutions about the COVID-19 pandemic, they indicated they wanted more information about vaccine development and the role or effectiveness of their government in addressing the pandemic. Information Sufficiency Strategy 3 is uncertainty

TABLE 6 | Topics of information insufficiency in the RoK and Vietnam during COVID-19.

	ROK	Vietnam	Total
Prognosis after treatment (long-term COVID-19 effects)	13	2	15
Development of better/more effective treatment methods	12	2	14
Precise infection rate	5	5	10
Vaccine development information/progress	5	3	8
Explanation of asymptomatic spread	2	2	4
Risk for people with underlying conditions	3	1	4
Early symptoms of COVID-19	1	1	2
Origins of COVID-19	0	3	3
Treatment costs of COVID-19, economic burden of the pandemic	0	1	1
Travel restrictions, information	0	1	1
Risks from overseas visitors	1	0	1
Role/effectiveness of the government	1	0	1
Zoonotic risk (species to species spread)	1	0	1

TABLE 7 | Combined RoK and Vietnam correlations on information insufficiency during COVID-19.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Prognosis after treatment	–												
2 Vaccine development	−0.14	–											
3 Explanation asymptomatic spread	0.30[a] 1.00[b]	−0.12	–										
4 Zoonotic risks	0.22	−0.06	0.49[b] 0.69[b]	–									
5 Risk with underlying conditions	0.30[a] 0.70[b]	−0.12	0.73[b] 0.80[b] 0.70[b]	0.49[b] 0.55[b]	–								
6 Precise infection rates	0.02	−0.20	0.23	0.29[a] 0.41[a]	0.05	–							
7 Developing better treatment	0.58[b] 0.42[a] 0.46[b]	0.23	0.16 0.46[b]	0.23	0.06	0.15	–						
8 Role/effectiveness of government	−0.09	0.33[a] 0.41[a]	−0.04	−0.02	−0.04	−0.07	−0.08	–					
9 Early symptoms of COVID-19	0.10 0.70[b]	−0.08	0.69[b] 0.69[b] 0.70[b]	−0.03	0.32[a] 0.55[b] 0.42[a]	0.16	0.11 0.70[b]	−0.03	–				
10 Risks from overseas visitors	−0.09	−0.06	−0.04	−0.02	−0.04	−0.07	−0.08	−0.02	−0.03	–			
11 COVID-19 origins	0.03	−0.10	0.24	−0.03	−0.07	0.09	0.04	−0.03	0.38[b] 0.56[b]	−0.03	–		
12 Travel restrictions, information	−0.09	−0.06	−0.04	−0.02	−0.04	−0.07	−0.08	−0.02	−0.03	−0.02	−0.03	–	
13 Economic burden of COVID-19	−0.09	−0.06	−0.04	−0.02	−0.04	−0.07	−0.08	−0.02	−0.03	−0.02	−0.03	−0.02	–

[a]= significant at the 0.05 level.
[b]= significant at the 0.01 level; n = 54; Combined correlations in black, significant Vietnam correlations in blue, significant RoK correlations in orange.

management. Uncertainty management represents a fear control process (see e.g., Witte, 1992). When participants wanted more information to manage uncertainty, they indicated they wanted more information about asymptomatic spread, prognosis and long-term effects of the disease, zoonotic risk, risk for people with underlying conditions, and early COVID-19 symptoms.

However, when analysis was performed for each country, while the overall information strategies remained similarly desirable (see **Figure 5**), their relevance in each country meaningfully changed. Participants from the RoK consistently wanted more information that focused on long-term solutions and uncertainty management. In addition to their interest in more information about vaccine development and the role of their government in this process of creating long-term solutions

to COVID-19, Koreans also believed they had insufficient information in two types of uncertainty management. The first, is recovery probability because they were most dissatisfied with the information available to them about long-term disease prognosis and how the treatments were being developed. And second Koreans were dissatisfied with the information available to reduce their uncertainty about COVID-19's progression.

Comparatively, participants in Vietnam were dissatisfied with their level of information regarding risk management and the connection between COVID-19 symptoms and its origins. They wanted more information about long-term prognosis, risk related to underlying conditions, how the disease was being treated, but also early COVID-19 symptoms. In their comments, the interest
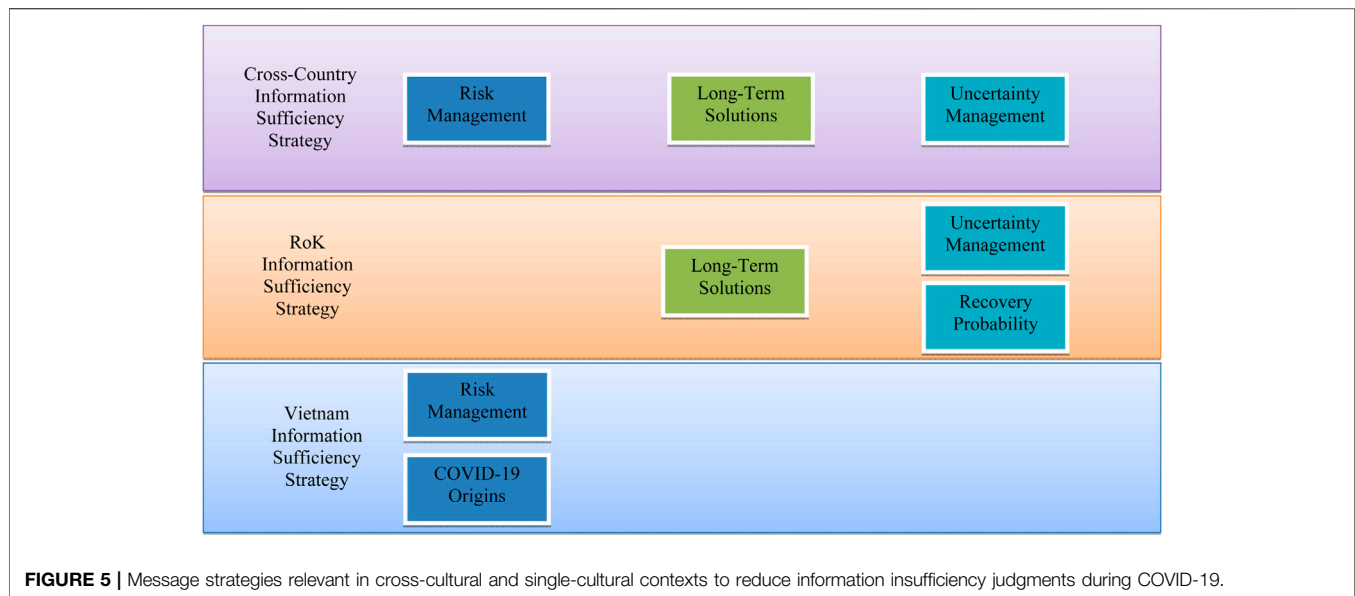
FIGURE 5 | Message strategies relevant in cross-cultural and single-cultural contexts to reduce information insufficiency judgments during COVID-19.

was on being better informed so that they might know when to report to the health authorities and what was likely to happen next.

Misinformation and its Detection

Given the interest in more information from the RoK and Vietnam and the level of uncertainty about the disease itself, and the high levels of information availability noted in both countries and to more fully answer RQ2, these data looked for differences in the perception and nature of misinformation in both countries. When asked if participants had personally seen any misinformation or rumors about COVID-19, participants in Vietnam (83%) were significantly more likely to have noticed misinformation than those in the RoK (54%) (X^2 1) = 5.44; p = 0.02). More importantly, what participants in each country described as misinformation was fundamentally different as well. In Vietnam, what participants described as misinformation was mostly about "accusations" about people within communities testing positive or spreading the disease. Participants describe this information as typically spread via word-of-mouth (WOM) or through social media and then quickly corrected by official sources.

Conversely, in the RoK misinformation was described in a way that is more aligned with traditional representations of it. Examples of misinformation provided by participants included:

- Advertisements for dietary supplements that were supposed to prevent COVID-19
- Specific foods (e.g., garlic, kimchi, or rinsing with salt water)
- Accusations of government the government for manipulating case numbers
- A lab in China spread the COVID-19 virus
- Masks or good hygiene do not prevent COVID-19
- The virus or its severity is a hoax

Participants identified several different sources of the misinformation including WOM, the internet (e.g., posting boards, YouTube, blogs), social media, foreign news (including specifically identifying then US President Donald Trump as a source). Similarly, the sources for correction were also diverse including scientific articles, official sources, domestic news coverage, and "good judgment." Therefore, these data demonstrate critical similarities and differences between the RoK and Vietnam regarding information seeking and evaluation providing statistically significant and qualitatively meaningful insights to answer RQ2.

RQ4–Institutional Trustworthiness and Improving the Government Response

Both countries communicated high levels of trust in their governments throughout questions asked of them. For example, a Korean respondent said, "The Korean government can't do better than it is now." This came across in questions about information sources where participants from both countries identified official governmental sources as being preferred (Vietnam m = 1.93, RoK m = 1.58). It also came in participants from some participants in both countries communicating satisfaction with the strict COVID-19 control measures or even identifying an interest in having stricter control measures, for example a Vietnamese respondent said:

The COVID epidemic in the Vietnamese community is now very well controlled, which is a large part of the efforts of health sector managers in Vietnam. However, we should not be subjective, but should seek ways to improve prevention measures.

Despite the confidence in their governments, there were significant differences in the level of satisfaction when comparing the RoK and Vietnam (F (1, 48) = 9.24; p < 0.00, η = 0.15, $R^2_{adj.}$ = 0.14). Participants in Vietnam were significantly more satisfied with the prevention and control measures taken there (m = 1.37) compared to those in the RoK (m = 1.04). Yet, despite differing

TABLE 8 | Improving the government response to COVID-19, citizen recommendations.

	ROK	Vietnam	Total
Nothing, the government is doing everything it can	1	11	12
Running information 24/7 with live updates to cases/tests/deaths	4	10	14
More direct response to rumors, improved information sharing	3	8	11
More information on controlling the outbreak, protecting selves and others	4	5	9
Better use of social media (including emergency text system)	3	4	7
Stronger sanctions against people who violate COVID-19 regulations	4	3	7
Developing more advanced knowledge of COVID-19	2	1	3
Academic articles, foreign press articles should be made more available	1	1	2
Improve interagency cooperation to improve risk communication	0	14	14
More information about wearing masks in public	9	0	9
Improved information about vaccine development, status, and side-effects	3	0	0
Better information on treatment, not just the number of cases	2	0	2
Government should use politically neutral broadcasting companies only	1	0	1
Don't promote travel or dining out with government subsidies	1	0	1

TABLE 9 | Combined RoK and Vietnam correlations on improving the government response to COVID-19, citizen recommendations.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Better use of social media	–	—	—	—	—	—	—	—	—	—	—	—	—
2 Info on wearing masks in public	−0.03	—	—	—	—	—	—	—	—	—	—	—	—
3 Stronger sanctions COVID-19 regulations	0.02	−0.03	—	—	—	—	—	—	—	—	—	—	—
4 More direct response to rumors	0.35[b] 0.43[a]	−0.10	0.22	—	—	—	—	—	—	—	—	—	—
5 Running information 24/7 w/live updates	0.53[b] 0.51[b] 0.56[b]	−0.27	−0.10	0.44[b] 0.51[a] 0.37[a]	—	—	—	—	—	—	—	—	—
6 Don't promote travel, dining out	−0.05	−0.06	−0.05	−0.07	0.23 0.47[a]	—	—	—	—	—	—	—	—
7 Gov't should use neutral broadcasters	−0.05	−0.06	−0.05	−0.07	−0.08	−0.02	—	—	—	—	—	—	—
8 Make available academic, foreign press	−0.08	−0.09	−0.08	−0.10	0.11	−0.03	0.70[b] 1.00[b]	—	—	—	—	—	—
9 Vaccines development, status, side-effects	−0.09	0.11	−0.09	−0.12	−0.14	−0.03	−0.03	−0.05	—	—	—	—	—
10 More advanced knowledge COVID-19	−0.09	−0.11	−0.09	−0.12	0.04	−0.03	−0.03	−0.05	0.29[a]	—	—	—	—
11 Better info on treatment, not cases	−0.08	−0.09	−0.08	−0.10	−0.12	−0.03	−0.03	−0.04	0.38[b]	0.38[b] 0.46[a]	—	—	—
12 More info on controlling the outbreak	−0.17	−0.07	−0.03	−0.10	−0.04	−0.06	−0.06	0.18 0.42[a]	−0.11	−0.11	−0.08	—	—
13 Improve cooperation, risk communication	0.28[a] 0.42[a]	−0.27	0.02	0.54[b] 0.65[b]	0.52[b] 0.61[b]	−0.08	−0.08	0.11	−0.14	0.04	−0.12	−0.04	—

[a]= significant at the 0.05 level.

[b]= significant at the 0.01 level; n = 54; Combined correlations in black, significant Vietnam correlations in blue, significant RoK correlations in orange.

levels of satisfaction and consistent interest in seeing their governments do more to address the COVID-19 pandemic, there was no indication that dissatisfaction in governmental actions had reduced participant's trust in the government and health authorities. In fact, the opposite was true–most participants who indicated they wanted a change wanted increased interventions to manage the crisis.

When asked what they would like the government to do differently, 14 topics emerged (see **Table 8**). Once the responses were coded overall correlations were run and then separate correlations were run for the RoK and Vietnam (see **Table 9**) to evaluate which recommendations co-varied together and for which country.

Improving Government Response Overall

When both countries are considered, three government response improvements emerge (see **Figure 6**).

Improvement 1–Improve Communication with the Public

Participants indicated four ways that their governments could better communicate with the public about COVID-19. First, participants believed the governments could better use official social media accounts, in particular emergency system texts were mentioned by several participants. Second, participants wanted their governments to be more proactive in responding to rumors and misinformation about COVID-19. Third, many participants wanted their governments to provide more frequent updates of

FIGURE 6 | Evaluating how the RoK and Vietnamese governments could respond better to COVID-19.
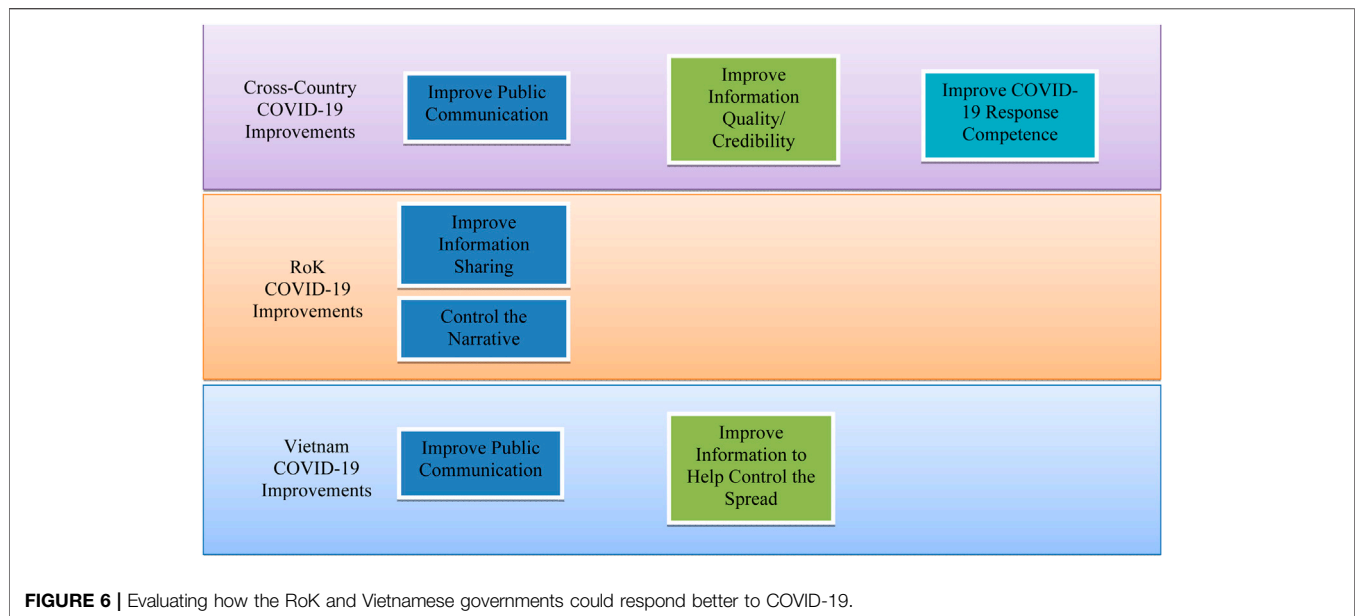
information on cases, deaths, and tests. For example, some participants from the RoK suggested establishing a 24/7 channel that only broadcast information related to COVID-19. Fourth, many respondents in Vietnam identified their interest in the government improving its interagency cooperation to improve their communication effort.

Improvement 2–Improve the Quality or Credibility of Information about COVID-19 available
In this case, participants discussed both ensuring the government be mindful of the sources, approaches, and channels they used to communicate and to improve access to academic articles and information from foreign press sources.

Improvement 3–Improve the Government's COVID-19 Competence and Information Sharing
Participants interested in the material response to COVID-19, wanted their governments to engage with vaccine development more directly to better understand its efficacy and potential side-effects. Additionally, they were interested in their governments demonstrating and developing a more advanced knowledge of COVID-19 and its treatment. Finally, they were interested in a shift in the government's approach from discussing cases to treatment.

Improving the Government Response in the Republic of Korea
Like with the information sufficiency, the general themes carry from the overall analysis to the country-specific analyses (see **Table 9** and **Figure 6**). However, in the RoK participants recommended two critical improvements in their government's response to COVID-19. Both were focused on two ways to improve public communication about the disease. RoK Improvement 1–Improving Information Sharing focused on several participants wanting their government to not only better

use social media–especially the emergency texting system–but use it to provide continuous updates on cases, tests, and deaths in the country. They also suggested RoK Improvement 2–Controlling the Narrative which focused on not only keeping the information constantly updating, but also a more direct response not rumors and a tighter focus on controlling the disease by avoiding promoting or subsidizing travel or dining.

Improving the Government Response in Vietnam
Like the RoK, participants in Vietnam viewed any critical improvements to the government's response to COVID-19 as being communicative (see **Figure 6**). In fact, several participants really defined any shortcomings in the country's response as communicative, for example as one person noted:

I recommend that health managers in Vietnam should work closely with other ministries to achieve the highest efficiency in communicating the risk to the people.

However, the communication improvements identified were different in that they articulated two different objectives. First, Vietnam Improvement 1–Improving Public Communication focused on an integrated recommendation for improving interagency cooperation to improve communication and more specifically better using social media, improving response to misinformation, and improving the flow of information. Second, Vietnam Improvement 2–Providing More Information to Help People Control the Spread focused on improving the quality and credibility of information available so that people could help control the spread. This recommendation focused directly on participant's interest in contributing to the reduction or prevention in community transmission by improving access to academic articles or foreign press, providing more information on actions people can take to control the outbreak to help people ". . .be more vigilant to protect themselves and everyone around them." Taken together, these data provide important insights not only into the high levels of institutional trust related to

information seeking, evaluation, and self-protective behaviors but also critical insights towards developing target messaging based on relative infection rates, thus providing an answer to RQ4.

DISCUSSION AND CONCLUSION

These data provide important insights to understand not only how people in countries with successful pandemic communication and control initiatives view self-protective behaviors, how they seek and evaluate information about pandemics, and how they believe their governments can improve their pandemic responses. Of course, the study has meaningful limitations that suggest that the conclusions drawn need to be tested in similar and other settings to validate them because it is not a representative sample. For example, though we were able to achieve thematic saturation in both countries, the number in the sample is relatively low, so drawing generalizations is not possible without further research. Additionally, there were age biases evident in the Vietnam sample as well as education and gender biases across both samples. We would assume these biases would influence results based on previous literature on the individual factors that influence information seeking and evaluation (see e.g., Lachlan, et al., 2014; Sellnow, et al., 2019). Further, because of the outbreak status difference, this study did not directly explore the cultural influences of attitudes about information seeking, evaluation, and self-protective behaviors. A final limitation is that because there was clear evidence of trust in the government, this study does not explore the influence of a government's trustworthiness on information seeking, evaluation, and self-protective behavior. Future research should explore these factors with different qualitative and quantitative methods to deepen both theory and implications for practice.

However, our study makes significant contributions by applying (Saliou's, 1994) standards for evaluating the effectiveness of pandemic communication to gain intelligence about non-Western countries with effective COVID-19 responses. By analyzing countries like the RoK and Vietnam with such similar COVID-19 policies, self-protection messaging, and first wave success at controlling the outbreak, we have functionally been able to conduct a field experiment to better understand the influence of outbreak on information seeking, evaluation, and self-protective behaviors (Croucher and Cronn-Mills, 2014). There are several critical lessons that can be learned and pathways to explore in future theory building or applied communication research.

Improved Actionable Knowledge About Self-Protective Behaviors

In answering RQ1 and partly answering RQ's 3 and 4, these data clearly demonstrate that getting people to take self-protective behaviors in countries like the RoK and South Korea is not a problem. Unlike countries like the United States where there are significant differences in the willingness to engage in self-protective behaviors because of socio-demographics, personal politics, or susceptibility to misinformation (see e.g., Papageorge, et al., 2021; Bruine de Bruin and Bennett, 2020;

Yang and Yunjuan, 2020), these data suggest that all respondents engaged in self-protective behaviors–whether they liked the restrictions or not. However, these data also clearly demonstrate that in the RoK, where there was a significant increase in cases during wave two, there was a greater variety of self-protective behaviors identified by participants than in Vietnam, where there was no meaningful change in cases during wave two. This suggests a fundamentally different communication environment in those countries where there is a high level of trust in the government and health authorities and demonstrably more control over the initial pandemic outbreak. Future research should more directly compare self-protective behaviors in countries with "successful" and "unsuccessful" wave one controls of a disease.

These data also suggest that in countries where the conditions are similar to those in the RoK and Vietnam, the uncertainty of the outbreak also seems to encourage the public to take more action to control the outbreak. Most previous research (Rickard et al., 2013; Dalrymple et al., 2016; Ahn and Noh, 2020; Chiu and Oh, 2021; Rui et al., 2021) emphasizes increasing trust in government to help manage the uncertainty of outbreaks and information seeking and evaluation. These data provide stronger insights into protective behavior by suggesting that together with high levels of trust in government and health authorities, establishing high levels of self-and response efficacy in the public ahead of outbreaks encourages the public to try to respond to an intensification of the pandemic by broadening the types of self-protective behaviors used to manage personal risk. Participant's comments on risk also suggest that effective communication from the government or public authorities ought to balance self-empowerment to mitigate personal risk and the susceptibility of the disease to minimize the danger control response. During wave two in both countries, the communication response seems to have been achieving this balance because only two respondents (one from each country) demonstrated a fatalistic attitude–that they would probably get COVID-19, despite any protective behaviors. This indicates a high level of self and response efficacy in participants from both countries. Future exploration in each country and beyond needs to examine differences that might emerge across demographics (e.g., the influence of education, age, socio-economic status); however, these data provide a strong starting point for better understanding the organizational and individual factors influencing self-protective behaviors.

Improved Actionable Knowledge About Information Seeking and Evaluation

In answering RQ2 and completing the answers to RQ's 3 and 4, despite the unanimous use of self-protective behaviors, when it comes to information seeking and evaluation these data demonstrate more evidence of a danger control process in Vietnam compared to the RoK where there was more evidence of a fear control process (see Witte, 1992). These data also suggest that instead of a fear control process being immediately connected to maladaptive behaviors (Witte, 1992) or misinformation processing (Love et al., 2020;

Martel et al., 2020), it did depress the amount of information consumed, increased dissatisfaction with information sufficiency (see e.g., Lachlan, et al., 2014; Rains and Ruppel, 2016; Sellnow, et al., 2019), and also risked contributing to uncertainty discrepancy and information equivocality (see e.g., Liu, et al., 2015; Pierre, 2019; Gesser-Edelsburg, et al., 2015). This was evidenced in critical differences in the amount of information seeking, types of information sought, and perceptions of information insufficiency in Vietnam and the RoK.

These data therefore, do suggest that as outbreaks increase in intensity, the need for governments and health authorities to communicate more often and with different types of information also increases. Moreover, these data suggest that though satisfaction with information from the government and health authorities is likely to reduce in countries that had previous pandemic management success, this does not necessarily translate into a reduced trust in these official sources. Instead, the trust in the government and health agencies drive increased self-protective behaviors and influence information-demands from official sources. Thus, these findings suggest other trustworthiness research (Mal et al., 2018; Pierre, 2019) finding that trust and mistrust are fundamentally different processes and not just ends of the same continuum.

Providing Information that Matters the Most at the Right Time

The findings for information seeking and evaluation also identified different and sometimes mutually exclusive evaluations of "useful" versus "not useful" information that provides more specific guidance for governments in responding to pandemics. For example, these data demonstrated that in a country like the RoK that was experiencing an outbreak of cases, self-protective instructions were viewed as the single most important type of information. These findings also suggest participants from the RoK were either more likely to be interested in self-protective behaviors (the majority) OR disease information and international collaborations, but they were unlikely to be interested in both. Whereas, in a country that was watching the global pandemic, but not experiencing any significant outbreak like Vietnam, information about the disease was found as the most important type of information. However, participants in Vietnam were also interested in self-protective behaviors, so the interest in information was not nearly so mutually exclusive as in the RoK. This suggests a more segmented strategy may be needed in countries experiencing disease outbreaks compared to those that are not.

The Changing Nature of Information Needs Based on Outbreak

These findings in the RoK and Vietnam also suggest that it is important to classify the difference between risk and uncertainty management. For example, by understanding the changing nature of information satisfaction during the outbreak in the RoK compared to the relatively stable and low transmission in Vietnam, these data provide insights into how to better manage the emotions guiding uncertainty discrepancy, information equivocality, and potentially ensure

improved misinformation processing (see e.g., Cheng and Luo, 2020; Lim, et al., 2016; Pierre, 2019; Valecha, et al., 2020). For example, the perceptions of information insufficiency in the RoK suggest that the participants wanted more information about disease recovery probability, uncertainty management, and the long-term answer to the pandemic. In short, they want assurances that everything will be alright, even if they get COVID-19. However, participants in Vietnam simply wanted more information about how to judge risk for themselves and their loved ones.

Even though all participants in the RoK and nearly all in Vietnam believe that it is easy to find information on COVID-19 in their country, there is a meaningful difference in the belief that they have all the information they need to protect themselves and their families. For example, only two of the 24 respondents in the RoK believed they had ample information but over 50 percent (16 of 30) in Vietnam thought they did. Moreover, these findings suggest that in the RoK there was a broader engagement with different sources of information compared to Vietnam, but there appears to be evidence of the breadth of this information contributing to uncertainty and perceptions of information insufficiency. This could be a cultural factor, it could also be related to subtle differences in governments or trust in the government or health agencies; however, placed within the context of the study and all the findings, these data suggest that it is more likely to be situational–or the change in the outbreak that most contributes to these differences. However, future research should explore this relationship more directly.

Finally, these data also demonstrate a very different experience with misinformation when comparing the RoK and Vietnam. For example, even the "definition" of misinformation seems to be different when comparing the responses in the two countries. In the RoK, there was evidence of typical types of pandemic misinformation ranging from conspiracy theory to bogus cures to the disease and a much lower sensitivity to misinformation with only about half of participants (13 of 24) reporting personally seeing misinformation or rumors about COVID-19 when compared to Vietnam. In Vietnam, misinformation was almost exclusively restricted to examples of people (either specific or more general reports of cases) being falsely reported as testing positive for COVID-19 either by WOM or social media and then being quickly corrected by official sources and over 80 percent (25 of 30 participants) reporting having seen these. Unfortunately, because of the mode of data collection, there was no ability to follow up on factors contributing to this fundamental difference; therefore, there are few direct conclusions that can be drawn. However, this finding should be explored more thoroughly to better understand it and its relevance to information seeking and evaluation.

Overall Contributions

In this section we have discussed practical implications of these findings, the limitations of the study, and areas for future research. We believe that beyond the applied communication implications of these findings there are two major

contributions of this study: 1) providing a cross-theory evaluation of the factors that contribute to information seeking, evaluation, and self-protective behaviors and 2) identifying potentially critical differences in information seeking, evaluation, and self-protective behaviors based on acute disease reproduction in countries with a successful pandemic suppression history.

Instead of applying a single theory to this project, we looked across theories to identify the factors that are globally the most relevant to information seeking, evaluation, and self-protective behaviors. This borrows from a contingency approach (Pang et al., 2020) increasingly used in crisis contexts that provides a broad framework for the factors (i.e., individual, organizational, and issue-related) that might affect decision-making and effective response strategy during crises (Diers-Lawson, 2020a). Acknowledging the uniqueness of the pandemic context (Saliou, 1994), these findings provide a research and theoretically grounded approach that is also pragmatic to explore a potentially new field of communication that blends health, risk, and crisis communication–pandemic communication. Second, this approach also largely confirms the importance of understanding pandemics as rich, complex, and evolving situations. This study focuses on the understudied "successful" countries–those with more extensive experience in responding to epidemics and pandemics–to improve our understanding of the situational dynamics that can affect public response in those countries. Third, this approach demonstrates the centrality of good government and health agency communication for regular citizens, but more than that, it also demonstrates the necessity of blending effective material crisis response with communication that manages specific information and self-protective behavior recommendations (Diers-Lawson, 2020b).

By blending the material crisis response with effective communication, these data also help to identify differences in information seeking, evaluation, and self-protective behaviors based on acute reproduction rates in a country as a pandemic continues over time. Participants in Vietnam and the RoK were largely complementary with similar levels of education, gender, and all were living in their capital cities. Both countries also shared similarities in severity of control measures and communication strategies, so there was no prima facie reason to expect differences between information seeking, evaluation, and self-protective behaviors, other than the difference in outbreak levels during wave two when the data was collected. Yet, we identified meaningful and significant differences in information seeking, evaluation, and self-protective behaviors based on country. Thus, this study provides a rationale for differences in pandemic communication strategy based on both pandemic history and acute outbreak. More than that, these data also provide guidance for benchmarking success. In the final evaluation, Saliou. (1994) argues that good pandemic

communication represents: 1) a well-coordinated approach between national and international bodies to build confidence in the pandemic response; 2) the public should have a strong understanding of the illness; 3) information loops need to be effectively managed to ensure the public is satisfied with the availability of credible information communicated by competent authorities; and 4) that information procedures are adapted to different groups using platforms appropriate to those groups. These data suggest that in countries with more successful pandemic records like the RoK and Vietnam, these recommendations are largely being implemented. However, these data also demonstrate important lessons learned from COVID-19 to develop more targeted strategies that are sensitive to changes in outbreak levels within countries.

DATA AVAILABILITY STATEMENT

The datasets presented in this article are not readily available because , the data is proprietary from the Asia-Europe foundation. Data can be requested from the corresponding author. Requests to access the datasets should be directed to audra.lawson@leedsbeckett.ac.uk

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by the Asia-Europe Foundation and Leeds Beckett University. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

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