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How do intercrisis learning outcomes affect intracrisis learning? “Learning in the making” in the case of South Korea’s Covid-19 response

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How Do Intercrisis Learning Outcomes Affect Intracrisis Learning? "Learning in the Making" in the Case of South Korea's COVID-19 Response

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Abstract: This study explores the processes of intercrisis and intracrisis learning and the link between them, drawing on South Korea's responses to the COVID-19 pandemic as an example. The crisis management literature suggests that intracrisis learning is less likely to occur than intercrisis learning due to inherent barriers that hinder learning and adaptation in the heat of crisis. Based on the conceptual framework of problem-oriented governance and crisis learning, we unpack how prominent outcomes of intercrisis learning facilitate intracrisis learning during the acute phase of an emerging crisis. We postulate that learning after 2015 MERS crisis developed the core capabilities for problem-oriented governance which, in turn, have facilitated learning during the COVID-19 pandemic. We also posit that these capabilities continue to be enhanced through ongoing intracrisis learning processes. Our findings indicate that, in South Korea, such capabilities—reflective-improvement capability, collaborative capability, and data-analytic capability—have been substantially developed after 2015 MERS crisis and are getting more sophisticated as a result of on-going intracrisis learning during the COVID-19 pandemic. Theorical and practical implications for crisis learning are discussed.

Keywords: COVID-19, problem-oriented governance, intercrisis learning, intracrisis learning, South Korea

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INTRODUCTION

The state's administrative capacity refers to its general and specific capabilities to design and implement public policies and programs that address public challenges and achieve intended policy objectives (Rogers & Weller, 2014; Savoia & Sen, 2015). As public problems become more complex and dynamic, a new set of state capabilities are increasingly required. The traditional government structures of the Weberian bureaucracy model are limited in their ability to address the emerging public problems. Despite its merits, the rigid hierarchical structure of the bureaucratic system and its demands for strict accountability may hinder the state's ability to respond to "wicked" policy problems the solution to which requires more flexibility, creativity, and collaboration. To this end, recent studies have called for a problem-oriented governance model that highlights learning and adaptation (Bersch, 2016; Cingolani, Thomsson, & de Crombrugghe, 2015; de Jong, 2016).

While some studies suggest that compared to private organizations, state governments tend to be restricted in their capacity and willingness to learn and adapt (Etheredge, 1985; Sabatier, 1987), others suggest that crises and their aftermath can facilitate learning, contributing to "overcoming the governmental inertia and political dynamics which often inhibit learning under normal conditions" (Stern, 1997: p. 69). Despite the importance of crisis learning, however, there is a paucity of research on the process of crisis-induced learning in general and, more specifically, the conditions necessary for successful learning after and during crises (i.e., intercrisis and intracrisis learning), and little is known about how intercrisis and intracrisis learning are related to each other. Considering that infectious disease problems like COVID-19 tend to evolve in unpredictable ways over a relatively long period of time, understanding how iterative learning processes work is critical.

Drawing on a conceptual framework that outlines how states can draw lessons from crisis learning (Moynihan, 2005, 2009; Stern 1997) and on research pertaining to the capabilities of problem-oriented governance (Mayne, de Jong, & Fernandez-Monge, 2020), this paper discusses how South Korea's lesson-drawing efforts after the 2015 MERS crisis contributed to the development of the core capabilities needed in problem-oriented governance for managing public health crises, capabilities that have been enhanced through ongoing intracrisis learning processes during the COVID-19 pandemic. Specifically, we explore if these newly acquired capabilities have facilitated—and eliminated the barriers to—intracrisis learning during the acute phase of a crisis. In doing so, we assume that crisis learning is an ongoing process and that problem-oriented governance capabilities, as both the outcomes of intercrisis learning and facilitators of intracrisis learning, further evolve as a result of

continued learning and adaptation in the midst of ever-changing situations.

INTERCRISIS AND INTRACRISIS LEARNING

A crisis presents opportunities for and necessitates learning (Boin & ‘t Hart, 2003). Crisis stakeholders and/or their networks must assess emerging or past incidents and change their thinking and behavior so that their future crisis response is better (Boin & ‘t Hart, 2003). Crisis learning is thus defined as the collective identification and implementation of practices that improve both current and future crisis response (Moynihan, 2008, 2009; Stern, 1997). In general, crisis learning often refers to intercrisis learning, meaning changes in the way stakeholders both acquire and interpret information and the way they disseminate and institutionalize new information as a result of reflection on past crisis experiences (Dekker & Hansén, 2004; Moynihan, 2009). Through the learning process, stakeholders may figure out how to do their jobs better or to change their assumptions about what their role is in crisis response (Argyris & Schön, 1996). Yet intracrisis learning, that is, learning during a crisis, also occurs. Studies on intracrisis learning have shown that new approaches are either improvised based on past knowledge (Moynihan, 2008, 2009) or developed in response to the situations the emerge during the crisis (Kamkhaji & Radaelli, 2017).

Studies often focus on either intercrisis learning or the challenges of intracrisis learning (Boin & ‘t Hart, 2003; Dekker & Hansén, 2004; Moynihan, 2008, 2009). Intracrisis learning, according to the literature, is less likely owing to several factors. First, both the cognitive capacity and practical ability to learn during a crisis are limited, since during a crisis, matters such as the high consequentiality of decisions, the limited timeframe in which to make decisions, political disputes, uncertainty, and ambiguity make it hard to think outside the box (Boin & ‘t Hart, 2003; Moynihan, 2008, 2009; Comfort, Yeo, & Scheinert, 2019). All these factors can discourage responders from trying to make sense of an unfolding situation (Weick, 2012) and instead prompt them to act based on what comes into their mind first rather than what is appropriate for the situation (Stern, 1997; Erkan, Ertan, Yeo, & Comfort, 2016). Second, the complexity and dynamics of a crisis bring multiple actors and their cultures and perspectives into the context (Moynihan, 2008; Yeo & Comfort, 2017), and so a lack of shared experiences or norms may hinder learning among such a group of actors (Senge, 2006). Moreover, without a definitive authority, the involvement of multiple actors may create institutional uncertainties that may lead to disputes or conflicts that likewise inhibit learning (Koppenjan & Klijin 2004; Comfort et al., 2019).

Lastly, a crisis may foster defensiveness that inhibits crisis learning (Dekker & Hansén, 2004; Comfort et al., 2019). This is the case when the complexity of a crisis is accompanied by political contention and criticism that puts pressure on the formal responders (Dekker & Hansén, 2004).

Nevertheless, the learning outcomes from past crises and reflection on them may still inform decisions and responses during current disasters (Stern, 1997). Experiences from past crises may take the form of organizational memory that enables individuals to respond adaptively to current situations (Dekker & Hansén, 2004). Updated policies and organizational structures, which serve to support the cognitive and behavioral capacities of relevant responders by easing the burden of contingent assessment and decision making during current crises, may create a common ground for multiple stakeholders with different resources and competencies, as Donald Moynihan shows happened in the case of the response to the 2002 Newcastle disease outbreak in California (Moynihan, 2008, 2009; Kamkhaji & Radaelli, 2017).

PROBLEM-ORIENTED GOVERNANCE AND CORE CAPABILITIES

In their widely cited 1973 work on policy planning, Horst Rittel and Melvin Webber illuminated the complex characteristics of policy problems, labeling them "wicked problems." They suggested that science-based, technical approaches are limited because there are "no 'solutions' in the sense of definitive and objective answers" (p. 155). Drawing on their insights, scholars have argued that such problems cannot be solved but that they can be tackled by ensuring that diverse stakeholders—actors with differing, and often conflicting, perspectives—are included in policy processes (Head, 2019; Koliba, Meek, Zia, & Mills, 2018; Alford & Head, 2017). This is because no single organization or sector has the resources or authority to manage a public challenge in a world in which power is shared, and so single sector efforts are likely to fail in addressing a policy problem (Bryson, Crosby, & Stone, 2006). Traditional bureaucratic models of public administration in which the government takes unilateral action and adopts siloed approaches are not adequate in the face of complex and enduring societal problems in contemporary governance settings.

The recognition of persistent wicked problems and sector failure in turbulent environments has led to the adoption of collaborative governance processes (Ansell & Gash, 2008; Koliba et al., 2018). While different terms are in use in the literature—"new governance" (Bingham, Nabatchi, & O'Leary, 2005), "collaborative management" (Agranoff & McGuire, 2003), "collaborative governance" (Ansell & Gash, 2008), "adaptive governance" (Scholz & Stiftel, 2010), "network governance"

(Provan & Kenis, 2008), "cross-sector collaboration" (Bryson et al., 2006)—they all reference a paradigm shift from a hierarchical, bureaucratic model of government to a collaborative and inclusive one (Bryson, Crosby, & Bloomberg; Lee, 2020). The underlying assumption is that collaboration, dialogue among multiple stakeholders, and deliberation create public value (see Bryson, Crosby, & Stone, 2015, for a review of collaborative public management frameworks).

Among these new frameworks, many scholars use the collaborative governance regime (CGR) framework advanced by Kirk Emerson, Tina Nabatchi, and Stephen Balough (2012). Recognizing that many collaboration frameworks were not generalizable, the authors developed an integrative one that takes into account system context, drivers, collaborative dynamics, outputs, impacts, and adaptation and highlights cyclical collaborative dynamics, which is comprised of three components: principled engagement, shared motivation, and capacity for joint action. Although collaborative governance has the potential to craft innovative policy solutions and cope with the new challenges that traditional Weberian bureaucratic governments cannot address (Moore & Hartley, 2008), a recent "problem orientation" turn in various fields of research suggests that collaboration will not suffice in addressing complex, entrenched social ills. Even if multiple actors and organizations collaborate, they will not make progress without learning about the problem at hand, reorganizing their capacity, and reimagining the possible responses.

Drawing on the notion of problem orientation and on research pertaining to multiple streams of governance, Quinton Mayne, Jorrit de Jong, and Fernando Fernandez-Monge (2020) provide a unified analytic framework of "problem-oriented governance" well suited for the study of the capabilities a state needs to develop to better cope with wicked problems like the COVID-19 pandemic. They argue that the problem itself, rather than institutional arrangements, should drive policy design and implementation. Since wicked policy problems are multifaceted and evolve over time, policy actors need to keep learning and enhancing their capabilities for problem solving. Problem-oriented governance, they argue, requires three core capabilities: reflective-improvement, collaborative, and data-analytic.

Reflective-improvement capability refers to "an organization's ability to articulate a theory of change around a nominated public problem and its ability to measure performance, learn, and adapt" (Mayne et al., 2020: p. 39). It is similar to the core element of adaptive governance that emphasizes both structure and flexibility in coping with public problems (Scholz & Stiftel, 2010). This capability is directly related to intercrisis and intracrisis learning processes and outcomes because it enables states to reflect on what did and did not work in all the phases of a given policy response, the result of which is that the state is able to improve organizational structure and man-

agement systems, making them better suited to tackling ongoing and future incidents. Both structure and flexibility are crucial for effective responses to crisis situations: emergency and crisis management systems in general function better when they are designed in advance through formal procedures, especially when the policy process to be determined involves multiple organizations and agencies (Siegel, 1985), but there is always a need for adaptability and even creativity to address unforeseen demands while managing unprecedented crises (Kendra & Wachtendorf, 2003).

Within a rigid hierarchical system, different organizations—with their own goals, institutional and cultural background, work practices, incentives, and accountability structure—may differ in their interpretation of the problem at hand, and "bureaucratic political motives" may lead them to avoid communication and information sharing in an effort to protect the organization's external image and share of governmental resources by covering up poor performance (Moynihan, 2009: p. 190; Stern, 1997: p. 78).

Collaborative capability refers to an organization's ability to form policy network among different kinds and levels of responding entities and facilitate communication and coordination among them to achieve their shared strategic goals in the event of complex public problems (Mayne et al., 2020). This property of problem-oriented governance is in line with the core element of both collaborative and adaptive governance frameworks, both of which emphasize the formation and adoption of a new form of governance institution that can deal with wicked problems through collective work and concerted effort among public authorities and private entities (Scholz & Stiftel, 2010: p. 5).

Data-analytic capability refers to "the ability of public sector organizations to collect, process, and analyze different types of information to improve accountability, enhance motivation, and adapt their theories of change based on an improved understanding of external context, internal conditions, and performance" (Mayne et al., 2020: p. 40). It is a necessary condition for different types of policy learning to take place. For example, explanation-based learning requires identification of the causes of problems, and such identification relies heavily on the utilization of knowledge and information garnered from multiple entities and sources (Stern, 1997). Data-analytic capability institutionalizes and routinizes these data processing practices between and within organizations, allowing them to focus on the strategic goals under challenging situations.

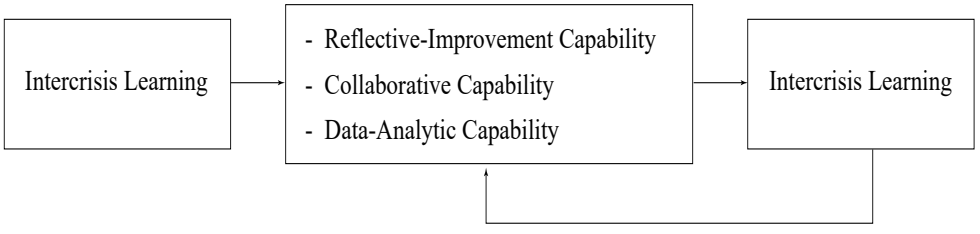
These capabilities for problem-oriented governance include not just mindset, motivation, abilities, and the skills of individual actors within public and private sectors but also the rules, regulations, structure, and functioning of organizations designed to tackle the challenges of public problems. According to Mayne and his

coauthors (2020: p. 36), "This means the capabilities inherent in the design, processes, and activities of individual organizations and multi-organizational collaborations that enable, incentivize, or compel individuals, teams, and networks to remain problem-oriented and excel in problem solving." We argue that problem-oriented governance as a unified and comprehensive conceptual framework is the best tool to use in studying government responses to wicked problems like COVID-19 and the link between intercrisis and intracrisis learning.

BUILDING CAPABILITIES FOR PROBLEM-ORIENTED GOVERNANCE FROM CRISIS LEARNING

Since many wicked problems are complex, multifaceted, urgent, and connected to other issues, it is critical that problem-oriented governance capabilities be cultivated across interorganizational community through iterative processes of learning and adaptation. Building on Moynihan's (2008, 2009) research suggesting a link between intercrisis and intracrisis learning, we explore how developing these capabilities allows intercrisis learning to facilitate intracrisis learning. In particular, we examine South Korea's intercrisis learning between the 2015 MERS and 2020 COVID-19 outbreaks and show how the outcomes of its intercrisis learning shaped its intracrisis learning during the COVID-19 pandemic, paying special attention to the government's commitment to cross-sectoral partnership. We concluded that a significant level of learning has been and is currently taking place, enhancing South Korea's ability to cope with COVID-19. In addition, we also explore whether this enhanced capability fostered by intercrisis learning is in turn a necessary condition for successful intracrisis learning and adaptation in the midst of a new crisis. Our conceptual model is shown in figure 1.

Figure 1. Conceptual Model



METHODS

We adopted a descriptive single case study method (Yin, 2013) to understand learning before and during the COVID-19 response in South Korea. The case study method is appropriate, since we focus the details of contemporary events with longitudinal aspects by asking how intercrisis learning influences intracrisis learning. Owing to the lack of research exploring the mechanisms through which intercrisis learning facilitates intracrisis learning, our case study is exploratory. The observational period for it is from 2015, when South Korea experienced a MERS outbreak, to 2020, specifically, January to June 2020, the first six months of COVID-19 outbreak in South Korea.

We collected data from multiple sources, including relevant journal and news articles, official briefings of central and local governments, government reports of the Korea Centers for Disease Control and Prevention (KCDC), the Ministry of Health and Welfare (MHW), the Ministry of the Interior and Safety, and the Ministry of Economy and Finance that have been published since 2015. We used a keyword search for "COVID," "COVID-19," "corona," "MERS," "MERS-Cov," "response" and "management" in online databases, including ProQuest, the Korean Information Service System, and portal websites to identify relevant literature. We also identified the extant literature using the bibliographies of the articles returned from the database search and searched the government websites (e.g., KCDC, MHW) for additional contextual information.

We then conducted a systematic qualitative content analysis on the data. Drawing on Moynihan's (2008, 2009) work, we coded the most prominent and visible improvements in the three core capabilities of problem-oriented governance. Specifically, we operationalized these core capabilities as a set of characteristics in order to determine what kinds of intercrisis and intracrisis learning occur with each. We operationalized the reflective-improvement capability for intercrisis learning as a set of improvements in formal legislation, structure, and procedures that the South Korean government introduced to better cope with similar infectious disease crises in the future after it had fully reflected on the results of external and internal reviews of its 2015 MERS response. We operationalized the capability for intracrisis learning as how flexible and adaptable the government has been in addressing the complex and unexpected demands posed by the COVID-19 pandemic. We operationalized collaborative capability for intercrisis and intracrisis learning as any institutional or organizational changes that encourage communication or information sharing among relevant organizations between and during crises. Finally, when coding data-analytic capacity for intercrisis and intracrisis learning, we focused on identifying both formal

and informal procedures for managing, analyzing, and disseminating relevant data and information that have been enhanced since the 2015 MERS crisis and during the 2020 COVID-19 pandemic, evidenced by a set of improvements in formal legislation, institutional structure, and practical procedures.

FINDINGS

Intercrisis Learning after 2015 MERS

Reflective-Improvement Capability

Political and public debates over and media attention to South Korea poor performance with respect to the 2015 MERS crisis had the effect of disseminating information about the extent to which the crisis management system had malfunctioned across multiple jurisdictions. This new knowledge or "cognition"—which Louise Comfort defines as "the capacity to recognize the degree of emerging risk to which a community is exposed and to act on that information" (p. 187)—resulted in multiple comprehensive evaluations being conducted by internal and external review boards (MHW, 2016; WHO, 2017), which recommended a series of reforms to make the crisis management system more effective, efficient, transparent, and accountable in dealing with infectious disease crises like COVID-19. These postresponse reports, we maintain, seriously addressed the causes of and solutions to the failed response—that is, they were not "fantasy documents" intended to merely convey the impression that the South Korean government had responded to the critiques (Birkland, 2019: p. 146; Deverell & Hansén, 2009)—because these intercrisis "double-loop learning" outcomes (Argyris & Schön, 1996) led to a fundamental shift in the assumptions behind policy design at the strategic level and to a series of concrete efforts to enhance the state's learning and adaptive capabilities with the goal of improving the response to similar future crises.

The most notable outcome of intercrisis learning from the 2015 MERS crisis was the establishment of a unified incident command system (Moynihan, 2009), which is intended to minimize inefficiency and clarify responsibilities among response actors. As Moynihan explains, "The incident commander is responsible for directing and coordinating the tactical efforts of the multiple organizations involved. A hierarchal structural arrangement facilitates the ability of the incident commander to direct multiple agencies, and typically divides responsibilities between the crisis functions of logistics, operations, planning, and finance/administration" (2009: p. 190). Because

such a system was not well-established during the early stage of 2015 MERS outbreak, the South Korean government was not able to mobilize resources in a timely manner. In the absence of strategic action plans, detailed manuals, and hands-on drills for infectious disease crises, neither central and local governments knew how to respond to the first confirmed case, and so they missed the golden time for early containment of the virus. The hospitals treated MERS-confirmed cases with other regular patients and even hospitalized them in the same rooms without employing specific safety measures other than wearing facial masks. Clearly, there was lack of understanding of the threat among the members of the response community (Comfort, 1999), and the number of confirmed cases increased sharply through infections within and across hospitals.

In the absence of shared cognition and legal, structural, and procedural measures designed to improve the way the government responds to crises, existing bureaucratic practices have been unable to respond to emergent needs associated with unprecedented pandemic crises (MHW, 2016; Schneider, 1992). In this urgent situation, an intracrisis learning process that would foster the government's reflective-improvement capability was not possible. The KCDC as a subdivision of the MHW, did not have the authority or the capacity to function as a "control tower" in responding to the 2015 MERS outbreak. Ten days into the MERS crisis, the MHW was designated as the central authority but it was subsequently criticized for its inability to control and coordinate related response entities and its lack of transparency. As a result of these criticisms, significant efforts have been made to resuscitate the protocols for crisis management that were established two decades ago but had gone by the wayside until the MERS outbreak. The KCDC was upgraded to a vice ministerial–level agency and clearly designated clearly as a central authority for infectious disease response. The KCDC amended its organizational structure and launched a 24/7 emergency operations center. The protocols, which are spelled out in a manual, dictate the mission, tasks, and responsibilities for both central and local governments, which vary according to how much authority each entity has (Lee, Yeo, & Na, 2020).

Another outcome of the MERS crisis was that the South Korean government secured facilities, personnel, and equipment to properly respond to infectious diseases under new regulations and guidelines and engaged in frequent and intensive training drills across the borders, which boosted the competence of responders. The Infectious Disease Control and Prevention Act was revised to provide legal grounds enabling rapid contact tracing, testing, quarantine measures, and the public sharing of patient mobility information. To facilitate early detection and isolation, the law mandated that the KCDC and local governments increase recruitment for and training in epidemiological investigation (Lee et al., 2020).

The healthcare infrastructure and hospital infection management systems were also significantly improved after the dangers and problems of the existing patient management system, which was set up in such as a way as to easily allow the spread of infection in hospitals, were acknowledged. National and regional hub hospitals were designated, where with financial support from central and local governments medical personnel were trained to treat infectious diseases. The Emergency Medical Service Act was also fully revised to minimize the risk of transmission within and between hospitals. The establishment of formal rules, procedures, and governance arrangements fostered the state's capacity for learning and it ability to adapt even further by providing a "common operating picture" (Comfort, 2007) that transformed government institutions' organizational subculture, working practices, and informal norms (Lee et al., 2020; Lee, 2015).

Collaborative Capability

The 2015 MERS crisis also taught the South Korean government the valuable lesson that large- scale public health crises cannot be managed by a single organization. A deeper understanding of the problem and the ability to intervene in a timely fashion and put policy measures into effect that can address the root causes require that widely dispersed resources, information, knowledge, ideas, expertise, and skills need to be brought together within a network made up of multiple public, private, and nonprofit sectors as well as the general public(Moynihan, 2008). Confusion over responsibilities and accountability abounded in the case of South Korean's response to MERS largely because the government did not have strategic plans and guidelines mandating coordination among parties in place. The rigid bureaucratic system that characterizes the South Korean government did not encourage the sharing information among governmental organizations or with professionals, the private sector, and the general public. Indeed, it was only after virus had spread to an unmanageable level that the MHW came to assume the role of intergovernmental leader. With little infrastructure and resources, however, the government sought to cover up the failing response system and blame others.

In the wake of the failed response to MERS, the South Korean government has gone a long way toward realizing Moynihan's vision of collaborative capacity that encourages "the development of a single and common set of goals and strategies," enables "coordination and the flow of information," makes clear what the "responsibilities and restrictions [are] for each actor," and maximizes the effectiveness of the overall response (2009: pp. 190-191). Collaborative capability has been enhanced significantly in terms of breadth and depth of interactions among the members of

governance community since 2015 (Chang, 2017). The series of structural and legal reforms enacted promoted mutual understanding and support across organizational boundaries. Pangovernmental efforts were reinforced through multiple drills and training in accordance with the established guidelines. The KCDC, for instance, established an emergency operations center and conducted emergency drills regularly based on hypothetical scenarios of an infectious disease crisis such as ab Ebola outbreak, and the revised field manuals for response efforts clearly state not just the general mission and task but also specific procedures and actions need to be taken by multiple central government departments, local governments, and private sector experts at each stage of emergency progression ranging from infectious disease alert level 1 to level 4. Officials also realized that the governance structure needed to be highly centralized to facilitate efficient coordination and management during the acute phase of a crisis, even if a more loosely affiliated network is adequate in non-crisis routine situations (Moynihan, 2009: p. 190).

Efforts at the national level were followed by the adoption of similar crisis preparation and management systems at the local government level and by private hospitals, the goal being to facilitate collaboration and coordination. The years in between the MERS and COVID-19 outbreaks enabled collaboration among different parties to be significantly strengthened, which has proved invaluable to intracrisis learning during the COVID-19 pandemic. In sum, the government was able to effect change in both explicit standards (e.g., laws, regulations, manuals) and implicit norms, or, "theories in use" (Argyris & Schön, 1996).

One of the most notable improvements under the restructured emergency management system has been the enhancement of mutual trust and joint capacity between central and local governments. In sharp contrast the 2015 MERS outbreak, during the COVID pandemic, each local government has taken preemptive measures with the strong support of the central government. As a result of intercrisis learning, local governments now have the authority to initiate epidemiological investigations and request relevant information for tracing suspicious cases. Thus empowered, local government were also able to establish local disaster and safety countermeasures headquarters that they equipped with substantial supplies, manpower, and other necessary resources. In addition, the KCDC established an alliance between the public and private sectors on infectious disease testing in 2017 to build cross-sector relationships and thereby leverage diverse professional and expert skills (Lee et al., 2020). To prevent the spread of infection within hospitals and hospital-to-hospital transmission, in 2017 the KCDC also sponsored the creation of the Korean Society for Health-Care Associated Infection Control and Prevention, whose job is to establish standard guidelines for the prevention of infection within hospitals.

Data-Analytic Capability

Another important lesson learned from the 2015 MERS crisis was the importance of data- and evidence-based approaches in managing problems and of sharing of accurate information regarding them, which can prevent the confusion, misunderstanding, and fear that ungrounded speculations and rumors can give rise to. KCDC did not have much information on the new corona virus that had originated in Southeast Asian countries and thus was unable to guide the public and private hospitals on how to diagnose and treat confirmed cases. The reason it did not have much information was partially because at the time there was no division within KCDC that specialized in monitoring and researching the origin, nature, and progress of infectious diseases. KCDC even declined the request from a local hospital to further investigate a case that looked like it might be MERS simply because the country the patient had traveled to was not listed as one of those with confirmed MERS cases. Medical doctors thus ended up treating this MERS-infected patient as a typical pneumonia case and failed to prevent the patient from visiting multiple hospitals located in different regions, which allowed the virus to spread. Even after acknowledging the fact that hospitals treating confirmed cases could be a breeding ground for the spread of virus through health care workers, patients, and families and visitors of patients, the South Korean government did not share the names of the hospitals that were treating confirmed cases. Moreover, those hospitals continued to treat MERS-confirmed cases with other patients in the same facilities and using the same procedures. Not surprisingly, the number of confirmed cases increased sharply (Ki, 2015). Such a sudden surge of confirmed cases panicked the general public, inciting even more fear and anxiety about the disease (e.g., "MERS might be an airborne disease," "the virus is mutated"), and this spread of disinformation in turn made it extremely difficult to carry out an initial epidemiologic investigation and implement preventive measures for contact tracing, testing, isolation, and treatment of confirmed cases, which led to uncontrollable spread of the virus.

Under the common operating framework reestablished after 2015 MERS crisis, the South Korean government attempted to collect and combine data from multiple sources and to share this data promptly with relevant parties and the general public. The KCDC also launched an official risk assessment system in 2016—emulating the European model—to evaluate the overall risk of various infectious diseases, how likely they were to be imported, and the risk of transmission of them. After the first case of COVID-19 was reported in Wuhan, China in December 2019, a total of eight risk assessments were conducted by the KCDC between January 8 and February 19, 2020, which enabled the KCDC to make timely decisions about when and how to

prepare for and initiate the response (Kim et al., 2020). South Korea was not only able to provide diagnostic testing kits early on in the pandemic but was also able to track and test those who might have been in contact with confirmed cases by taking full advantage of South Korea's world-class data and network infrastructure (e.g., credit card usage data, CCTV recordings, and GPS system on mobile phones). Relevant but deidentified information was promptly disclosed to the public via online data-sharing platforms to expedite diagnostic testing, isolation, and self-quarantine of those who may have contacted the confirmed patients. Although this approach entails a trade-off between privacy and public safety, the majority of the public understood the potential risk of the disease and supported these rather intrusive measures for the early containment of the virus.

Intracrisis Learning during COVID-19

Reflective-Improvement Capability

It was not long before the intercrisis learning outcomes from the 2015 MERS crisis were put to the test. Thanks to the systematic incident command system and the formal procedures that institutionalized early detection and control measures under common response protocols, South Korea was able to avoid repeating the mistakes it had made in 2015 by implementing rapid if intrusive measures to the stem the tide COVID-19 cases. More importantly, the scope of the problem ended up exceeding the existing response system, and so the public health management system did not at first work as envisioned, but the state's reflective-improvement capability was further enhanced as a result of these unforeseen challenges. Such enhancement resulting from crisis learning is iterative, specifically, an instance of what Matt Andrews and his coauthors (2017) call "problem-driven iterative adaptation." This improved reflective learning and ability to adapt helped diverse policy actors focus on the common goal of tackling COVID-19, motivating them through clearly articulated accountability mechanisms.

Learning and adaptation during the crisis manifested themselves in several policy changes. First, after acknowledging inherent limitations in the existing incident command system and restrictions on KCDC's capacity to serve as a central authority in directing and coordinating the actions of multiple public and private sectors during the first months of COVID-19 outbreak, in June 20202, the South Korean government, with a strong support from the president and many politicians, decided to revise the Government Organization Act primarily to further empower KCDC. Under the revised act, the KCDC has been upgraded to an independent agency that can

recruit and train personnel to engage in research and epidemiological investigations and that can open regional branches to ensure more consistent and efficient implementation of strategies and plans. It was an unprecedentedly swift decision because it took less than 40 days from public debates to a submission of the bill to the congress, especially considering that the same recommendation made earlier by the Korean Medical Association and the Korean Society of Infectious Diseases after the 2015 MERS crisis came to nothing. In addition, guidelines and instructions that incorporate the most recent data and other useful information and that detail the roles and responsibilities that central and local governments, hospitals, and even the general public should assume are facilitating efficient and effective responses. Such intracrisis learning has been made possible by the structural and legal procedures established in the wake of the 2015 MERS crisis.

The Infectious Disease Control and Prevention Act was also once again revised substantially in March 2020 to make it easier for responders to better implement the "boxing method" (contact tracing, diagnostic testing, isolation, treatment), which has been proven to be effective for containing the virus. The revised law requires the MHW to make public information such as the travel routes, means of transportation and potential contacts of confirmed cases via the internet and social media so as to allow for rapid control and prevention of further infection. The revised law also specifies procedures for formally objecting to this information-sharing mandate when the protection of personal information is at issue, prohibits the exporting of medicines and other products (e.g., facial masks) to ensure there are enough domestic supplies (a shortage during the surge of confirmed cases in February 2020 is what motivated this revision), and authorizes the enacting of penalties when patients suspected of having the virus who have been in close contact with large numbers of people refuse to be tested and treated. Thus, drawing on the lessons learned while responding to the first wave of the COVID-19, the government has reformed legal provisions associated with infectious disease response during a state of emergency while also protecting civil rights. Without intercrisis learning from MERS, it is less likely that these modifications and improvements that are constantly being made as part of ongoing intracrisis learning would be being made.

After experiencing chaos even with the substantially improved health care infrastructure and patient management system introduced as an outcome of intracrisis learning after MERS, the South Korean government and medical professionals realized that even well-functioning systems during normal situations can be paralyzed when there is a sudden surge of patients due to unexpected mass contagion (e.g., via religious groups, large workplaces, and public gathering places). Such intracrisis learning engendered even more efficient measures for managing patients, such as

innovative screening centers (e.g., walk-through, drive-through, and phone-booth styles) and residential treatment centers for those with relatively minor symptoms. This kind of response has been made possible by the shared cognition of risk and an understanding of the nature of the virus (i.e., the virus is most contagious when it is in the incubation period and the majority of the confirmed cases manifest relatively minor or even no symptoms until they fully recover). The rapid introduction and implementation of these innovative measures enabled the quick and safe testing of large numbers of people, and that in turn allowed the response system to focus strategically on the most severe patients when there was an unexpected surge of suspicious and confirmed cases.

Collaborative Capability

The intercrisis learning outcomes that built state's collaborative capability contributed to the successful initial response and continued intracrisis learning during the COVID-19 pandemic, The KCDC activated the network of public and private sector organizations multiple times immediately after the first case was confirmed in South Korea (January 19, 2020) and was thereby able to avoid the mistakes made during the 2015 MERS crisis, when there was limited collaboration and information sharing. Because they shared information about the nature of the disease to early enough, they were able to minimize the harms and costs of the virus. The South Korean government began to grant fast-track approvals for the mass production of test kits on February 4, increasing the maximum daily testing capacity from 3,000 on February 7 to 18,000 on March 16 (Ministry of Economy and Finance, Republic of Korea, 2020). Considering this proactive response was unprecedented in the history of South Korea, we believe that conscious efforts after the MERS outbreak to build collaborative capability (intercrisis learning) came to fruition and laid foundation for the successful intracrisis learning, which, in turn, reinforced the existing collaborative capability. Such enhanced collaborative capability also facilitated communication and innovative collaboration among private parties at the peak of pandemic—

for example, the world's first drive-through screening centers, which were set up after a mass infection of a secretive religious group in Daegu city in February 2020 put unmanageable demands on the existing testing system. A doctor at a conference held after the 2015 MERS crisis was the first to bring up the idea of a drive-through testing center, and when doctors working in Daegu found themselves dealing with a mass infection that was spiraling out of control, they asked the doctor to thoroughly explain how it would work, and then they implemented it. The drive-through testing center was thus the result of ongoing collaborative efforts among professionals via

diverse venues.

Such enhanced collaborative capability also enabled the suppression of seemingly uncontrollable mass contagions from unknown sources. During the early stages of the pandemic, it became clear that the limited number of epidemiological investigators and medical workers were not able to manage their workload when there was a sharp and rapid increase of confirmed cases due to unexpected mass contagion. Because collaborative capacity had been strengthened considerably in the five years that had passed since the MERS crisis, it was possible to recruit many investigators and medical personnel voluntarily in various regions of the country through their own network platforms to assist with the workload. Unlike in 2015, the central government also undertook joint investigations with local governments and dispatched the KCDC's immediate response team to regions experiencing a shortage of personnel and resources due to mass contagions (Ministry of Economy and Finance, Republic of Korea, 2020). These well-coordinated cross-boundary alliances made it possible for the national and local governments to work together to design, implement, and evaluate policy response at different phases of the COVID-19 pandemic. These examples illustrate how a mix of planned and improvised organizational networks that allowed for better coordination grew out of both intercrisis and intracrisis learning (Boo & Dudley, 2012). Unprecedented "wicked problems" necessitate innovative approaches, and collaborative capability stimulates such innovation by empowering field officials, experts, and citizens who are willing to share ideas and extend their support to take action in order to achieve the common goal of securing public health and safety.

Data-Analytic Capability

With the extensive data collection of multiple sources and a series of rigorous risk assessments at its disposal, KCDC quickly shared information regarding and initiated a collaborative response to the first confirmed COVID-19 case in South Korea. One of the most notable actions taken by KCDC was its sharing of data and information about the unique characteristics of COVID-19 (e.g., its generic structure and incubation period as well as symptoms of it at different stages of infection) with medical personnel, testing kit manufacturers, and many other actors in positions of authority. It was the decisive measure to produce testing kits in large quantities early on that enabled rapid epidemiological investigation and containment of the virus at a manageable level; without the critical information garnered from the early assessment of the first confirmed COVID-19 case in addition to the after-the-fact assessment of 2015 MERS suggesting that the virus is most infectious at the early stage—even

before the symptoms of the virus infection emerge—authorities would not necessarily have known that early and large-scale testing was the key. Intercrisis learning from a similar outbreak in the past and explanation-based learning during the acute phase of the current outbreak facilitated intracrisis learning processes that continue to help minimize the potential threat posed by the virus.

In addition to deploying the existing data sharing system allowing epidemiological investigators to use CCTV footage and to access an individual's medical records, cell phone, GPS tracking device, credit card transaction records to track down those who were potentially exposed to the virus, on June 10, 2020, the South Korean government decided to mandate a new quick response code system, which requires individuals to scan a personalized code at the entrance of high-risk public gathering and entertainment facilities such as karaoke lounges, bars, daytime discos, nightclubs, indoor gyms, indoor concert halls, restaurants, and churches. This is a typical example of intracrisis learning because the authorities learned that even after implementing the technological tools and legal procedures required to trace contacts for isolation and quarantine, it was extremely difficult to locate all the potential contacts of confirmed cases unless every patron was registered and their information retained electronically. Before implementing this measure, response teams had struggled trying to trace transmission through entertainment venues such as nightclubs and bars in which super-spreaders spent time without wearing protective gear. The government has also encouraged other high-risk public facilities such as public libraries, movie theaters, and hospitals to adopt this approach in the case of citizens who are willing to consent to it. To protect privacy, the person's information will be logged in a database kept by the Social Security Information Service for four weeks before it is automatically deleted, according to the MHW.

CONCLUSION

To better address challenges and threats posed by unprecedented, complex, and urgent "wicked problems" (Rittel & Webber, 1973), governments need to change their structures and institutional arrangements and the way they function. Building on Moynihan's (2008, 2009) research suggesting a link between intercrisis and intracrisis learning and Mayne and his colleague's (2020) conceptual framework of problem-oriented governance, we have discussed how intercrisis learning affects intracrisis learning, showing how by developing three core capabilities, the South Korean government was able to improve its infectious disease response. The white paper published by the MHW after the 2015 MERS crisis (MHW, 2016) notes that South

Korea's failure to successfully manage the 2015 MERS crisis was attributable primarily to the absence of a prior opportunity to build the capacity to learn and adapt, the lack of communication and collaboration among central/local governments, nongovernmental organizations, private sector, and nonprofit sectors, and the failure to collect, process, analyze, and disseminate different types of data and information.

Owing to reform efforts and shared experiences over the past five years, diverse actors within multiple jurisdictions have developed knowledge and a common understanding of the nature of novel corona viruses as well as the capacity to address similar infectious diseases that might emerge in the future. Such goal-driven learning and adaptation prepared South Korea for the COVID-19; such capacity-building efforts to learn from and improve on past responses, to communicate and collaborate so as to maximize efficiency and transparency, and to make good use of data and analytic tools were instrumental in South Korea's early containment of the virus. More importantly, such structural and institutional reforms had the effect of removing barriers to intracrisis learning. For example, South Korea learned the invaluable but painful lesson from the 2015 MERS outbreak that a lack of these capabilities is a barrier to crisis-induced learning and that without such learning the tendency of organizations to defend their actions when they are critically questioned kicks into gear and cripples the ability to response effectively to crises (Moynihan, 2009: p. 192). In the wake of the 2015 MERS crisis, South Korea worked to build collaborative capability by improving the formal and informal procedures through which organizations can cooperate; this had the effect of encouraging intracrisis learning during the acute phase of COVID-19, and interorganizational networks, functioning as collective learning units, facilitated innovative approaches to achieve shared goals in a complex and an uncertain situation.

We conclude that due to the enhanced capabilities characteristic of a problem-oriented governance that the South Korean government developed in the intercrisis learning period after the 2015 MERS outbreak, it was able to implement effective and strategic measures at the initial phase of the COVID-19 pandemic and to continue to improve its crisis management system through ongoing intracrisis learning rather than resorting to "uncoordinated patchworks" (Kim, Oh, & Wang, 2020). Successful intercrisis learning requires organizations to undertake a range of evaluations that can help them reflect on and identify the factors that led to disconnection between the goal at the initial stage of a given crisis and the actions those organizations took to achieve that goal—what Eric Stern (1997) calls "explanation-based learning."

Intracrisis learning, on the other hand, tends to be "work in progress" (Johnsen, 2005: p. 14; Moynihan, 2009) and often entails "problem-driven iterative adaptation" (Andrews et al., 2017: p. 83). In the absence of evidence-based knowledge or practi-

cal lessons learned from prior experiences, a scientific and systematic approach to understanding the root causes of the problem and the link between those root causes and the policies deployed to address them is extremely difficult especially when the problem is still ongoing and even aggravating (Stone, 1989). Thus, even if it does not necessarily yield scientifically well-established causal models, successful intracrisis learning expedites the adoption of the most plausible and feasible measures and minimizes costs associated with trial and error during the acute phase of a constantly evolving crisis. Without these concrete lesson-drawing efforts and corresponding reforms, institutional memory is not of much use, especially considering turnover of primary decision makers and staff (Stern, 1997: p. 70).

While the possibility of a second and third COVID-19 wave remains as we write this paper, the South Korean crisis management system continues to make progress and to evolve, allowing it to at least keep the virus at a manageable level even if it cannot permanently contain it. South Korea's performance in the case of the pandemic is an instance of a virtuous circle in which it has developed successful crisis learning processes and built citizens' trust in government's capacity for managing disasters (Dostal, Kim, & Ringstad, 2015; Rockman & Hahm, 2011).

This study contributes to the literature by exploring the factors that facilitate intracrisis learning during the acute phase of crisis and suggesting the possible mechanisms linking intracrisis and intercrisis learning, which are relatively understudied in the research areas of organizational and policy learning in general and crisis learning specifically. While our study of lesson drawing was conducted based on context-specific conditions for effective implementation in South Korea, we are hopeful that the strategies that have proven to be effective in South Korea can help other countries craft their own strategies after they fully consider their own strengths and weaknesses.

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