It’s Politics, Isn’t It? Investigating Direct and Indirect Influences of Political Orientation on Risk Perception of COVID-19

Youngkee Ju and Myoungsoon You∗

Public response to the COVID-19 pandemic provides a unique opportunity to study risk perception in relation to political orientation. We tested a risk perception model of how political orientation influences risk perception of an emerging infectious disease and how it moderates other influences. Two nationwide online surveys in South Korea (N = 2,000) revealed that conservatives showed a higher risk perception regarding an emerging infectious disease, and political orientation can even moderate the influence of perceived risk characteristics on risk perception such as how a liberal orientation exhibited a greater outrage effect of perceived unfairness on COVID-19 risk perception. Also, the frequency of media use is positively related to higher risk perception. The implications of the direct and moderating effects of political orientation are discussed in the context of the studies of political orientation as well as risk perception.

KEY WORDS: COVID-19; media use; political orientation; risk perception

1. INTRODUCTION

The first case of the COVID-19 caused by the novel coronavirus, SARS-CoV-2, was documented on November 17, 2019 in Wuhan, China. By March 20, 2020, there were 237,701 confirmed cases of COVID-19 in 174 countries and 9,794 people had died of COVID-19 across the world. On March 11, 2020, the World Health Organization (WHO) declared COVID-19 a pandemic (Wu & Olson, 2020). South Korea—adjacent to China—became the second epicenter of COVID-19, and experienced a rapid increase in new cases. The first confirmed case of COVID-19 in South Korea was reported on January 20, 2020, and over the next 2 months 8,652 people were infected and 94 people died from COVID-19.

As the pandemic spread across the global community, South Korea became a paradigm for successful prevention of disease spread. Many European countries modeled their response after Korean preventive measures by importing Korean detection kits, adopting drive-through inspections initiated by the nation, or utilizing Korean CDC guidelines. A total of 117 nations asked the South Korean government to export or generously provide detection kits and other tools for preventive measures (Noh, 2020).

Despite the positive world views on how the Korean government coped with COVID-19, citizen petitions were circulated that sought two opposing outcomes. One called for impeachment of the president based on criticism that he did not bar entry to foreigners as the leaders of other countries did, whereas the other expressed support for the president, who they thought was doing his best to respond to the health crisis. The former petition was signed by 1,469,023 Koreans, whereas the latter
gathered 1,504,597 signatures. Although these petitions are only two examples of the 880,000 petitions posted on the website managed by the Blue House, the Korean presidential office, they suggest an equal divide among conflicting attitudes toward government performance during the COVID-19 outbreak in South Korea, and also how political orientation could potentially influence public responses to an emerging infectious disease crisis.

Taking the abovementioned context into account, we investigated whether and how political orientations are involved in different responses to a pandemic disease including varying levels of risk perception and different magnitudes of coping behaviors. We also examined whether political orientation moderates other types of possible influences on perception of the risk presented by a pandemic disease, such as media use and outrage factors (Sandman, 1993). Also, as a comprehensive investigation of pandemic disease risk perception, we examined the main influence of crisis stage.

Although the effect of political orientation on risk perception has been studied for climate or environmental issues such as climate change, local weather, heat waves, and fine dust (Chu & Yang, 2018; Cutler, Marlon, Howe, & Leiserowitz, 2018; Dunlap & McCright, 2008; Ju & You, 2020; Shao & Goidel, 2016), perception of the risk of an infectious disease has never been studied in the context of political orientation. Yang (2016) examined Americans’ response to the outbreak of Ebola virus disease to understand how altruism is related to worldview cultural cognition (i.e., individualism, hierarchy-egalitarianism, anticommunism). However, this study of cultural cognition did not directly investigate the role of political orientation in response to a disease outbreak. Moreover, risk perception in Yang’s study was used as a measure of perceived issue salience, rather than as a dependent variable predicted by cultural cognition. Therefore, in the present study we assessed how political orientation can affect perception of COVID-19 as an emerging infectious disease.

2. REVIEW OF RELATED LITERATURE

2.1. Political Orientation and Its Correlates

In general, political orientation is thought to have a connection to personality traits. Kandler, Bleidorn, and Riemann (2012) conceptualize this orientation as a psychological characteristic of individuals that makes “left-wing people prefer change and equality, whereas right-wing people prefer stability and hierarchy” (p. 633). Conservatism is further specified as “a generalized susceptibility to experiencing threat or anxiety in the face of uncertainty” (Wilson, 1973, p. 259), or motivated social cognition characterized by resistance to change and acceptance of inequality, which serves to reduce fear, anxiety, and uncertainty (Jost, Glaser, Kruglanski, & Sulloway, 2003). By comparison, liberals are open to change and tolerant of insecurity, while preferring equality (Jost et al., 2003, 2008, 2009, 2013; Jost, Stern, Rule, & Sterling, 2017; Thorisdottir, Jost, Livitan, & Shrout, 2007), attaching little importance to individualism and business success (Allport, 1954), and feeling more comfortable with violating social rules or with novel and thrill-seeking experiences (Carney, Jost, Gosling, & Potter, 2008; Hirsh, DeYoung, Xu, & Peterson, 2010; Jost et al., 2003; Lee, Ashton, Ogunfowora, Bourdage, & Shin, 2010; Thorisdottir et al., 2007). One possible psychological characteristic of liberals, based on the abovementioned tendencies, can be epitomized as being less susceptible to experiencing threat or anxiety in the face of uncertainty that Wilson (1973) recognized for conservatives.

Notably, a rapidly increasing number of empirical studies have documented how liberals and conservatives differ in various aspects of life that have little direct connection to politics. For example, liberals are more creative, curious, and novelty-seeking, whereas conservatives are more orderly, conventional, and better organized (Carney et al., 2008). Moreover, individuals in the United States, Canada, and Korea who had a high social conformity orientation were found to be less open to new experiences (Lee et al., 2010). German conservatives are also less open to new experiences (Bakker, Hopmann, & Persson, 2015).

Tendencies in the health behavioral domain were also connected to political orientation. Active behaviors such as flu vaccination, exercise, and seeking health information, in addition to negative behaviors such as consumption of tobacco or excess alcohol were affected by political orientation. In the United States, Democrats and liberals were more likely to smoke cigarettes and drink excessively compared to Republicans and conservatives (Kannan & Veazie, 2018). On the other hand, American Republicans ate more high-fat and processed foods and fewer varieties of fruit and vegetables. They also had lower
odds of flu vaccination and exercise participation, and were less engaged in health information seeking. Based on the abovementioned results, it seems reasonable to consider that political orientation is not a separate characteristic that plays a role exclusively in the political domain. Rather, this construct would be worthwhile to examine as a psychological property that can be associated with the response of an individual to events that occur in various domains of everyday life.

2.2. Political Orientation and Risk Perception

Risk perception by definition is a belief about “potential harm or the possibility of a loss” or “a subjective judgment that people make about the characteristics and severity of a risk” (Darker, 2013, p. 1690). As Douglas (1985) explains, “the best established results of risk research show that individuals have a strong but unjustified sense of subjective immunity” (p. 29). This sense of subjective immunity may be substantiated by “optimistic bias” (Weinstein, 1980) or may be pessimistic among individuals or based on types of risk. Similarly, the premise of a psychometric paradigm for risk perception studies is that ordinary people make a subjective judgement of a risk that is likely to be different from technological, objective risk evaluation (Slovic, 1990).

When considering that political orientations inherently involve susceptibility to experiencing threat or anxiety (Wilson, 1973), investigation of whether perception of risk involves political orientation would be worthwhile. Indeed, multiple studies provide empirical findings that signify the association between risk perception and political orientation. Here, the specific risks that were examined included climate change (Carvalho & Burgess, 2005; Dunlap & McCright, 2008; Hamilton, 2011; Hindman, 2009; Krosnick, Holbrook, & Visser, 2000; McCright & Dunlap, 2011; Wood & Veditz, 2007; You & Ju, 2020), local weather change (Shao & Goidel, 2016), heat wave (Cutler et al., 2018), and fine dust (Ju & You, 2020). The proportion of Democrats in the United States that supported the concept of global warming, for example, increased from 47% in 1998 to 75% in 2008, whereas the percentage of Republicans decreased from 46% to 41% during the same period, signifying that climate change risk perception varied according to party affiliation (Dunlap & McCright, 2008). In a survey of residents living in the Gulf Coast region of the United States, too, Republicans perceived the local weather as being largely unchanged, whereas Democrats were more likely to believe that the climate had in fact changed (Shao & Goidel, 2016).

Together, these studies indicate that conservatives have a lower level of risk perception for climate change or changes in local weather. On the other hand, conservatives tend to recognize the “central importance of business and industry in society” (Kerlinger, 1984, p. 17), whereas a liberal “de-emphasizes the importance of rugged individualism and business success...” (Allport, 1954, p. 431). In this context, conservatives were more willing to take risks to obtain gains in the financial domain (Choma, Hanoch, Gumerum, & Hodson, 2014). In another context, political conservatism was also associated with perceiving “personal danger” hazards as riskier, whereas a liberal orientation was associated with heightened risk concerning collective or shared hazards (Choma, Hanoch, Gumerum, & Hodson, 2013).

2.3. Political Context in Korea

The abovementioned variations in the association between risk perception and political orientation across multiple risk domains suggest that risk perception of COVID-19 may also be affected by political orientation. Such effects are even more relevant considering that the rapid spread of SARS-CoV-2 could be perceived as both a personal and collective threat to society. Risk perception could likely be increased for conservatives and liberals, who are more susceptible to personal threats and sense a collective threat to the global population, respectively.

In Korea, where rapid economic development occurred under military dictatorships for around 30 years (1960s–p1980s), conservatives are characterized as having “Park Chung-hee syndrome,” which includes favoring the economic achievements of this former military dictator, support for recognition of the inevitability of developmental dictatorship, and prioritizing national security and developmentalism (Kim, Lee, & Cheong, 2011). Korean liberals referred to as “Jinbo” are progressives who oppose antidemocratic practices of the dictatorship to a greater degree than they value economic growth. Although military dictatorships do not occur in Western democracies, prioritizing economic growth or financial benefit are tendencies that are shared by both Korean and American conservatives. Individuals in the United States and Korea who are inclined to social conformity consistently are less open to new
experiences, signifying identical traits for political orientations in both regions (Lee et al., 2010). In this context, we examined two research questions regarding the association between political orientation and COVID-19 risk responses. Examination of the second question in terms of preventive behaviors is based on an earlier study concerning political orientation and health behavior (Kannan & Veazie, 2018):

RQ1a: Do Korean conservatives show higher risk perception of a newly emerging infectious disease than liberals or vice versa?
RQ1b: Do Korean conservatives engage in more preventive measures than liberals or vice versa?

2.4. Media Use and Risk Perception

As another factor, news media are considered a key station of amplification of a risk in the social amplification of risk framework (SARF, Kasperson et al., 1988), and are responsible for increases in concern of individuals about risk. In terms of media psychology, new media can amplify perceived risk since news coverage of a risk can magnify its accessibility in the public mind (Kasperson et al., 1988). Accessibility refers to the “activation potential” of knowledge in memory (Higgins, 1996). Increased news coverage can increase the activation potential of a risk. When the accessibility of a social issue heightens, it becomes “an important issue for society” in the public mind, thus producing an agenda-setting effect (Iyengar, 1990; Price, Tewksbury, & Powers, 1997). Similarly, heightened accessibility of a risk is expected to lead to a higher risk perception.

Empirical findings supported risk amplification by media. Media use heightened the perception of various types of risk, such as wildlife threats (Hart, Nisbet, & Shanahan, 2011), alcohol-related injuries (Slater & Rasinski, 2005), haze in China (Wu & Li, 2017), and fine dust in Korea (Ju & You, 2020), as well as food risks such as consumption of beef (Frewer, Miles, & Marsh, 2002), and other risks related to foods including “pesticides,” “additives in processed foods,” “food preservatives,” (Fleming, Thorson, & Zhang, 2006), and processed/seafood imported from China and Japan to Korea (You & Ju, 2017).

It is also notable that media can potentially attenuate risk perception depending on how messages are framed (Glik, 2007; Rickard, McComas, Clarke, Stedman, & Decker, 2013; Lewis & Tyshenko, 2009; Gore, Siemer, Shanahan, Schufele, & Decker, 2005). People’s risk perception from encountering black bears, for example, was reduced by media coverage that emphasized the extremely low probability of encountering bears (Gore et al., 2005). The risk of Mad Cow Disease was also attenuated in Canada compared to European nations and Japan, since during this time the Canadian media focused more attention on SARS and the war in Iraq (Lewis & Tyshenko, 2009).

For COVID-19, it seems reasonable to expect that this new pandemic disease would be subject to risk amplification by the media, considering the unprecedented magnitude of health threats associated with this virus for the global community. From an evolutionary perspective of news, people are considered to have a biological need to survey the environment, and news media thus “fulfill people’s innate desire to detect threats in the environment…” (Shoemaker, 1996, p.32). News media are likely to cover COVID-19 as part of their journalistic function of detecting threats, just as they would for coverage of wildlife threats or risks accompanying consumption of certain foods or exposure to fine dust. Increasing amounts of news coverage under the motivation of detecting threats can lead to heightened accessibility of COVID-19 that in turn increases risk perception among the public. Based on this rationale, we tested the following hypothesis:

H1: More frequent use of news media is associated with higher risk perception of COVID-19.

2.5. Interaction Effects on Risk Perception

Baron and Kenny (1986) suggested that the relationship between the main predictor and the predicted outcome can be better understood by examining moderating conditions. In this respect, investigation of whether political orientation elicits moderating conditions that interact with other possible influences on risk perception is also promising. We therefore examined the interaction of political orientation with another main factor, media use, on risk perception of COVID-19:

RQ2a: Does political orientation moderate the influence of media use on risk perception and coping behaviors associated with COVID-19?
Political orientation can also be examined in light of its interaction with other influences on risk perception. In particular, multiple studies examined how risk characteristics influence the level of risk perception across various types of risk, either under psychometric paradigms (Fischhoff, Slovic, Lichtenstein, Read, & Combs, 1978; Slovic, 1990) or from the perspective of outrage factors (Ju, Lim, Shim, & You, 2015; Sandman, 1993). Outrage factors in particular were regarded as qualitative risk characteristics that elicit emotive responses of the public to a risk that then lead to heightened risk perception (Sandman, 1993). These emotion-eliciting factors were found to be influential in public responses concerning various types of risk, such as food risk (You & Ju, 2017; You et al., 2019; Heyes, 2012), climate change (You & Ju, 2020), and fine dust (Ju & You, 2020). In this study we controlled for outrage factors, and therefore could also examine whether political orientation moderates possible outrage effects on infectious disease risk perception, via another research question:

RQ2b: Does political orientation moderate the possible influence of outrage factors on risk perception and coping behaviors associated with COVID-19?

2.6. Variances of Influences at Different Disease Outbreak Stages

Nations across the world, including South Korea, were faced with a health crisis caused by the COVID-19 pandemic. Crises such as the COVID-19 pandemic have a life cycle. Fink (1986) suggested that this cycle has four stages: “crisis buildup,” “crisis breakout,” “abatement,” and “termination”, whereas Reynolds and Seeger (2005) suggested five stages: “from risk, to eruption, to clean-up and recovery on into evaluation” (p. 51). The crisis and emergency risk communication framework (CERC) developed by the U.S. Center for Disease Control and Prevention (CDC) suggests a simpler set of crisis stages consisting of precrisis, crisis, and postcrisis based on an earlier study (Coombs, 1999). Crisis communication research converges on basic premises that each stage of a crisis has its own dynamics, needs, and challenges, and thereby requires different organizational responses and varying types of crisis communication throughout each stage (Rickard et al., 2013; Sturges, 1994).

Taking crisis stages into account, Beaudoin (2007) examined how news framing of the 2003 outbreak of SARS changed over time and reported that the news media focus on responsibility attribution and severity of damage increased over time. When newspaper editorials addressing the Middle East Respiratory Syndrome (MERS) outbreak in 2012 were examined, public health was the most salient throughout the whole outbreak, whereas the frequency of references to leadership increased and personal efficacy information decreased over time (You, Joo, Park, Noh, & Ju, 2017). The abovementioned finding that journalism behaviors can vary across different stages of a health crisis raises the question of whether variance in public response could similarly occur throughout the COVID-19 crisis. We thereby further examined whether the association between political orientation and risk perception as well as whether risk perception and coping behaviors themselves varied across time using the following two research questions:

RQ3: Does risk perception or coping behavior regarding the COVID-19 pandemic vary across different stages of the health crisis?

RQ4: Does risk perception or preventive behavior vary by political orientation in different ways across different stages of the health crisis?

3. METHOD

3.1. Data Collection

Data were collected from two consecutive nationwide online surveys that each involved different sets of 1,000 Korean adults and were conducted by a professional survey agent in South Korea. The first survey was conducted between January 31 and February 4, 2020, immediately after the government upgraded its alarm system level from “alert” to “warning” after several dozen COVID-19 cases were confirmed, but no deaths related to COVID-19 had been recorded. The second survey was conducted around one month later between February 25 and 28, 2020, which was about one week after the government raised the level from “warning” to “grave”—the highest level of urgency in the Korean national warning system. The number of confirmed COVID-19 cases rose from 977 in the first survey period to 2,337 in the second survey period, and the average daily number of new infections increased from two to 376 cases during the same periods. Based on these trends, we considered the first survey period to be
the crisis buildup, whereas the second period represented the peak of the virus crisis (Fink, 1986).

A quota sampling method was used to survey the proportionate ratio of people compared to the overall Korean population in terms of age, gender, education, and residential area. The survey agent invited 5,290 and 8,077 people in their panel list to participate in the first and second surveys, respectively, and 1,000 people completed online questionnaires for each survey (18.9% and 12.4% response rate, respectively). The response rate was slightly lower for the second survey that was conducted during the crisis breakout, and thereby more people were invited to participate compared to the first survey. Each survey took about 15 minutes to complete, and the participants were compensated with 5,000 Korean won.

Each survey included responses from 494 males (49.4%) and the average age of respondents was 46.99 and 47.04 years-old, which is four years older than the average age of the South Korean population (42.6 years old). Among the populations for the first and second surveys, 42.3% and 47.0%, respectively, had a college degree or higher. This is slightly lower than the Korean adult population (25–64 years old), half of which (50.5%) had some higher education (Hwang, 2020). The most common monthly household income level for the first survey was 7.00 million won ($5,766) or more followed by 3.00–4.00 million won ($2,471–3,295) and for the second survey was 3.00–4.00 million ($2,471–3,295) and more than 7.00 million won ($5,766). The data for income level of the survey participants essentially approximated the average household income of Korea in 2019, which was 4.86 million won.

3.2.3. Control Variables

Although we focused on the role of political orientation and media use in this study, multiple factors that can have influences on risk perception across various types of risk have been studied. We could not control for all of these factors in this study but did take into account several possible factors such as sociodemographic factors (e.g., age, gender, education, and income). The other factors considered were trust, perceived health status, and outrage factors, which in previous empirical studies were reported to be influential on risk perception (Chen & Li, 2007; Ju & You, 2020; Siegrist, 2000; Slovic, 1993; Terpstra, 2011). Trust was measured by asking the respondents to rate their trust in seven institutions, such as Blue
Table I. Measurement of Variables

| Variables                          | Questions/Statements                                                                 |
|-----------------------------------|--------------------------------------------------------------------------------------|
| Risk perception (Cronbach’s $\alpha = 0.51$) | ■ What is the likelihood that you will be infected by the virus?  
■ (1 very low likelihood—5 very high likelihood; $M = 2.74, SD = 0.90$)  
■ How serious would the health influence or damages be if you are infected? (1 not very serious—5 very serious; $M = 3.85, SD = 0.85$)  
■ During the recent week, how frequently did you take following actions?  
■ (1 never; 2 sometimes; 3 frequently; 4 always)  
■ Wearing a mask when going out ($M = 3.12, SD = 1.02$)  
■ Washing hands after returning home ($M = 3.47, SD = 0.70$)  
■ Avoiding public transportation ($M = 2.62, SD = 1.20$)  
■ Avoiding public places such as terminals, libraries, and cafes ($M = 2.73, SD = 1.14$)  
■ Avoiding hospitals ($M = 2.08, SD = 1.14$)  
■ Avoiding sending children to school ($M = 3.60, SD = 1.65$)  
■ Where do you think your ideological tendencies lie? (0 progressive; 5 neutral; 10 conservative) ($M = 4.97, SD = 1.89$)  
■ How frequently did you search for and use news concerning COVID-19 during the past week? (1 never; 2 rarely; 3 sometimes; 4 frequently) ($M = 3.52, SD = 0.69$)  
■ 1st survey = crisis buildup, 2nd survey data = crisis breakout

Health behaviors (Cronbach’s $\alpha = 0.60$)  
Political orientation media use  
crisis stage

House, Department of Health & Social Welfare, local governments, Korean Center for Disease Control, two public medical institutions, and the news media. A four-point Likert scale was used (1 = never trust, 2 = rarely trust, 3 = trust a little, 4 = trust very much). The level of trust was determined by averaging the scores for the institutions, and the inter-item reliability for the seven measures was good (Cronbach’s $\alpha = 0.87$). Perceived health status was measured on a five-point scale with the question: “How good is your current health status?” Each of 15 outrage factors were controlled for based on our previous study (Ju & You, 2020) and were measured by asking respondents to rate a statement that was developed using the conceptual explanation of outrage factors derived by Covello and Sandman (2001). As an example, for controllability, respondents were asked to rate the degree of agreement with the following statements: “Risk from COVID-19 is similar to risks associated with driving or bike riding that are under our control.” (1 = strongly disagree; 5 = strongly agree).

3.3. Analysis

In general, all the analyzed statistics were obtained by combining the data from the first and second survey. Only the third and fourth research questions were examined using separate data from each survey. We conducted multivariate regression analyses to test models of influences of political orientation and media use on COVID-19 risk perception and relevant coping behaviors with controls for outrage factors. Some demographics (age, gender, education, and income), perceiver characteristics (trust, social support, and perceived health status), and crisis stage were also entered into the model. Furthermore, we examined whether political orientation interacts with media use, crisis stage, and outrage factors in the multiple regression model.

To diminish multi-collinearity in the interactive regression model, factors for which an interaction effect was tested were mean-centered (Aiken & West, 1991). Interplot in the R software package was used to visualize the direction of interactions (Helgeson, van der Linden, & Chabay, 2012) as well as changes in coefficients for media use and control variables induced by political orientation as a potentially significant moderator.

4. RESULTS

4.1. Descriptive Statistics

In terms of political orientation, the majority of respondents were found to be in the “middle of the
road” as indicated by a response of “5” (46.9%). Liberals were the next most common result (“0–4,” 27.9%), followed by conservatives (“6–10,” 25.2%). The average media use was 3.52 ($SD = 0.69$) where “3” and “4” refer to “sometimes” and “frequently,” respectively. Risk perception of COVID-19 was relatively high in terms of “severity of damage that is expected when infected” ($M = 3.85, SD = 0.85$), compared to probability of infection ($M = 2.74, SD = 0.90$). The respondents estimated that their chance of being infected was lower than “50–50” (= 3). The risk perception averaged from the two measures was 3.30 ($SD = 0.72$).

For behaviors that were measured by averaging the frequencies of performing the six preventive activities recommended by the government, the average compliance was 2.80, where “2” refers to “did sometimes” and “3” indicates “did frequently” ($SD = 0.69$). As a control factor, the highest-scoring outrage factor was “catastrophic potential” ($M = 4.13, SD = 0.82$), followed by “human vs. natural origin” ($M = 4.06, SD = 0.82$), “dread” ($M = 3.96, SD = 0.83$), “accident history” ($M = 3.87, SD = 0.81$), and “moral nature” ($M = 3.82, SD = 1.07$). This means that during the outbreak South Koreans perceived outrage factors that might have elicited emotive responses in the following order:

- catastrophic potential (“COVID-19 can bring about a large number of victims”)
- human versus natural origin (“The virus came out of human activities rather than as a natural phenomenon”)
- dread (“COVID-19 is dreadful”)
- accident history (“The pandemic reminds me of earlier infectious disease outbreak”)
- moral nature (“This pandemic involves irresponsible and immoral responses to the outbreak”)

An analysis of variance showed that the intensity of the perception regarding each outrage factor varied significantly ($F(1, 29998) = 1834.0; p < 0.01$, Cohen’s $d = −1.33$).

### 4.2. The Main Effect of Political Orientation and Media Use

Upon dividing the political orientation of the respondents into three groups, the risk perception of the conservatives ($0 \leq PO \leq 4$) was the highest ($M = 3.39, SD = 0.73$), followed by “moderates” ($PO = 5; M = 3.36, SD = 0.69$) and liberals ($6 \leq PO \leq 10; M = 3.09, SD = 0.70$). The mean difference among the three groups was significant ($F(1,1998) = 49.87; p < 0.01$, Cohen’s $d = 1.83$). A post hoc text with Bonferroni adjustment showed that liberals had a lower risk perception than the other groups. However, the frequency of taking preventive measures did not vary according to political orientation as values for the “moderates” ($M = 2.84, SD = 0.70$) and conservatives ($M = 2.82, SD = 0.70$) were similar. Liberals had a lower value than the other two groups ($M = 2.71, SD = 0.66$).

After assessing the mean difference of risk perception and behaviors among the political orientation groups, we entered this factor into a multiple regression model to determine whether a given factor retained an influence when other potential factors were controlled for. The results showed that Korean conservatives showed a significantly higher risk perception ($b = 0.023, t = 2.987, p < 0.01$), but did not show more active coping activities. As such, for both RQ1a and RQ1b, political orientations entered as a continuous variable did have a substantial influence on COVID-19 risk perception, but this effect was not connected to the likelihood of taking preventive measures in a pandemic crisis (Table II).

Media use also influences the level of risk perception. Those who used news media more frequently showed a higher risk perception ($b = 0.066, t = 3.093, p < 0.01$). Their behaviors also became more prevention-oriented. Frequent media users performed the preventive measured suggested by the government more often than those who used news media less frequently ($b = 0.134, t = 5.909, p < 0.01$, Table I). The first hypothesis was therefore confirmed.

### 4.3. Moderation of Political Orientation

The second research question concerned whether political orientation can moderate other factors for risk perception. Although those with different political orientations did not exhibit different media effects, political orientation was found to indirectly influence COVID 19 risk perception.

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1 Given the poor internal consistency of the risk perception measure, perceived probability, and severity were regressed separately on the predictors. The results also indicated that political orientation showed a direct influence on either probability ($b = 0.028, t = 2.637, p < 0.01$) or severity ($b = 0.019, t = 2.002, p < 0.05$).
by affecting the magnitude of outrage effect on risk perception. In particular, the outrage effect of fairness on risk perception increased for Korean liberals such that liberals who experienced feelings of unfairness from social responses to COVID-19 exhibited a higher pandemic risk perception than conservatives who had the same feeling ($b = -0.020, t = -2.554, p < 0.05, \text{Fig. 1}$).

The outrage effect of moral nature showed an increase that was approaching statistical significance at the conventional $p < 0.05$ level for Korean conservatives ($b = 0.014, t = 1.717, p = 0.086$) and that of human origin showed an increase for Korean liberals that was also approaching statistical significance ($b = -0.018, t = -1.856, p = 0.064$). For taking preventive measures, political orientation did not moderate any influence on the coping behaviors.

### 4.4. Influence of Crisis Stage

The third research question examined variance of public responses by crisis stage. The average risk perception for the first stage was 3.25 ($SD = 0.70$), whereas that for the second stage was 3.34 ($SD = 0.73$). The crisis stage did not have an influence on determining the level of risk perception. However, the behaviors of respondents in coping with the virus outbreak did vary across the stages ($b = 0.265, t = 7.460, p < 0.01$). Exhibiting the six types of recommended behaviors increased from 2.62 ($SD = 0.66$) to 2.99 ($SD = 0.67$), wherein “2” and “3” refer to “sometimes” and “frequently,” respectively. For the fourth research question, the political orientation effect on risk perception or coping behavior did not vary across the stages.
5. DISCUSSION

This study examined whether political orientation plays a role in guiding the risk perception of an emerging infectious disease, by investigating its direct and indirect effects on risk perception. The model was used to assess risk perception associated with COVID-19 and considered media use and other control factors including a set of outrage factors for two surveys involving 2,000 respondents in South Korea. In this study, we found that political orientation did directly influence COVID-19 risk perception but did not affect behaviors associated with recommended preventative measures. Political orientation also moderated the outrage effect on risk perception. Korean liberals showed a greater outrage effect of fairness on risk perception than did Korean conservatives who had the same level of this outrage factor.

A few implications arise from the findings. First, political orientation has rarely been examined in the context of its influence on the perception of risk from a pandemic disease. The association between risk perception and political orientation has been examined in terms of climate change (Carvalho & Burgess, 2005; Dunlap & McCright, 2008; Hamilton, 2011; Hindman, 2009; Krosnick et al., 2000; McCright & Dunlap, 2011; Wood & Vedlitz, 2007), local weather change (Shao & Goidel, 2016), heat waves (Cutler et al., 2018), and fine dust as an environmental risk (Ju & You, 2020). The finding of the influence of political orientation on the perception of the risk of an emerging infectious disease indicates an expansion of risk perception that involves political orientation.

Beyond expanding the scope of risk to involve political orientation, this study shows how political orientation moderates outrage factor in guiding risk perception, as well as provides a direct demonstration that political orientation influences risk perception. Here, Korean conservatives showed a significantly higher risk perception of danger associated with an infectious disease, but liberals showed a greater outrage effect of fairness on risk perception. This result signifies that being a conservative in Korea was more likely to directly heighten pandemic risk perception, whereas the risk perception of Korean liberals was more likely to be influenced by feelings of unfairness about the circumstances surrounding the COVID-19 than Korean conservatives who had the same feeling.

Political orientation has been found to moderate the framing effect on climate change such that diagnostic framing (You & Ju, 2018) leads to higher risk perception for Korean conservatives, and spatial/temporal framing manipulated by “climate departure dates” displayed a stronger effect on policy attitude for American conservatives compared to liberals (Rickard, Yang, & Schuld, 2016). In the present study, we found that the outrage effect of fairness was subject to moderation by political orientation in
guiding perception of risk associated with a pandemic disease. This finding thus supports the psychological potential of political orientation to serve as a generator of contingent effects on risk responses. With respect to emotive responses to a risk, outrage factors have been moderated by media use in the case of fine dust risk perception (Ju & You, 2020). The moderation of outrage effect by political orientation in the case of pandemic disease risk perception thus also expands our understanding of the risk perception dynamic.

This study has several limitations that will require further investigation to address. First, the two surveys involved different participants, although the questions were the same. Therefore, the changes across the two surveys do not exactly represent changes in individuals’ risk perception across different crisis stages of the COVID-19 pandemic. The crisis stage should be examined using panel data based on responses from the same participants.

Second, there are some issues associated with measurement methods that can be addressed in future studies. Political orientation as the main factor in this study was measured using a single item, and media use also relied on a single item measure. Multiple-item measures can be implemented in future studies. Also, the single factor for measurement of media use was the question: “How frequently did you search for and use news concerning COVID-19 during the past week?” and the responses may not fully represent the frequency of media use in general since searching for a certain type of news differs from using news media in general. A more generic measure of media use could be applied in future studies. In addition, more specific measures of media use can allow examination of different media effects by various types and/or channels of media.

The poor internal consistency of measurement of pandemic risk perception is a limitation of this study. Although perceived severity and perceived probability constitute multiple measures of risk perception concerning various types of risk (Griffin et al., 2008; Leiserowitz, 2006; Yang, 2016; You & Ju, 2017), the situation involving COVID-19 showed that not all types of risk can be consistently measured by combining perceived severity and perceived probability. Both measures may not be highly correlated, particularly in the situation in which everyone was asked to stay at home to prevent exposure to the virus. Korean respondents might have perceived a low likelihood of infection based on their adherence to government guidelines, even though their perceived severity of risk might still be high. In that respect, we found no noticeable difference from the current findings after conducting additional multiple regression tests using separate measures of either probability or severity. This outcome supports the validity of the current finding concerning pandemic risk perception dynamics. Nonetheless, further studies that address theoretical and methodological issues concerning risk perception themselves are needed (Wilson, Zucke, & Walpole, 2019).

In addition, the effect of risk perception on coping behaviors was reduced for conservatives, who showed greater outrage effect of dread on risk perception. Notably, the preventive measures were recommended by a government under liberal presidential leadership. Additional investigation is needed to examine whether a different direction of interaction occurs upon examining behaviors by conservatives under a conservative leadership. For example, protests against government mandates requiring wearing of masks occurred in the United States, but not in Korea, suggesting that the interaction of political orientation and outrage factor in guiding pandemic disease risk perception in areas other than South Korea would be worthwhile to examine.

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