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Investigating tolerance of uncertainty, COVID-19 concern, and compliance with recommended behavior in four countries: The moderating role of mindfulness, trust in scientists, and power distance

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\section*{A R T I C L E  I N F O}

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\section*{A B S T R A C T}

Consumers’ compliance with recommended behavior during the COVID-19 pandemic helps contain the spread of the virus and positively impacts marketplace outcomes. This study investigates the effect of consumers’ tolerance of uncertainty on COVID-19 concern, compliance with recommended behavior, and panic buying intentions, across four countries (Germany and USA with a low power distance index; India and The Philippines with a high power distance index; \(N = 1272\)). We test the moderating role of power distance, mindfulness, and trust in scientists, among these relationships. Our results show that tolerance of uncertainty is negatively associated with COVID-19 concern, and COVID-19 concern is positively associated with compliance and panic buying intentions. In high power distance countries, tolerance of uncertainty is negatively associated with compliance. The negative association of tolerance of uncertainty with COVID-19 concern is more pronounced at low levels of mindfulness, and consumers with high COVID-19 concern and high trust in scientists demonstrated the highest compliance. Our findings reveal that stressing the importance of mindfulness, though positive overall, might not yield more compliance. Interventions to make consumers more concerned about the consequences of the pandemic and, at the same time, enhancing their trust in scientists, can lead to higher levels of compliance.

\section*{1. Introduction}

As countries around the world grapple with the third or fourth waves of the COVID-19 pandemic, most countries are continuing to apply strict measures to contain its spread, including social distancing, quarantining, wearing masks and lockdowns (Van Bavel et al., 2020). However, individuals’ perceived inconveniences, discomfort or lack of concern has led to decreased compliance in many countries (Stotic et al., 2021). Indeed, individuals’ compliance with recommended behavior during the COVID-19 pandemic helps contain the spread of the virus and is positively associated with consumer and marketplace outcomes (McKinsey & Company, 2020).

Given that individuals’ adherence is the key factor in the effectiveness of these measures (Fragkaki et al., 2021), compliance with recommended behavior is a variable of great importance to scholars and practitioners during the pandemic. However, “little is known about what distinguishes those who comply from those who do not” (Zhang et al., 2021, p. 168). This has led to an urgent call for research by several scholars to understand individual differences that lead to differences in pandemic-related intentions and behaviors (Fragkaki et al., 2021; Stotic et al., 2021; Van Bavel et al., 2020). In answering this call, our research aims to investigate what makes consumers more or less concerned about COVID-19, given that consumers’ concern is a key variable to understand their compliance (Kwon et al., 2021). Apart from consumers’ COVID concern and compliance with recommended behavior, our research also examines consumers’ panic buying intentions.

Building on extant research, we develop and empirically test a conceptual model of consumers’ individual differences (tolerance of uncertainty, mindfulness, trust in scientists), associated with COVID-19 concern, compliance with recommended behavior, and their panic buying intentions. Further, there has been much interest in differences in citizens’ compliance with recommended behavior across countries. Our theorizing includes power distance, a cultural difference variable (Hofstede et al., 2010). We test our model using a sample from four countries, two of them with a low power distance index (Germany and USA) and two of them with a high power distance index (India and The

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2. Theory and conceptual model

2.1. Tolerance of uncertainty, COVID-19 concern, and compliance with recommended behaviors

Tolerance of uncertainty (TU) is an individual difference in tendency to consider the possibility that something negative happens in the future as unacceptable (Carleton et al., 2007). TU is related to trait anxiety, anxiety disorders, and worry; individuals who are low in TU are more vulnerable to these conditions (Lejoyeux et al., 2011). People low in TU also feel lonelier during the COVID-19 pandemic (Parlapani et al., 2020), show less resilience (Karataş & Tagay, 2021), and fear COVID-19 more (Deniz, 2021). In turn, fearing COVID-19 positively influences individuals’ preventative behaviors in response to the pandemic (Jovančević & Milicević, 2020). Indeed, lack of concern about COVID-19 has been implicated in decreased compliance with recommended behavior (Stosic et al., 2021). Based on these studies, we postulate a mediation hypothesis wherein TU is negatively associated with consumers’ concern about COVID-19, and COVID-19 concern, in turn, is positively associated with compliance with recommended behavior (H1).

2.1.1. Panic buying intentions

Since the beginning of the pandemic, many consumers have engaged in panic buying behavior, which is quite common during disasters (Dobalaka, 2020). People might panic buy during the pandemic due to different reasons: as a response to fear, as a means to restore lost control over the environments, because of the perceived scarcity of goods, and as a result of social learning effects based on shared concerns (Arafat et al., 2020). In this research, we focus on the role of TU and COVID-19 concern on consumers’ panic buying intentions during the pandemic. Extant literature shows that consumers tend to engage in panic buying of groceries when they are concerned about food scarcity during a pandemic (Jovančević & Milicević, 2020), and that low TU is associated with hoarding symptoms (Mathes et al., 2017). Based on these findings, we postulate a mediation hypothesis, similar to the one on compliance with recommended behavior; TU is negatively associated with consumers’ concern about COVID-19, and COVID-19 concern, in turn, is positively associated with panic buying intentions (H2).

2.2. The moderating role of mindfulness

Mindfulness is “one’s complete attention to the experiences occurring in the present moment, in a nonjudgmental or accepting way” (Baer et al., 2006, p. 27). It is related to several psychological benefits such as positive emotional states, enhanced self-regulation (Brown & Ryan, 2003), and improved coping with stressful waiting periods (Sweeney & Baer, 2003), and improved coping with stressful waiting periods (Sweeny et al., 2020). In this research, we focus on the role of mindfulness in moderating the relationship between TU and COVID-19 concern and compliance with recommended behaviors.

2.3. The moderating role of trust in scientists

Trust in scientists might help to attenuate some negative consequences of COVID-19 concern. For instance, Plohl and Musil (2021) find that individuals who trust in science show a higher willingness to comply with COVID-19 prevention guidelines than those who don’t. Believing in science also predicts believing in the effectiveness of wearing masks during the COVID pandemic, which in turn increases people’s willingness to wear a mask in public (Stosic et al., 2021). We thus hypothesize that trust in scientists moderates the effect of COVID-19 concern on consumers’ compliance with COVID-19 prevention measures, such that consumers with high trust in scientists and high COVID-19 concern exhibit the highest compliance, and those with lower trust in scientists and lower COVID-19 concern exhibit the lowest compliance (H4). In addition, lower knowledge of science and lower levels of trust in medicine predict unreasonable behaviors during the pandemic, such as increased levels of consumers’ panic buying behavior (Sailer et al., 2020). Hence, we predict that higher levels of trust in scientists and lower levels of COVID-19 concern will be associated with the lowest levels of panic buying behavior, while lower levels of trust in scientists and higher levels of COVID-19 concern will be associated with increased panic buying behavior (H5).

2.4. The moderating role of power distance

Power distance is a cultural dimension that refers to the extent to which individuals expect and accept the situation where power is distributed unequally between the society members (Hofstede et al., 2010). Countries and cultures can differ on this dimension. Within a culture, individual differences in people’s beliefs about power inequality in society exist as well and can be measured as power distance beliefs (PDBs) (Yoo et al., 2011).

Based on recent research, we speculate that a country’s power distance might be related to individuals’ willingness to comply with COVID-19 recommended behavior. Cultures with low power distance rely on mutual obligation and generally do what authorities ask, thus, people might be more willing to comply with prevention measures. In contrast, in high power distance cultures, governments are more likely to force rules, which can lead to social protest (Hofstede, 2020, April 8). Furthermore, power distance has been shown to affect consumers’ prosocial behavior such as donating money (Winterich & Zhang, 2014), such that consumers from high power distance cultures are less involved in charitable behavior. The same effect holds on the individual level: those with high PDBs show lower perceived responsibility to help others, which leads to decreased charitable giving. Apart from social responsibility to aid others, low PDBs lead to heightened empathy for victims of companies’ poor labor practices (Xu et al., 2021).

We consider adhering to prevention measures during the pandemic not only as a form of self-protection but also as a specific form of prosocial behavior. Karić and Međedović (2021) show that caring about saving people’s lives is positively associated with engagement in COVID-19 precautionary behaviors. Based on our first hypothesis about the indirect effect of TU on compliance with recommended behavior, and extant research on power distance and prosocial behavior, we postulate that TU and power distance interact to affect consumers’ compliance with recommended behavior (H6). In particular, we expect that in high power distance cultures, tolerance of uncertainty negatively influences people’s willingness to comply with COVID-19 recommended behavior (H6a). Extant research shows that high power distance leads to less prosocial behavior. Similarly, high power distance countries, unlike low power distance ones, do not have unwritten social obligations, and thus their inhabitants might not be motivated to stick to the COVID-related rules to protect other citizens. Thus, in high power distance cultures, when one’s tolerance of uncertainty is low, a person will show increased compliance with preventative measures due to potentially heightened concern about the pandemic and as a means to protect themselves from...
COVID-19 uncertainty, not as a prosocial act. At the same time, we expect that in low power distance cultures tolerance of uncertainty does not affect people’s willingness to comply with COVID-19 measures \((H_{16b})\). In this case, a person will show high levels of compliance with preventative measures regardless of their tolerance of uncertainty, which might be driven by their social responsibility to protect others, which is more common in low power distance cultures. We do not hypothesize a similar interaction effect of TU and power distance on consumers’ panic buying intentions. We believe that prosocial considerations in low power distance cultures are relevant for compliance with recommended behavior and not for panic buying intentions, since complying with recommended behavior during the pandemic includes elements of social distancing and keeping others safe along with oneself.

Two conceptual figures, based on our hypotheses about the indirect effect of TU on compliance with recommended behavior, via COVID-19 concern, and the moderating effects of mindfulness, trust in scientists, and power distance, are shown in Figs. 1 and 2.

### 3. Participants and procedure

One thousand two hundred and seventy-two respondents from four countries, Germany \((N = 307; 40\% \text{ female}; \text{ Mean Age} = 32),\) USA \((N = 287; 50\% \text{ female}; \text{ Mean Age} = 36),\) India \((N = 340; 51\% \text{ female}; \text{ Mean Age} = 38)\) and The Philippines \((N = 338; 58\% \text{ female}; \text{ Mean Age} = 34)\) were recruited on two well-known market research panels, Prolific (Germany and USA) and Pollfish (India and The Philippines). All participants were older than 25 years. Participants responded to an online questionnaire with measures of study variables, and were each paid 3 USD, on average, for their participation.

#### 3.1. Measures

**3.1.1. Tolerance of uncertainty**

The 12-items scale by Carleton et al. (2007) was used to measure respondents’ intolerance of uncertainty. The items were then reversed coded to measure TU. As proposed by Carleton et al. (2007), an aggregate score of the 12 items was calculated to measure the TU construct \((\alpha = 0.91)\).

**3.1.2. COVID-19 concern**

We measured respondents’ COVID-19 concern with 3-items \(e.g., \text{ I am afraid I may contract COVID-19} \) that respondents expressed their agreement with on a 7-point scale \((\text{from} 1 = \text{‘strongly disagree’} \text{ to} 7 = \text{‘strongly agree’})\). The items were averaged \((\alpha = 0.84)\).

**3.1.3. Mindfulness**

The 15-items Mindfulness Attention Awareness Scale (MAAS) by Brown and Ryan (2003) was used to measure respondents’ mindfulness. Following Brown and Ryan (2003), an aggregate score of the 15 items was calculated \((\alpha = 0.96)\).

**3.1.4. Power distance**

We coded respondents from India and The Philippines as high power distance \((\text{High Power Distance} = 2),\) and those from Germany and the USA as low power distance \((\text{Low Power Distance} = 1)\). We also measured respondents’ PDBs using a 5-item scale \((\alpha = 0.93)\) (Yoo et al., 2011).

**3.1.5. Trust in scientists**

We measured respondents’ trust in scientists with a single question \((\text{I trust information from scientists who are working on COVID-19}),\) on a 7-point scale \((\text{from} 1 = \text{‘strongly disagree’} \text{ to} 7 = \text{‘strongly agree’})\).

**3.1.6. Compliance with recommended behavior**

Respondents’ compliance with recommended behavior was measured with a 5-item scale \((\text{e.g., I intend to follow social distancing rules; I plan to wear a mask in public spaces})\). They expressed their agreement with these statements on a 7-point scale \((\text{from} 1 = \text{‘strongly disagree’} \text{ to} 7 = \text{‘strongly agree’})\). The items were averaged \((\alpha = 0.82)\).

**3.1.7. Panic buying intentions**

We measured panic buying intentions with a 3-item scale \((\text{e.g., I intend to buy more than usual quantities of home essentials such as toilet paper, hand soap, and hand sanitizers to be on the safe side})\). Respondents expressed their agreement with these statements on a 7-point scale \((\text{from} 1 = \text{‘strongly disagree’} \text{ to} 7 = \text{‘strongly agree’})\). The items were averaged \((\alpha = 0.93)\).

The scale items for the following measures – COVID-19 concern, trust in scientists, compliance with recommended behavior, and panic buying intentions - were developed for this study and were not piloted. Scale items employed to measure all study variables are listed in Table A1 in the supplemental document (Appendix A).

### 3.2. Power analysis

A sensitivity power analysis conducted on G-Power 3.1 (Faul et al., 2009) revealed that 92 participants would yield 80% power to detect a medium effect \((\text{Cohen’s} f = 0.15; \text{assuming} \alpha = 0.05),\) and 674 to detect a small effect \((\text{Cohen’s} f = 0.02; \text{assuming} \alpha = 0.05)\). Hence, our sample size is adequate. We acknowledge that post-hoc power analysis has limitations and might lead to misleading conclusions because of the issues arising from a monotone function of the \(p\)-value (Dziak et al., 2020).

### 4. Results

Table A2 in Appendix A shows the correlations among the study variables, and Table A3 in the same Appendix lists the descriptive

![Conceptual Model with Mediating and Moderating Variables](image-url)
confirmed for the mediating role of COVID-19 concern in the relation. This mediation was tested using bootstrapping with repeated extraction.

4.2. Multiple moderated mediation

We conducted two multiple moderated mediation analyses using the PROCESS macro Model 21 (Hayes, 2017) (i.e., X = Tolerance of Uncertainty; M = Mindfulness; Z = Trust in scientists; Y1 = Compliance; Y2 = Panic buying). Results showed that the multiple moderated mediation is significant for compliance with recommended behavior (index = 0.002, 95% CI [0.001, 0.003]), and panic buying intentions (index = 0.007, 95% CI [0.005, 0.009]). Further, 12% the variance in the mediator, COVID-19 concern, was accounted for by the predictors, F(3, 1268) = 16.74, p < 0.001, and 24% of the variance in the dependent variable, compliance with recommended behavior, was explained by the predictors, F(4, 1267) = 101.29, p < 0.001.

We now report the individual moderation effects in our model. As predicted in H3, we found a significant interaction effect of TU and trust in scientists (point estimate = 6.57) and higher levels of trust in scientists showed higher compliance with recommended behavior at all levels of COVID-19 concern. Results showed that higher levels of COVID-19 concern (point estimate = 6.57) and higher levels of trust in scientists (point estimate = 6.59), whereas lower levels of COVID-19 concern (point estimate = 3.56) and lower levels of trust in scientists (point estimate = 4.46) were associated with lower compliance (point estimate = 3.34). Consumers’ compliance was relatively high (point estimate = 6.18) even at lower level of COVID-19 concern (point estimate = 3.56) when trust in scientists was high (point estimate = 7.0).

Additionally, as predicted in H5, we found a significant moderation effect of trust in scientists on the relationship between COVID-19 concern and panic buying intentions (H1; H2). Further, results showed that power distance (PD) moderated this relationship. Additionally, we examined the moderating role of consumers’ mindfulness, trust in scientists, and power distance. We found that consumers’ concern about COVID-19 mediated the relationship between TU and their compliance with recommended behavior and panic buying intentions (H1; H2). Further, results showed that power distance.

4.3. Moderating effect of power distance

We tested hypotheses 6, 6a and 6b with ordinary least squares (OLS) regression, using the PROCESS macro Model 1. Results showed an interaction of TU and power distance (PD) on compliance with recommended behavior (F(3, 1268) = 7.65, p < 0.001, R² = 0.2), supporting H6. To interpret the interaction, we examined the Johnson-Neyman points for PD (high vs. low). In countries with high PD, responders’ TU tolerance did not affect their willingness to comply with COVID-19 recommended behavior (b = 0.016, SE = 0.0035, t = -4.57, p < 0.001), supporting H6a. In contrast, in countries with low PD, responders’ TU tolerance did affect their willingness to comply with COVID-19 measures (b = -0.0053, SE = 0.0038, t = -1.41, p > 0.05), supporting H6b.

5. Discussion

5.1. Implications

In this research, we investigated the indirect effect of consumers’ TU on their compliance with recommended behavior, and their panic buying intentions. Consumers’ COVID-19 concern mediated these relationships. Additionally, we examined the moderating role of consumers’ mindfulness, trust in scientists, and power distance. We found that consumers’ concern about COVID-19 mediated the relationship between TU and their compliance with recommended behavior and panic buying intentions (H1; H2). Further, results showed that power distance.

\[
[-] = \text{Negative Relationship}
\]

Fig. 2. The Moderating Effect of Power Distance.
distance moderated the relationship between tolerance of uncertainty and compliance, such that in high power distance countries, tolerance of uncertainty is negatively associated with compliance (H6). Further, mindfulness moderated the relationship between tolerance of uncertainty and concern about COVID-19, such that among participants with lower levels of uncertainty, those who also had low levels of mindfulness showed lower levels of COVID-19 concern (H3). Finally, trust in scientists moderated the relationships between concern about COVID-19 and compliance, and concern about COVID-19 and panic buying behavior, such that those with high trust in scientists and high COVID-19 concern demonstrated the highest compliance, and those with low trust in scientists and high COVID-19 concern showed the highest levels of panic buying (H4; H5).

We substantially extend recent research on the effect of TU on COVID-19 related concerns and behavior (Deniz, 2021; Satici et al., 2020) by investigating variables relevant to consumer behavior, and by theorizing about power distance. To our knowledge, power distance, a cultural variable, has not been studied in the context of other individual difference variables and COVID-19 related behavior.

5.2. Limitations and future research

Despite the theoretical and practical importance of this research, it is not without limitations. First, our cross-sectional survey research does not establish causality. Future research should use experiments to determine causal relationships in our conceptual model. Second, we only included four countries in our sample. A greater range of countries that vary on the power distance index can further validate our model and theorizing about the moderating role of power distance. Yet another limitation is that there are countries where the effect of the pandemic on consumers was significantly worse (e.g., Brazil), or significantly better (e.g., New Zealand). Future research can investigate the effect of the severity of the pandemic, and consumers’ perception of their government’s response to the pandemic, as additional variables that might affect the relationships in our conceptual model.

6. Conclusion

Based on our findings, stressing the importance of mindfulness, though positive in general, might not yield more compliance with recommended behavior when compared to enhancing consumers’ trust in scientists. Interventions to make consumers more concerned about the consequences of the pandemic and, at the same time, enhancing their trust in scientists, can lead to higher levels of compliance. In addition, tolerance to uncertainty is a quality that can be changed (Deniz, 2021). Hence, interventions focused on helping consumers with very high levels of tolerance of uncertainty become more concerned about the adverse effects of the pandemic, could be developed and implemented to reduce the spread of the COVID-19 globally. In sum, our findings provide multiple insights for researchers and decision makers to be better equipped in handling future crises where adherence to recommended behavior could be key for economic and social recovery.

CRediT authorship contribution statement

Shashi Matta: Conceptualization, Methodology, Investigation, Writing – Original draft preparation, Writing – Review and Editing, Project administration, Supervision.
Natalia Rogova: Conceptualization, Methodology, Investigation, Writing – Original draft preparation.
Gonzalo Luna-Cortes: Investigation, Formal analysis, Validation, Data curation, Writing – Original draft preparation.

Ethical statement

All procedures performed in studies involving human participants were in accordance with the ethical standards and with the Helsinki Declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants included in the study.

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Appendix A

Table A1

| Study variable                          | Cronbach’s α | Items in the scale                                                                 |
|----------------------------------------|--------------|-----------------------------------------------------------------------------------|
| Tolerance of uncertainty               | 0.91         | 1. Unforeseen events upset me greatly.                                            |
| (Carleton et al., 2007)                |              | 2. It frustrates me not having all the information I need.                         |
|                                        |              | 3. One should always look ahead so as to avoid surprises.                         |
|                                        |              | 4. A small, unforeseen event can spoil everything, even with the best of planning.|
|                                        |              | 5. I always want to know what the future has in store for me.                    |
|                                        |              | 6. I can’t stand being taken by surprise.                                         |
|                                        |              | 7. I should be able to organize everything in advance.                            |
|                                        |              | 8. Uncertainty keeps me from living a full life.                                  |
|                                        |              | 9. When it’s time to act, uncertainty paralyses me.                               |
|                                        |              | 10. When I am uncertain I can’t function very well.                               |
|                                        |              | 11. The smallest doubt can stop me from acting.                                   |
|                                        |              | 12. I must get away from all uncertain situations.                                |
|                                        |              | 13. I worry about COVID-19                                                       |
|                                        |              | 14. I am afraid I may contract COVID-19                                            |
|                                        |              | 15. I dread facing a situation involving COVID-19                                  |
|                                        | 0.84         | 1. People in higher positions should make most decisions without consulting people in lower positions |
|                                        |              | 2. People in higher positions should not ask the opinions of people in lower positions too frequently |
|                                        |              | 3. People in higher positions should avoid social interaction with people in lower positions |
|                                        |              | 4. People in lower positions should not disagree with decisions by people in higher positions |
|                                        |              | 5. People in higher positions should not delegate important tasks to people in lower positions |
| Power distance beliefs                  | 0.93         | 1. I break or spill things because of carelessness, not paying attention, or thinking of something else. |
| (Yoo et al., 2011)                     |              | 2. I find it difficult to stay focused on what’s happening in the present.        |

(continued on next page)
Table A1 (continued)

| Study variable                                      | Cronbach’s α | Items in the scale                                                                 |
|-----------------------------------------------------|--------------|-----------------------------------------------------------------------------------|
| Trust in scientists                                 |              | I trust information from scientists who are working with COVID-19                 |
| Compliance with recommended behavior               | 0.82         | 1. I intend to adhere to quarantine appeals.                                      |
| Panic buying intentions                             | 0.93         | 1. I intend to buy more than usual quantities of food essentials such as milk, bread/rice/flour, butter/oil, etc. to be on the safe side. |

**Correlation is significant at the 0.01 level (2-tailed).**

Table A2

Correlations among study variables.

|                               | 1     | 2     | 3     | 4     | 5     | 6     | 7     |
|-------------------------------|-------|-------|-------|-------|-------|-------|-------|
| 1. Tolerance of uncertainty   | –     |       |       |       |       |       |       |
| 2. COVID-19 concern           | –0.36 | –     |       |       |       |       |       |
| 3. Power distance beliefs     | 0.38  | 0.44  | –     |       |       |       |       |
| 4. Mindfulness                | 0.38  | –0.04 | –0.09 | –     |       |       |       |
| 5. Trust in scientists        | –0.15 | 0.24  | 0.25  | –0.25 | –     |       |       |
| 6. Compliance with recommended behavior | –0.11 | 0.40  | –0.01 | 0.03  | 0.47  | –     |       |
| 7. Panic buying intentions    | –0.29 | 0.44  | 0.43  | 0.08  | 0.05  | 0.22  | –     |

**Correlation is significant at the 0.01 level (2-tailed).**

Table A3

Descriptive statistics of study variables by country.

| Study variables               | USA mean (SD) | Germany mean (SD) | The Philippines mean (SD) | India mean (SD) |
|-------------------------------|---------------|-------------------|--------------------------|-----------------|
| Tolerance of uncertainty     | 59.49(10.48)  | 61.89(9.96)       | 51.71(9.64)              | 61.91(8.75)     |
| COVID-19 concern              | 5.12(1.49)    | 4.02(1.35)        | 5.43(1.46)               | 5.60(1.18)      |
| Power distance beliefs        | 2.67(1.80)    | 2.58(1.26)        | 5.03(2.04)               | 6.05(2.34)      |
| Mindfulness                   | 59.86(14.36)  | 59.39(11.39)      | 87.44(12.34)             | 50.01(19.86)    |
| Trust in scientists           | 5.82(1.32)    | 6.05(1.12)        | 5.43(1.42)               | 5.83(1.26)      |
| Compliance with recommended behavior | 6.17(0.98)  | 5.92(0.98)        | 6.06(0.92)               | 5.98(0.96)      |
| Panic buying intentions       | 3.98(1.79)    | 2.52(1.45)        | 5.26(1.50)               | 5.76(2.01)      |

*Means across the rows for a given study variable with different superscripts are different at p < 0.01.

Appendix B. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.paid.2021.111352.

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