

Neoliberalism and governmental and individual responses to the COVID-19 pandemic: A cross-national analysis

Yuanze Liu  | Zhongda Wu  | Yuying Wang | Zhiwen Dong |
Zhaoyang Sun | Yiqun Gan 

Beijing Key Laboratory of Behavior and Mental Health, School of Psychological and Cognitive Sciences, Peking University, Beijing, China

Correspondence

Yiqun Gan, Beijing Key Laboratory of Behavior and Mental Health, School of Psychological and Cognitive Sciences, Peking University, Beijing 100871, China.
Email: ygan@pku.edu.cn

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Abstract

Given the deficiencies of traditional government capacity indicators and cultural factors (e.g., individualism) in explaining the discrepancies of different agents' responses to the coronavirus disease 2019 (COVID-19) pandemic, the present study proposed and examined the role of neoliberalism, a novel cultural tradition of knowledge emphasizing the principles of free markets and self-governance, as an additional explanation of the discrepancies in the governmental and individual responses to the pandemic. Analyzing policy responses of 106 nations and personal responses from 105,203 individuals in 104 nations during the first wave of the pandemic, we found that nation-level neoliberalism (delineated by the economic freedom index) negatively predicted the nonlinear trajectories of government policy responses to contain the pandemic. Specifically, in more neoliberal countries, stringent containment policy responses showed a sharper decline in the later stage of the first wave of the pandemic. Moreover, nation-level neoliberalism negatively predicted individuals' pandemic-protective attitudes and behaviors. All these effects are independent of and incremental to those of nation-level individualism. In conclusion, this study sheds light on how neoliberalism could lead to negative consequences during large-scale, long-lasting public threats, offering practical guidance for adjusting public crisis management in the future.

KEY WORDS

COVID-19, cultural differences, government responses, neoliberalism, policy

Yuanze Liu and Zhongda Wu contributed equally to this study.

Open science engagement: This study has been preregistered before data analyses; for the registration information, see https://osf.io/4m6hc/?view_only=1c8f08463bfd4113a965567236bbca5a

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INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic has strikingly reversed the general understanding of the capabilities of different countries regarding public crisis management. The countries that have long been labeled as more advanced have unexpectedly fared rather poorly in the face of this pandemic (Jones & Hameiri, 2021). For example, countries listed at the top of the Epidemic Preparedness Index (e.g., the United States, the United Kingdom, and Spain) (Oppenheim et al., 2019) reported some of the highest mortality rates during the pandemic (Liu, 2021). In terms of policy responses, some well-established governance capacity indices have been found to counterintuitively correlate negatively with the speed of governmental response to the pandemic (Toshkov et al., 2022). The failure of these traditional indicators has motivated researchers to explore deeper cultural explanations the discrepancies in responses to the current pandemic (Van Bavel et al., 2020).

In this regard, extant knowledge (Gelfand et al., 2021; Lu et al., 2021) suggests that collectivist and culture-tight societies would react more effectively to the COVID-19 pandemic. However, neither collectivism nor cultural tightness provide a complete picture. For instance, not all collectivist and culture-tight countries have been successful in tackling the pandemic (Liu, 2021). This suggests that some other important factors causing discrepancies in different agents' responses to the pandemic may remain undiscovered. In particular, neoliberalism has been argued to play a potential role in shaping national pandemic responses (Cardona, 2021).

Neoliberalism may have different meanings depending on one's vantage point (Ong, 2006). Originally used in political economics, neoliberalism refers to a package of development policies characterized as the "D-L-P" formula (i.e., Deregulation of the economy, Liberalization of trade and industry, and Privatization of state-owned enterprises) or a political-economic model regarding self-regulating free markets associated with voluntary choice and freedom of competition as the prerequisite of effective and efficient government (Steger & Roy, 2010, pp. 12–14).

According to the above conceptualization, neoliberalism has often been operationalized as economic freedom at the national level (Bjørnskov, 2015; Plehwe, 2020). There are two highly correlated indices ($r = .88$, see also McLean et al., 2019) measuring economic freedom, namely, the Economic Freedom of the World Index (EFWI) (Gwartney et al., 2021) and the Economic Freedom Index (EFI) (Miller et al., 2021). Although the specific components and data sources used for the composition of the two indices differ, both tap the underlying postulation of neoliberalism that the production and exchange of goods and services should be organized by the free market based on personal ownership of self (i.e., individuals have the right to decide how to use their own time and talents, but not others'), and the missions of governments are to protect the self-governance of individuals and to refrain from actions that interfere with the free market (Gwartney & Lawson, 2003).

Specifically, both the EFWI and EFI consist of dimensions reflecting the following three aspects: (1) the freedom of all kinds of economic elements, including both domestic and international economic activities, such as business, labor, trade, and investment freedom (i.e., the *Regulation* and *Freedom to Trade Internationally* subfactors of the EFWI and the *Regulation efficiency* and *Open market* subfactors of the EFI); (2) the governments' protection of individuals and their property (i.e., the *Legal System and Property Rights* and *Sound money* subfactors of the EFWI and the *Rule of law* subfactor of the EFI); and (3) minimized government interference with the operation of the free market (i.e., the *Size of Government* subfactor of the EFWI and the *Government size* subfactor of EFI). Taken as a whole, according to the rhetoric of neoliberal thinkers, an economy is considered as more neoliberal if individuals have more freedom in both domestic and international economic activities, which are more well protected by law and institutions and less influenced by governments. It should be kept in mind that, as suggested by some critics, this definition may be more of a reflection of ideological tenets

rather than the political-economic reality, given the internal contradiction in its description of economic freedom (Hickel, 2016; Schmidt, 2018). Nevertheless, since we aimed to shed light on exactly how neoliberalism functions as an ideology, we still used this definition to operationalize nation-level neoliberalism in the present article, that is, the degree of economic freedom evaluated by indices such as the EFI or EFWI.

Despite its narrower initial focus on economic freedom (Castree, 2010), from the perspective of social representation (Guimond et al., 2013), neoliberalism as a cultural tradition of knowledge can exert its impacts in more profound and extensive ways (Chiu et al., 2010). First, it can exist in the form of public representations such as legalized and instituted economic-political structures. Additionally, neoliberal culture can also be embodied in intersubjective representations such as perceived norms and in private representations such as internalized beliefs (Chiu et al., 2010). Evolutionarily speaking, these three types of representations of cultural knowledge are not independent from one another. Instead, manifestations of cultural knowledge, as entrenched public representations, are more likely to be widely shared and perceived as intersubjective representations such as norms and to be integrated as a part of individuals' belief systems. The latter ones can directly predict individuals' attitudes and behaviors in policymaking processes (Prentice & Paluck, 2020). Indeed, neoliberalism has gradually become a part of the zeitgeist (Ganti, 2014) and turned into an ideology that considers the free market as "an ethic in itself, capable of acting as a guide to all human action and substituting for all previously held ethical beliefs" (Treanor, 2005, summarizing neoliberalism section). In these ways, neoliberalism can further extend its hegemonic impact to nonmarket institutions (e.g., health care) and individuals (Adams et al., 2019; Bettache et al., 2020).

However, although neoliberalism is often regarded as the panacea to solving various issues in the contemporary world, it has also caused sticky problems in the political, economic, social, and ethical realms (Bettache & Chiu, 2019; Pickren, 2018). For instance, neoliberalism has been found to lead to systematic inequality and the global rise of populism (O'Donnell, 2018), aggravated indifference toward social inequality (Bettache et al., 2020; Perez & Salter, 2019), and the fragility of social security systems (Cardona, 2021; Sohn, 2017). All of these problems brought forth by neoliberalism may have disastrous consequences when amplified by a public health crisis such as the COVID-19 pandemic.

In the first place, with beliefs derogating governmental intervention and advocating the marketization of public services, neoliberal countries spend less on social expenditures and thus may lack a powerful public healthcare system to respond effectively during epidemic outbreaks (Navarro, 2020). Moreover, neoliberalism attaches importance to the freedom of both domestic and international exchange of goods and people. As a result, neoliberal countries may be more reluctant to close their borders and apply more restrictive foreign policies, which may accelerate the spread of the virus during the pandemic (Hsiang et al., 2020). In addition, by prioritizing exchange values, neoliberalism undermines prosocial values and reduces the willingness of both governments and individuals to take restrictive measures toward COVID-19 prevention (Mair, 2020; McCloskey, 2020). What is worse, neoliberalism shapes how people understand the state–citizen nexus (Leach et al., 2021). Under the self-governance rhetoric of neoliberalism (Bagus et al., 2023), the responsibility to cope with the virus is deposited on individuals (Cardona, 2021; Peters, 2019), which aggravates a hollowing-out effect of state capacities and a dysfunctional shift from the "government to governance" during a public health emergency (Jones & Hameiri, 2021).

Although there have been substantial discussions on the association between neoliberalism and different agents' performance in response to the COVID-19 pandemic (Mair, 2020; Navarro, 2020), relevant empirical evidence remains scarce. Clarifying the influence of neoliberalism on governmental and individual responses could be consequential (Dunlop et al., 2020),

since timely and appropriate responses (e.g., spontaneous or recommended behavioral restrictions) have been verified to slow the spread of the virus (Hsiang et al., 2020; Islam et al., 2020) and reduce mortality (Qi et al., 2021).

To fill this research gap, this study aimed to explore whether nation-level neoliberalism affects how governments and individuals respond to the COVID-19 pandemic, while controlling for the effect of individualism (versus collectivism), another important cultural factor explored by extant literature (Chen et al., 2021; Lu et al., 2021). Governmental responses in our study refer to governmental interventions to contain the pandemic, including “school closings, travel restrictions, bans on public gatherings, emergency investments in health-care facilities, new forms of social welfare provision, contact tracing and other interventions to contain the spread of the virus, augment health systems and manage the economic consequences of these actions” (Hale et al., 2021, p. 529). Meanwhile, individual responses in our study refer to a series of attitudes, intentions, and behaviors concerning protective actions during the pandemic (Fetzer et al., 2021). Consistent with the theoretical rationale, it is first hypothesized that:

H1: Nation-level neoliberalism negatively relates to governmental responses to the COVID-19 pandemic.

Specifically,

H1a: Nation-level neoliberalism negatively relates to the magnitude of governmental interventions to contain the pandemic.

H1b: Nation-level neoliberalism negatively relates to the response trajectory slopes of governmental interventions to contain the pandemic.

As illustrated in Figure 1, Hypothesis 1b did not specify the trajectory type of governmental responses, which were verified in our longitudinal data analyses. This is because governmental responses in this relatively narrow period could exhibit either roughly linear trends or curvilinear ones, depending on whether these societies have reached a plateau phase of COVID-19 severity at the end of the chosen time window, which we did not have sufficient evidence to infer a priori. Moreover, nation-level neoliberalism may also exert its influence on individuals, and thus we hypothesized that:

H2: Nation-level neoliberalism negatively predicts individual responses to the COVID-19 pandemic.

To examine these hypotheses, we used large-scale, cross-national, and longitudinal datasets of governmental pandemic policy responses and people's perceptions and behaviors during the pandemic. This study was preregistered¹ prior to data analyses (for registration information, see https://osf.io/4m6hc/?view_only=1c8f08463bfd4113a965567236bbca5a).

¹Our analysis made a departure from the preregistration that should be noted. That is, we changed the competing variable in our models from meritocracy to individualism. We did so for several reasons: (1) Individualism is a more noticeable cultural factor used to explain the differences in the reactions to the pandemic in extant literature; thus, comparing the effects of neoliberalism with individualism would be more theoretically insightful. (2) Our accessible data of meritocracy, which is proxied as the *Reward for application* dimension in Leung and Bond's (2004) Social Axiom dimensions, involved less than 50 nations (this issue was unexpected when we made our preregistration); thus, using this dataset would significantly restrict the range of countries in our analysis and lead to less reliable results, especially in HLM (Hox, 1998). Therefore, we reasonably changed the competing variable in our models from meritocracy to individualism.

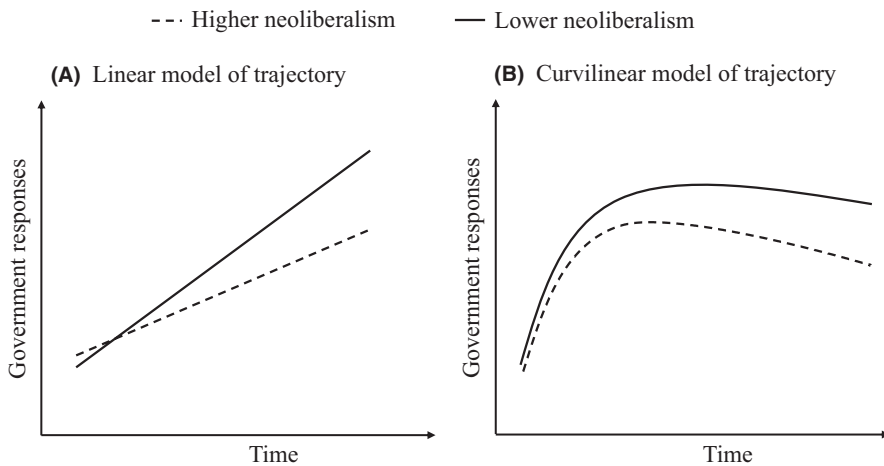


FIGURE 1 Potential trajectories of government responses toward the COVID-19 pandemic over time and figural presentations for the proposed negative association between nation-level neoliberalism and government responses (H1). Since the specific type of trajectories cannot be verified a priori, both linear and curvilinear trajectories may be observed, as portrayed in Panels A and B, respectively. As proposed, a flatter increasing linear trajectory or a sharper downward-bending nonlinear trajectory should be observed in a more neoliberal country.

DATA AND METHODS

Data

We adopted the EFI as a proxy variable of neoliberalism in our analysis. The EFI assesses the degree to which citizens in a society possess the fundamental rights to control their labor and property. The EFI (ranging from 0 to 100) is measured based on 12 factors grouped into four broad categories: (1) *Rule of Law* (i.e., property rights, government integrity, and judicial effectiveness); (2) *Government Size* (i.e., government spending, tax burden, and fiscal health); (3) *Regulatory Efficiency* (i.e., business freedom, labor freedom, and monetary freedom); and (4) *Open Markets* (i.e., trade freedom, investment freedom, and financial freedom) (Miller et al., 2021). As noted earlier, the four categories are believed by neoliberal thinkers to be indispensable ingredients of economic freedom. Hence, the composite EFI scores averaged from the four subfactors were used in the analyses, which were from the 2021 Index of Economic Freedom (evaluating economic freedom in 2019), containing data from 178 nations.

The data on governmental responses were extracted from the Oxford COVID-19 Government Response Tracker (OxCGRT), containing longitudinal data of worldwide national governments' responses since January 2020 (Hale et al., 2021). Specifically, we adopted the General Response Index (GRI), Containment and Health Index (CHI), Stringency Index (SI), and Economic Support Index (ESI) in the OxCGRT as indicators of governmental responses to the COVID-19 pandemic. These indices represent one or more aspects of government responses to the COVID-19 pandemic. More specifically, the CHI assesses containment and health aspects such as workplace closings and public event cancellations; the SI assesses the stringency of reactions such as restricting the size of gatherings and internal movement; the ESI includes aspects such as income support and debt/contract relief for households; and the GRI represents general policy responses (Hale et al., 2021).

For each government response index, we extracted data for 13 weeks, from March 11, 2020 (when the WHO announced the pandemic) to June 9, 2020, to cover the first wave of the pandemic (Dimitrakopoulos & Lalis, 2022; Syropoulos et al., 2021). We chose the day

of the announcement of the pandemic as the starting point of our temporal window rather than a nation-level threshold such as a specific number of cases, since it provided a uniform external environment and a commensurately urgent signal for all countries to take action (Muldoon et al., 2021), making the responses of different countries more comparable. In contrast, nation-level thresholds may have country-specific meanings and make it harder to control for the influences of external environments. All these defects lead to difficulty in comparison. Weekly scores of government responses were calculated by averaging the daily data (the same was done for the control variables, i.e., confirmed case and death rate per million, during the same period); thus, we obtained data of 2,132 observations (164 nations and 13 timepoints).

We used the “Measuring Worldwide COVID-19 Attitudes and Beliefs” dataset (Fetzer et al., 2021) to capture individual responses to COVID-19 ($N = 110,484$; nested in 150 countries) and calculated three main indicators as follows.

1. Pandemic-protective behaviors (PPB; i.e., behaviors that benefit pandemic protection) were measured with five items (e.g., “stayed at home,” “did not attend social gatherings,” “kept a distance,” “reported symptoms,” and “washed hands more frequently” for the last week; Cronbach's $\alpha = .65$). Each item was answered using a scale that ranged from 0 (*does not apply at all*) to 100 (*applies very much*). PPB scores were calculated by averaging these five items.
2. Pandemic-protective attitudes (PPA; i.e., personal attitudes regarding preparedness to deal with COVID-19) were measured with four items asking if people agreed that governments or people should do different activities during the pandemic (i.e., “cancel participation in social gatherings,” “not shake hands,” “close stores,” and “general curfew” [0 = No; 1 = Yes]). Following previous studies that used binary response options (Harding, 1982; Vallacher & Wegner, 1989), a single-item indicator of PPA was created by summing the scores of these four items, yielding a range from 0 to 4. The higher the score, the more positive the PPA was.
3. Counter pandemic-protective intentions (CPPI; i.e., personal intentions to leave home for unnecessary reasons) were measured with five items asking people's intentionality of leaving home in the next five days for unnecessary reasons (i.e., “visiting friends,” “feeling bored,” “for the adrenaline,” “feeling tired,” and “exercising one's freedom” [0 = did not check; 1 = checked]). Similarly, a single-item indicator of CPPI was created with a range from 0 to 4. The higher the score, the higher the CPPI was.

Control variables

We included the number of nationwide confirmed cases of and deaths from COVID-19 (per million), government responses in the previous week (baseline), and nation-level individualism as control variables in our nation-level analysis. We extracted data on COVID-19 cases and deaths from the “covid-tests-cases-deaths” file released by Oxford Martin School (Our World in Data, 2021). As commonly used in the literature (e.g., Adam-Troian et al., 2021; Gelfand et al., 2021; Lu, 2023), data on nation-level individualism ($N = 109$) were based on the Hofstede index. Specifically, we used the Hofstede individualism index (Hofstede et al., 2010) retrieved from the Hofstede Insights website (Hofstede Insights, 2021). In the individual-level analysis, in addition to nationwide COVID-19 confirmed case and death rates and nation-level individualism, we also controlled for demographic variables (i.e., age, gender, income, education, and number of family members) and individual-level trust in the government extracted from the data of individual responses (Fetzer et al., 2021).

Analytical procedure

After matching different datasets, we obtained a matched sample of 106 countries for the test of Hypothesis 1 (please see Appendix S1 in the online supporting information for the full list of countries). First, a series of ordinary least squares (OLS) regressions were conducted to test the influence of neoliberalism on momentary policy responses, while excluding the influence of nation-level individualism and other control variables.

Subsequently, we conducted latent growth modeling (LGM) to test the hypotheses regarding the effects of neoliberalism on the longitudinal changes in government responses to the COVID-19 pandemic. We adopted LGM because, first, based on the theory of principled and pragmatist approaches in strategic crisis management (Boin & Lodge, 2021), governments' reactions to a crisis full of pervasive and prolonged uncertainty such as the pandemic are more inclined to be pragmatist and influenced by conditional factors at independent timepoints. However, from a long-term perspective, even these pragmatist reactions can reflect a core principle or value. Therefore, to evaluate the influences of a principled, core cultural variable (e.g., neoliberalism) accurately, it is better to adopt the LGM approach, which can study the long-term trajectories of government responses. Second, technically speaking, the LGM approach is useful in longitudinal repeated-measures data. The strengths of LGM include the following: It can capture either a linear or a curvilinear trajectory when estimating longitudinal change; measurement errors can be accounted for; and the model can easily include multiple predictors or correlates of change (McArdle & Bell, 2000). To conclude, the LGM approach is useful for exploring our research question on the dynamic trajectories of government responses to the COVID-19 pandemic.

Using the LGM approach, we first tested a series of nested models, comparing them to determine the basic form of the growth trajectories. For each index (i.e., GRI, SI, CHI, and ESI), we specified two latent variables (i.e., the intercept and slope) for each of the 13 repeated scores at each timepoint. Specifically, we located the intercept at the initial measurement time (i.e., March 11) and fixed all the intercept factor loadings at one, while the first slope factor loading was zero. Accordingly, we were able to gain information about the average trend and starting levels through the means of intercept and slope. In addition, the average tendency could be represented by the slope mean, which serves to indicate the growth rate of the indices over time (i.e., the average longitudinal change). Since we could not specify a priori the form of the longitudinal changes in governmental responses, we sequentially fitted a sequence of three models with different growth functions to determine the change function that best fit the data. The first linear model assumed a significant sample-level linear change across the 13 timepoints (Model 1). The second model entailed an additional nonlinear growth, concomitant to the linear slope, to capture the curvilinear component of the longitudinal change in each dependent variable (Model 2). Finally, the third model assumes a nonlinear change in time by estimating the relative change (Model 3). All the ordinary least squares (OLS) regressions were conducted using the `lm()` function and all the LGM analyses were conducted using the “lavaan” package (version 0.6-8) (Rosseel, 2012) in R 4.0.5 software (R Core Team, 2021).

We obtained a final sample of 105,203 individuals nested in 104 countries after matching our focal variables from different data sources for the test of Hypothesis 2 (see Appendix S1 in the online supporting information for the full list of countries). Since Hypothesis 2 aimed to explore whether nation-level neoliberalism can also exert its influence on individuals, as previous literature on neoliberalism suggests (Bettache et al., 2020), we further tested the individual-level influence of neoliberalism by conducting hierarchical linear modeling (HLM). HLM is a major statistical approach recommended whenever the datasets are in nested structures (Bliese et al., 2018). Because the individuals were nested within countries, we first calculated intraclass correlations to assess how much variation was accounted for at the individual or national level. The results showed that the intraclass correlation coefficients (ICC [1]) of PPB, PPA, and CPPI were .169, .161, and .039, respectively. In our

HLM model, we estimated the effects of nation-level neoliberalism (i.e., EFI) on the outcomes (i.e., PPB, PPA, and CPPI) at the individual level, while controlling for confirmed COVID-19 cases and deaths (per million) at the national level, and number of family members, trust in the government, and demographic variables (i.e., age, gender, income, and education) at the individual level. HLM was conducted with the “lme4” package (version 1.1-26) (Bates et al., 2015) in R 4.0.5 software (R Core Team, 2021).

STUDY RESULTS

Nation-level influences

The descriptive statistics of the main variables in nation-level analyses are presented in Table 1 (for the descriptive statistics of all variables, see Appendix S12 in the online supporting information). Then, as illustrated in Table 2, the main results of OLS regressions showed that neoliberalism (i.e., EFI) and individualism were significantly negatively associated with government responses in only five and four timepoints out of 52 selected, respectively.

Next, we examined the form of the growth trajectory of government responses (for descriptive information of the growth trajectories, see Figure 2). Model 2 (the nonlinear trajectory together with linear trajectory) fitted the data significantly better than Model 1 (the linear trajectory) for all indices, including GRI ($\Delta\chi^2 = 753.27$, $\Delta df = 4$, $p < .001$), SI ($\Delta\chi^2 = 679.86$, $\Delta df = 4$, $p < .001$), CHI ($\Delta\chi^2 = 730.77$, $\Delta df = 4$, $p < .001$), and ESI ($\Delta\chi^2 = 675.92$, $\Delta df = 4$, $p < .001$). Similarly, Model 2 fitted the data significantly better than Model 3 (nonlinear change by estimating relative change) for all indices, including GRI ($\Delta\chi^2 = 498.25$, $\Delta df = 7$, $p < .001$), SI ($\Delta\chi^2 = 175.41$, $\Delta df = 7$, $p < .001$), CHI ($\Delta\chi^2 = 599.44$, $\Delta df = 7$, $p < .001$), and ESI ($\Delta\chi^2 = 335.06$, $\Delta df = 7$, $p < .001$). Therefore, we specified a growth trajectory using Model 2 for each index of government response in the following analyses.

Table 3 summarizes the LGM results. Specifically, the EFI negatively predicted the nonlinear trajectory slope of the GRI ($B = -.007$, $SE = .003$, $p = .004$), SI ($B = -.008$, $SE = .004$, $p = .033$), and CHI ($B = -.006$, $SE = .003$, $p = .018$); while it insignificantly positively predicted the linear trajectory slope of the CHI ($ps > .05$) (as illustrated in Figure 3). Simultaneously, individualism did not significantly predict either the linear or nonlinear trajectory slopes for nearly any governmental response indicator.² Thus, our hypothesis was partially supported, in that neoliberalism (i.e., EFI) significantly predicted the nonlinear trajectory of governments' general responses, stringent responses, and containment and health responses.

Individual-level influences

The descriptive statistics of the main variables in the individual-level analyses are presented in Table 4. Table 5 further presents the main results of the HLM analysis. Specifically, the EFI significantly negatively predicted PPB ($\beta = -.180$, $SE = .037$, $p < .001$) and PPA ($\beta = -.110$, $SE = .038$, $p = .005$) at the individual level; however, it nonsignificantly predicted CPPI ($\beta = .025$, $SE = .016$, $p = .129$). In contrast, nation-level individualism significantly predicted PPB negatively ($\beta = -.105$, $SE = .044$, $p = .016$) and CPPI positively ($\beta = .041$, $SE = .017$, $p = .015$), while the effect was not significant for individual-level PPA ($\beta = -.052$, $SE = .045$, $p = .261$).

²We found an exception for the effect of individualism on the linear trajectory slope of SI ($B = -.026$, $SE = .050$, $p = .028$). However, we note that this effect became insignificant in many cases of our supplementary analyses and thus should not be regarded as robust.

TABLE 1 Descriptive statistics of variables in OLS regressions and LGMs.

Variables	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8
1. EFI	62.21	10.58	—							
2. Individualism	38.13	21.64	.51***	—						
3. GDP per capita	4.10	.52	.72***	.56***	—					
4. Average cases (logged) ^a	1.71	.97	.64***	.50***	.85***	—				
5. Average deaths (logged) ^a	.30	.86	.47***	.54***	.71***	.87***	—			
6. Average GRI ^a	56.45	12.18	.28***	-.01	.44***	.47***	.31***	—		
7. Average SI ^a	70.16	14.57	.02	-.23*	.17*	.22**	.13	.88***	—	
8. Average CHI ^a	58.69	12.18	.19*	-.17	.34***	.37***	.21**	.97***	.93***	—
9. Average ESI ^a	40.76	24.75	.47***	.43***	.56***	.57***	.51***	.59***	.29***	.38***

Note: *n* = 106 (matched data).

Abbreviations: CHI, containment health index; EFI, economic freedom index; ESI, economic support index; GDP, gross domestic product; GRI, government response index; SI, stringency index.

^aAverage scores of COVID-19 cases, COVID-19 deaths, GRI, SI, CHI, and ESI of 13 weeks are presented here.

p* < .05; *p* < .01; ****p* < .001.

TABLE 2 Results of ordinary least squares regressions.

Time	Economic freedom				Individualism			
	GRI	SI	CHI	ESI	GRI	SI	CHI	ESI
T1	-.073	-.153	-.064	-.082	-.078	-.137	-.123	.289**
T2	-.113	-.167	-.119	-.014	.002	-.033	-.043	.158
T3	-.014	-.029	-.008	-.027	.110	.069	.040	.176**
T4	.107*	.048	.081	.085	-.077	-.024	-.028	-.133
T5	.127**	.078	.120*	.055	-.101*	-.084*	-.109*	-.003
T6	.040	-.010	.032	.025	-.026	-.020	-.039	.026
T7	.028	.002	-.005	.099*	-.032	-.021	-.030	-.003
T8	-.010	-.016	-.028	.042	-.058	-.057*	-.041	-.051
T9	-.031	.005	-.028	-.024	-.008	-.021	-.011	.003
T10	-.121**	-.114*	-.129**	.006	-.027	-.043	-.022	-.015
T11	-.066*	-.026	-.068*	.002	.029	.033	.037	-.024
T12	-.057	-.045	-.057	-.005	.002	-.008	-.002	.012
T13	-.068	-.049	-.046	-.073	.008	-.006	-.003	.044

Note: *n* = 106 (matched data). Standardized regression coefficients are shown in the table. Control variables include confirmed COVID-19 cases (per million) and deaths (per million) in the country (log transformed) and corresponding policy indices in the previous week.

Abbreviations: CHI, containment health index; ESI, economic support index; GRI, government response index; SI, stringency index.

p* < .05; *p* < .01.

Supplemental analyses

To offer further nuances to the study and to evaluate the robustness of our findings, we conducted a series of supplemental analyses. First, although we did not add nation-level testing rate as a covariate in the main analyses since the data of testing rate are partly or totally unavailable for nearly half of the countries, we additionally did so at each timepoint

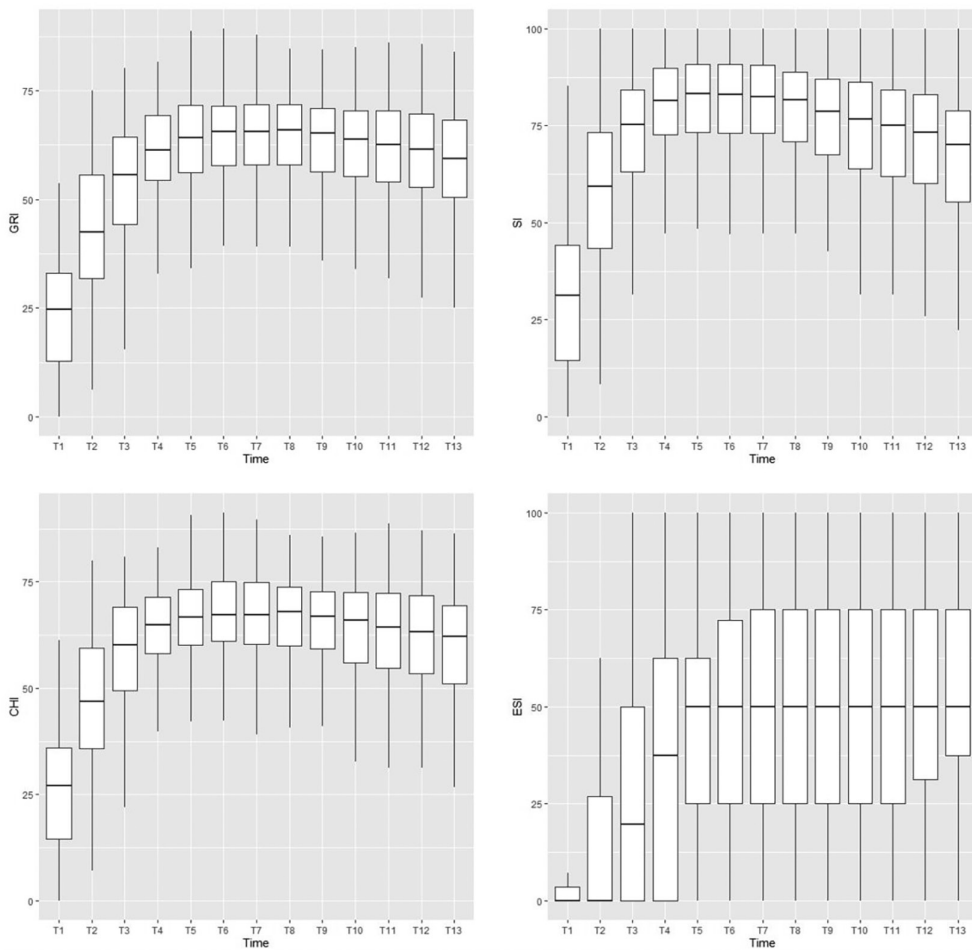


FIGURE 2 The longitudinal trends of GRI, SI, CHI, and ESI over time. $n = 106$. CHI, containment health index; ESI, economic support index; GRI, government response index; SI, stringency index.

in a supplemental analysis. The results remained qualitatively unchanged. Second, using the Cultural Tightness Index accessible for 53 countries in our study, we additionally treated cultural tightness as a competing variable in LGMs and HLMs. Controlling for this important cultural factor, it was noteworthy that the result patterns remained identical. Third, in our preregistered analyses, we used the EFI instead of the EFWI as the indicator of neoliberalism, because the EFI ($n = 178$ nations) covers more countries than the EFWI ($n = 165$ nations) and the 2019 EFWI was not fully updated when the analysis was conducted (Gwartney et al., 2021). In our supplemental analyses, we switched to using the EFWI to check the robustness of our results, and the result patterns were almost identical. Fourth, we further tested our hypotheses using two alternative indicators of individualism (Minkov & Kaasa, 2022; Pelham et al., 2022). We once again attained similar result patterns to those of our preregistered analyses. Fifth, we additionally controlled for population size in testing Hypothesis 1, which also resulted in identical result patterns to those of our preregistered analyses. Finally, we conducted nation- and individual-level analyses adding the four components of the EFI into the models separately, and the result patterns remained the same, although the effects only reached the significance level of 10% (i.e., $p < .10$). For

TABLE 3 Results of latent growth modeling.

Predictors	Outcome: GRI		Outcome: SI		Outcome: CHI		Outcome: ESI	
	Linear slop	Quadratic slop	Linear slop	Quadratic slop	Linear slop	Quadratic slop	Linear slop	Quadratic slop
EFI	.069 (.035)	-.007 (.003)**	.073 (.050)	-.008 (.004)*	.059 (.038)	-.006 (.003)*	.066 (.069)	-.006 (.005)
Effect size (EFI)	.226 [.005, .447]	-.321 [-.533, -.109]	.170 [-.057, .397]	-.243 [-.462, -.024]	.182 [-.043, .407]	-.271 [-.489, -.053]	.106 [-.11, .322]	-.135 [-.356, .086]
Individualism	-.003 (.008)	<.001 (.001)	-.026 (.012)*	.001 (.001)	-.011 (.009)	.001 (.001)	.024 (.021)	-.002 (.001)
Effect size (Individualism)	-.032 [-.219, .155]	.022 [-.159, .203]	-.220 [-.411, -.028]	.144 [-.042, .331]	-.123 [-.315, .07]	.094 [-.094, .281]	.108 [-.079, .296]	-.125 [-.318, .068]
<i>Model fits</i>								
χ^2/df	2.565		2.429		2.486		2.510	
CFI	.895		.902		.897		.919	
RMSEA	.098		.093		.095		.096	
SRMR	.072		.091		.084		.029	

Note: $n = 106$ (matched data). Unstandardized estimate coefficients are presented in the table with standard errors in the parenthesis. Gross domestic product per capita and confirmed COVID-19 cases and deaths per million Confirmed COVID-19 cases and deaths of every timepoint are controlled. Effect size measures reported in this table are standardized regression coefficients along with 95% confidence intervals.

Abbreviations: CHI, containment health index; EFI, economic freedom index; ESI, economic support index; GRI, government response index; SI, stringency index.

* $p < .05$; ** $p < .01$.

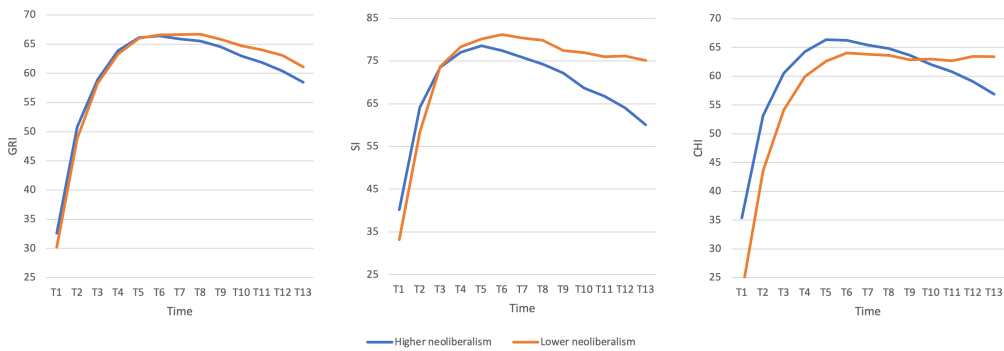


FIGURE 3 Estimated mean trajectories of government policy responses to the pandemic over time under different neoliberalism levels. $n = 106$ (matched data). We would like to thank the anonymous reviewer for the suggestion to add an additional presentation for trajectories of government policy responses to the pandemic over time under different neoliberalism levels based on our latent growth modeling (LGM) estimations. Note that the trajectories presented in this figure were generated based on multigroup LGM analyses. Higher and lower neoliberalism indicate nations at the 75th ($n = 36$) and 25th ($n = 41$) percentiles in neoliberalism, respectively. CHI, containment health index; GRI, government response index; SI, stringency index. Trajectories of the economic support index were unavailable to be presented due to the failure of the multigroup LGM estimations (model nonconvergence).

detailed results of the above supplemental analyses, see Appendices S2–S11 in the online supporting information.

DISCUSSION

The results of the OLS regressions suggest that both individualism and neoliberalism only showed limited and unstable effects on governmental responses at separate timepoints. However, the findings could be justified: As the previous literature has implied, under situations of pervasive and prolonged uncertainty, governments can take either principled or pragmatist approaches to tackle a crisis (Ansell & Boin, 2019). With the former approach, governments may take actions more in line with a core principle or value, such as neoliberalism. However, with the latter approach, how governments react may be more contingent on the circumstances, rather than determined by a core principle. This may be especially true at the beginning of a crisis, when the government has to take temporary and expedient measures given the urgency and unexpected nature of the crisis. Nonetheless, even pragmatic approaches can culminate in a strategy that manifests some fundamental principle in the long run (Boin & Lodge, 2021). Therefore, only from a relatively long-term perspective can we evaluate the impact of neoliberalism (and other cultural variances) on governmental responses more accurately. This possibility was further examined using LGM.

The descriptive statistics suggested an inverted J shape for each of the longitudinal development trajectories of policy responses (see Figure 2). This reflected that, for a certain period after the WHO declared the COVID-19 a pandemic, countries generally adopted policy responses to address it. However, the magnitude of policy responses began to slowly decrease as the first wave of the pandemic was brought under control and went into a “relaxation period” in early June 2020 (Kossowska et al., 2021). Moreover, the LGM results revealed that neoliberalism could negatively predict the nonlinear trajectory of the GRI, SI, and CHI. That is, neoliberal countries exhibited trajectories of policy responses with sharper downward trends. This finding supported our hypothesis and was in consonance with the theoretical critique that, in neoliberal countries, stringent containment policies that restrict economic activities are often derogated and among those most likely to be abandoned during a dynamic trade-off

TABLE 4 Descriptive statistics of variables in HLMs.

Variables	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
<i>Nation level</i>														
1. Economic freedom index (EFI)	68.8	9.38												
2. Individualism	56.71	25.48	.67***											
<i>Individual level</i>														
3. Age	38.88	13.01	.20***	.24***										
4. Gender (0 = Female, 1 = Male)	.44	.50	<.01	.01	.03***									
5. Years of education	16.36	4.68	-.03***	-.01*	.11***	.01**								
6. Number of family members	2.93	1.72	-.10***	-.20***	-.12***	<.01	-.03***							
7. Trust in the government	2.91	1.50	.30***	.09***	.09***	<.01	-.05***	.04***						
8. Income (logged)	4.21	1.08	-.01*	-.11***	.04***	.06***	.07***	.10***	.01*					
9. Cases (logged)	1.77	.79	.65***	.62***	.20***	.01*	-.08***	-.13***	.34***	-.23***				
10. Deaths (logged)	.46	.48	.43***	.52***	.17***	.03***	-.08***	-.11***	.19***	-.15***	.79***			
11. PPB	86.46	14.77	.10***	.13***	.12***	-.04***	.07***	-.02***	.07***	.03***	.19***	.17***		
12. PPA	3.47	.81	-.09***	-.03***	-.06***	-.04***	.01*	.04***	-.13***	-.04***	-.03***	.03***	.29***	
13. CPPI	.20	.59	.03***	.01***	-.09***	.05***	-.02***	-.04***	.01***	<.01	-.01**	-.03***	-.23***	-.27***

Note: n = 105,203 nested in 104 nations (matched data).

Abbreviations: CPPI, counter pandemic-protective intentions; PPA, pandemic-protective attitudes; PPB, pandemic-protective behaviors.

*p < .05; **p < .01; ***p < .001.

TABLE 5 Results of HLM analysis (individual level).

Predictors	PPB	PPA	CPPI
Age	.063*** (.007)	.003 (.006)	-.095*** (.010)
Gender (0 = Female, 1 = Male)	-.070*** (.007)	-.081*** (.007)	.062*** (.006)
Years of education	.035*** (.004)	-.013** (.004)	.002 (.004)
Number of family members	-.005 (.004)	.007 (.004)	-.036*** (.004)
Trust in the government	.045*** (.009)	-.001 (.016)	-.029** (.009)
Income (logged)	.041*** (.005)	.001 (.004)	-.005 (.003)
Cases (logged)	.491*** (.019)	.131*** (.018)	-.060*** (.016)
Deaths (logged)	-.118*** (.012)	-.128*** (.012)	.027* (.011)
Individualism	-.105* (.044)	-.052 (.045)	.041* (.017)
Economic freedom index (EFI)	-.180*** (.037)	-.110** (.038)	.025 (.016)
Marginal R^2	.095	.031	.017
Number of observations	105,203	105,203	105,203
Number of countries	104	104	104

Note: Standardized regression coefficients are displayed as effect size measures, with standard errors in parentheses.

Abbreviations: CPPI, counter pandemic-protective intentions; PPA, pandemic-protective attitudes; PPB, pandemic-protective behaviors.

* $p < .05$; ** $p < .01$; *** $p < .001$.

between exchange values and other values (e.g., maintaining people's health and saving lives) (Narlikar & Sottilotta, 2021).

In addition, it is also noteworthy that neoliberalism did not impact the ESI. This may be because only a few countries adopted economic support policies to mitigate the pandemic (Hale et al., 2021), denoting that there was a floor effect for the impact of neoliberalism and individualism on the ESI.

In the individual-level analysis, a series of HLM analyses showed that neoliberalism negatively predicted PPB and PPA. Although limited by the datasets adopted, we cannot further examine the exact underlying mechanism of how nation-level neoliberalism influences individual attitudes and behaviors; some theoretically possible processes are provided here. For instance, neoliberalism, as a predominant ideology, may act as an intersubjective representation and further become internalized by society members as a private representation (Chiu et al., 2010). Both these intersubjective and internalized representations of neoliberalism would likely influence individuals' reactions during the pandemic.

As revealed by the results of HLM, the EFI significantly predicted PPB and PPA but not CPPI, while nation-level individualism predicted PPB and CPPI but not PPA. As an attempt

to explain the results that did not support our hypotheses, we extend the discussion on the insignificant relationship between the EFI and CPPI. Measuring the intentionality of leaving home in the next five days for the listed unnecessary reasons (e.g., “feeling bored” and “feeling tired”), CPPI indeed captured more specific actions, rather than extensive aspects of daily life, of individuals' pandemic responses. Therefore, the effect of neoliberalism (i.e., EFI) on CPPI could be weaker because of the confounding of more specific factors that might determine individuals' behavioral intentionality during a given time period.

The present study provides three major contributions to the literature. First, to our knowledge, this is the first study to quantitatively examine the impact of nation-level neoliberalism on governmental and individual reactions to the COVID-19 pandemic. In particular, we showed that the impact of neoliberalism is incremental to and independent from that of individualism. This is pivotal in understanding the discrepancies in responses to the recent spikes in the pandemic (Liu, 2021).

Second, the present study can stimulate a more refined discussion on policy responses. Instead of indirectly measuring the speed of government policy response (e.g., using the cumulative number of cases at the time the first policy measure was adopted, or the time interval between the first confirmed case and the first adopted policy) as in previous studies (Adolph et al., 2021; Toshkov et al., 2022), we took advantage of the OxCGRT dataset to delineate dynamic fluctuations in policy implementation during the pandemic. Through this dynamic approach, we found detrimental effects of neoliberalism on the long-term sustainability of restrictive policy responses to the COVID-19 pandemic, thus providing a novel explanation of the phenomenon of “pandemic fatigue” (i.e., fatigue in responses toward the pandemic) (Petherick et al., 2021).

Third, our study sheds light on the effects of nation-level neoliberalism on individual responses to the COVID-19 pandemic. Some studies have noted that political-economic conservatism at the individual level, which conceptually overlaps with neoliberalism (Azevedo et al., 2019), could lead to less engagement in preventive actions, lower risk perceptions, and more support for the reopening of the economy during the COVID-19 pandemic (Jain et al., 2023; Newman et al., 2022; Pennycook et al., 2022). Our findings, by adopting the perspective of social representation (Guimond et al., 2013; Morris et al., 2015), further demonstrated that nation-level neoliberalism in a structural, instituted form can also exert influences on individual responses.

This study also has practical implications for both governments and individuals under the rule of structural and instituted neoliberalism. From a top-down view, governments should take lessons from the pandemic and be aware that neoliberalism is not omnipotent, and that free markets and self-governance are not supreme values overriding all other moral principles. Accordingly, in the wake of major public crises involving public safety, governments should make more flexible policy decisions to give priority to people's lives instead of sticking to the dogmatic principles of neoliberalism. In the long run, governments should systematically balance neoliberal ethics with other equally important values (e.g., the values of equity and mutual care) in the formation and revision of laws and institutions. From a bottom-up view, citizens should also take active roles in resisting the hegemonic expansion of neoliberal culture in realms where equity and life should be put first, such as engaging in the construction of a better public health system (Jacobs & Myers, 2014).

Limitations

First, although we have used the EFI of 2019, which refers to a period prior to that of the dependent variables to capture the causal direction from neoliberalism to pandemic-related responses, a direct causal link can hardly be inferred based on the current analysis. Therefore,

for future studies, it would be meaningful to manipulate instituted neoliberal culture (e.g., laws or institution design) in laboratory settings using artificial groups or imaginary scenarios to see how policymakers and individuals take actions in response to public health crises such as the COVID-19 pandemic. Second, in regard to our choice of control variables, the individualism index used in our main analyses (i.e., the Hofstede index) is criticized by some as outdated and peculiar (Pelham et al., 2022). That being said, we have conducted supplemental analyses using two alternative measures of individualism for the core results, to which readers should pay more attention. Third, as an initial exploration, we have verified an overall negative effect of neoliberalism on governmental and individual responses to the COVID-19 pandemic. However, it remains unclear exactly why and how neoliberalism influences governmental and individual responses to a pandemic. Future studies could continue to investigate the potential mediating factors in the relationship between neoliberalism and pandemic responses. For example, in light of our analysis, it might be fruitful to explore whether neoliberalism is perceived as an intersubjective representation or if it is internalized into individuals' belief systems and how it influences individuals' response behaviors. Moreover, our analysis mainly captured the trajectories of policy responses in the first wave of the COVID-19 pandemic (i.e., March 11 to June 9, 2020), while neoliberalism may also have influenced nation-level responses toward the pandemic in its latter phases. Especially with the large-scale implementation of vaccines, some countries have gradually adjusted their policies and chosen to coexist with the virus, while other countries continue to adhere to strict restrictive policies, which may also be explained by neoliberalism. Thus, it would be meaningful to explore the effects of neoliberalism on governmental responses across various stages of the pandemic. Finally, the present study primarily focused on the negative effects of neoliberalism on governmental and individual responses to the pandemic, while focusing less on the consequent public health-related outcomes resulting from these responses, such as morbidity and mortality rates. It would be relevant to further explore whether neoliberalism would lead to adverse public health-related outcomes (e.g., more infections or deaths caused by the pandemic) in future studies.

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ORCID

Yuanze Liu  <https://orcid.org/0000-0003-1437-1892>

Zhongda Wu  <https://orcid.org/0000-0002-9417-6562>

Yiqun Gan  <https://orcid.org/0000-0001-9886-6862>

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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