War Against COVID-19: How Is National Identification Linked With the Adoption of Disease-Preventive Behaviors in China and the United States?

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Fighting the COVID-19 pandemic requires large numbers of citizens to adopt disease-preventive practices. We contend that national identification can mobilize and motivate people to engage in preventive behaviors to protect the collective, which in return would heighten national identification further. To test these reciprocal links, we conducted studies in two countries with diverse national tactics toward curbing the pandemic: (1) a two-wave longitudinal survey in China (Study 1, \(N = 1200\)), where a national goal to fight COVID-19 was clearly set, and (2) a five-wave longitudinal survey in the United States (Study 2, \(N = 1001\)), where the national leader, President Trump, rejected the severity of COVID-19 in its early stage. Results revealed that national identification was associated with an increase in disease-preventive behaviors in both countries in general. However, higher national identification was associated with greater trust in Trump’s administration among politically conservative American participants, which then was associated with slower adoption of preventive behaviors. The reciprocal effect of disease-preventive behaviors on national identification was observed only
Governments around the globe have devoted significant efforts to curbing the spread of the SARS-CoV-2 coronavirus and the disease it causes, COVID-19. To contain the COVID-19 pandemic, stakeholders in different countries have implemented policies and issued detailed recommendations on disease-preventive practices (e.g., social distancing, wearing face masks, avoiding crowds). The adoption of these preventive practices by the public is especially needed in the case of COVID-19, given its high human-to-human transmissibility (e.g., Courtemanche, Garuccio, Le, Pinkston, & Yelowitz, 2020; Zhang et al., 2020). Based on computer simulation, Kai, Goldstein, Morgunov, Nangalia, and Rotkirch (2020) estimated that wearing face masks would significantly reduce the infectious rate of COVID-19 when at least 80% of a population wears them, but not when only 50% does. Accordingly, the fight against COVID-19 relies not only on the efforts of medical experts but also on the concerted efforts of everyone in a country adopting the recommended disease-preventive behaviors.

To ensure people’s adoption of disease-preventive behaviors, some countries and regions have implemented mandatory policies (e.g., stay-at-home and social-distancing orders, closure of schools and nonessential businesses). Despite these policies, the adoption of disease-preventive practices often relies on people’s voluntary compliance and cooperation. At the individual level, when people perceive a high risk of contracting the disease, they are motivated to adopt preventive behaviors in order to protect themselves and their family members (for a review, see Bish & Michie, 2010). At the collective level, when there are enough people in a nation adopting preventive behaviors, each individual has a lower likelihood of contracting the disease (Courtemanche et al., 2020; Kai et al., 2020; Zhang et al., 2020). As such, the adoption of disease-preventive practices is similar to cooperation in a public-goods dilemma, such that a nonexclusive health benefit can be enjoyed by everyone, regardless of individual contribution (see Johnson, Dawes, Fowler, & Smirnov, 2020). On the one hand, adoption of preventive practices (e.g., social distancing, wearing face masks) imposes some personal costs (e.g., physical discomfort, reduced freedom). On the other hand, when a large number of citizens adopt preventive practices, the country as a whole benefits by controlling the pandemic faster and being able to reopen schools and businesses sooner. Therefore, individuals may choose to adopt preventive behaviors, regardless of their own risk of contracting the disease, if they prioritize the national benefits over personal costs.

Given that people who strongly identify with a group will prioritize the collective well-being of that group (Brewer, 1991; De Cremer, & Van Vugt, 1999; Ellemers, 2012), we postulate that the
more individuals identify with their nation, the more they will adopt disease-preventive practices. Also, to the extent that curbing the disease is a national goal, contributing to this goal by engaging in preventive practices can enhance one’s identification with the nation in return. As such, there could be a reciprocal link between individuals’ national identification and their adoption of preventive practices. In this research, we seek to examine these links using a longitudinal design, assessing people’s national identification and disease-preventive behaviors at multiple time points during the first few months of 2020, when the coronavirus spread worldwide.

Although our proposed links between national identity and disease-preventive behaviors may seem straightforward, it is unclear how they would play out in different countries, which differ in their national tactics and communication strategies regarding the pandemic. Furthermore, people may have different ways to conceptualize national identity and its meaning, given their immediate sociopolitical contexts. Admitting these challenges, we sought to test our proposed links in two countries with diverse sociopolitical contexts: China and the United States. To justify this comparison, we will first elucidate our overarching theoretical framework, then discuss specific predictions in the contexts of (mainland) China and the United States. In particular, we will highlight the similarities and differences, as well as the limitations we faced in testing our predictions in each context.

Before we proceed, it is crucial to note that we do not argue for a universally appropriate method in curbing disease outbreaks, nor are we making a value judgment that favors one country or its methods over another. Instead, our goal is to test the extent to which a social identity approach would be useful in promoting disease-preventive behavior within different sociopolitical contexts.

Theoretical Background and Hypothesis Development

The present research aims at predicting disease-preventive behaviors via a social identity approach (Drury, 2018; Tajfel, 1981; Turner, Oakes, Haslam, & McGarty, 1994). Social identity is a part of an individual’s self-concept that comes from his or her knowledge of and emotional bonding with a social group (Tajfel, 1981). People who have strong identification with a group will consider being a member of that group to be important and will hold positive evaluation of such membership (for a review, see Ashmore, Deaux, & McLaughlin-Volpe, 2004). This ingroup identification is a crucial factor in determining people’s behavioral decisions. According to social identity theory (Tajfel, 1981) and self-categorization theory (Turner et al., 1994), identification with a group leads people to think, feel, and act on behalf of the group (Brewer, 1991; De Cremer, & Van Vugt, 1999), thereby motivating them to engage in behaviors that can benefit other ingroup members and/or achieve shared group goals (Ellemers, 2012). This ingroup-helping preference can also be explained by the enhanced connection between ingroup members (e.g., perceived similarity and closeness) through heightened ingroup identification (see Levine & Crowther, 2008). For example, studies have found that ingroup identification is related to more cooperation in a public-goods dilemma, even at the expense of personal benefit (e.g., De Cremer & van Dijk, 2002; De Cremer & Van Vugt, 1999). Drury, Brown, González, and Miranda (2016) found that shared ingroup identity (identification with victims of an earthquake) predicted people’s participation in actions supporting earthquake survivors. Levine, Prosser, Evans, and Reicher (2005) also demonstrated that in emergencies, people are more likely to help strangers that show a clear sign of shared ingroup membership than those who show rival outgroup membership or no identifiable group membership.

The Beneficial Role of National Identification on Disease-Preventive Behaviors

The COVID-19 pandemic is essentially a health crisis that requires joint efforts from everyone through adherence to public-health recommendations and mandates set forth by the state and local governments. In the face of such a collective crisis, national identification helps people to develop a
sense of common fate and thus motivates them to protect and support their fellow citizens (Kellezi, Reicher, & Cassidy, 2009; see Drury, Cocking, & Reicher, 2009). Indeed, past studies have offered supporting evidence on the relationship between national identification and people’s ingroup protection behavior (Stevenson & Manning, 2010). For example, Maki et al. (2019) found that national identification was related to a higher likelihood of donating money and goods to compatriots after an earthquake. Furthermore, according to the common ingroup-identity model (Gaertner, Dovidio, & Samuel, 2000), a more inclusive social identity, such as national identity, can transcend existing intergroup bias between subordinate groups (e.g., ethnic groups, religious groups, etc.) and thereby unify people to engage in behaviors that benefit the superordinate group (Levine et al., 2005; Transue, 2007). In the case of COVID-19, people’s adoption of disease-preventive practices can be seen as an ingroup cooperative behavior, given that such behavior contributes to curbing the spread of the virus and, in effect, protecting other ingroup members.

That being said, the implementation of policies and regulations, together with the discourse of governmental authorities, can shape the extent to which “fighting COVID-19” is perceived as a national goal. Countries differ in terms of their policies for curbing the spread of the disease and how they mobilize their citizens (Yan, Zhang, Wu, Zhu, & Chen, 2020). Some governments acknowledged the risk of the pandemic and set a clear national goal to fight it early on (e.g., New Zealand, South Korea, China), whereas others showed ambiguity in their discourse, with top government administrators denying the severity of COVID-19, often comparing or equating it to the common flu (President Trump repeatedly espoused this view; Yamey & Gonsalves, 2020). It is theoretically interesting to test the beneficial role of national identification in these two distinct contexts: that of a clear national discourse (e.g., China) and that of an ambiguous national discourse (e.g., the United States, due to President Trump’s early denial of the severity of the COVID-19 pandemic).

Cross-Country Differences and Similarities

Before making specific predictions for the mainland Chinese and American contexts, we need to address several issues. First, previous research has shown cross-cultural differences in the normative meaning of national identity across China and the United States. For example, Hong, Ip, Chiu, Morris, and Menon (2001) have shown that Chinese respondents generated more obligations and responsibilities than individual rights when thinking about their national identity, whereas North American respondents showed the opposite tendency. To tackle this issue, we operationalize national identification in terms of the private-evaluation dimension of collective identity, which reflects the extent to which an individual feels positively about his or her ingroup membership (for a review, see Ashmore et al., 2004). Such positive feelings represent an ingroup love that would motivate people to promote the collective well-being of the national group regardless of the specific contents of one’s national identity, thereby alleviating the limitation stated above to some extent.

Second, we will not compare the mean differences of national identification and disease-preventive behaviors across the two countries. This comparison is unwarranted because countless factors may give rise to mean differences between the countries. For instance, previous research has shown that Chinese participants prioritize national identity more than North American participants do (Hong, 2009). Instead, we focus on comparing the linkages of national identification and disease-preventive behaviors within each country given its sociopolitical context.

Predictions for China

Some countries have a centralized and homogenous governance structure, with the political power of the central government being emphasized. When these countries aim at curbing the spread of COVID-19, it is easier for them to implement strict and mandatory regulations in a top-down
manner (Yan et al., 2020). These regulations, together with the official rhetoric of the authorities, send a clear message to citizens about the national goal of fighting COVID-19. One clear example of this centralized approach is China, where authorities not only implemented austere measures in curbing the disease but also mobilized citizens to support these measures by using wartime narratives. For example, Chinese President Xi Jinping declared a “people’s war” against COVID-19 in early February 2020. These measures and narratives explicitly framed the fight against COVID-19 as a national goal. It follows that a stronger national identification would motivate people to engage more in disease-preventive behaviors in this political landscape. In this research, we operationalize this adoption as people’s self-reported engagement in a list of disease-preventive behaviors (e.g., wearing a face mask in public, avoiding crowds, washing hands for at least 20 seconds or using sanitizer). We predicted that national identification would relate to more engagement in disease-preventive behavior over time.

**H1:** National identification will be positively related to disease-preventive behavior in China.

**Predictions for the United States**

Other countries have a less centralized and more heterogeneous governance structure; in these countries, there can be diverse opinions and discourses surrounding COVID-19. It is possible that “fighting COVID-19” as a national goal is diluted or obscured by ambiguous discourse in a country. In this research, we refer to the United States as a context in which the COVID-19 discourse has been politically polarized.

At the early stage of the outbreak, conservative-leaning media (e.g., Fox News; Ash, Galletta, Hangartner, Margalit, & Pinna, 2020) and the Trump administration described the virus as less threatening than liberal-leaning media did (e.g., Ash et al., 2020). For example, from late January 2020 to mid-March 2020, President Donald Trump repeatedly offered reassurances to Americans that COVID-19 was no more dangerous than seasonal influenza, that it would go away on its own, and that there was nothing to worry about (see Yamey & Gonsalves, 2020). Although President Trump declared a state of emergency and employed war narratives in late March, he did not consistently promote the recommended disease-prevention practices advised by the U.S. Centers for Disease Control and Prevention (CDC). For example, the president stated that he would not wear a face mask even after the CDC recommended everyone do so (see Yamey & Gonsalves, 2020). He also expressed his support for protests against mandatory stay-at-home orders and for reopening businesses, even though the public health experts recommended the opposite. Trusting in the Trump administration therefore may have made people consider disease-prevention practices to be unconducive to the well-being of Americans as a whole, although they may still have had a strong motivation to protect their compatriots.

Consistent with President Trump’s discouragement in following the recommended disease-prevention practices, studies found that trust in the Trump administration was related to stronger intention to defy social-distancing orders (e.g., Graham et al., 2020). Using geotracking data, Gollwitzer et al. (2020) found that, between March 9 and May 29, 2020, counties that voted for Trump in the 2016 election showed less physical distancing than did those that voted for Clinton, even after controlling for the number of actual confirmed cases of COVID-19 in each county. These findings suggest that trusting in the Trump administration would relate to less disease-preventive behavior, regardless of the actual severity of the outbreak.

Given this sociopolitical context, we predicted that the effect of national identification on disease-preventive behavior would be ambivalent. On the one hand, the motivation to protect compatriots would lead to more adoption of disease-preventive behaviors (i.e., the beneficial role of
national identification). Therefore, it is possible that, like in China, a stronger national identification would motivate people to engage in disease-preventive behaviors more. This led us to make a prediction similar to that of China.

**H2**: National identification would have a positive association with disease-preventive behavior in the United States.

On the other hand, if people trust the narratives of the Trump administration, they would be less likely to engage in disease-preventive behaviors given his discouragement. The extent to which a national leader is trusted by his citizens would relate to national identity. According to the social identity approach to leadership (Hogg, 2001; van Knippenberg & Hogg, 2003), the effectiveness of leadership depends on a sense of shared group membership between leader and followers (i.e., “we-ness”). Studies have shown that ingroup identifiers would consider a leader to be influential, effective, and trustworthy if they perceive this leader to be prototypical of the group (i.e., representing the group; e.g., Giessner & van Knippenberg, 2008; for a meta-analysis, see Steffens, Munt, van Knippenberg, Platow, & Haslam, 2021).

Individuals with strong national identification may inherently consider their official national leader to be representative of the group by developing a sense of similarity (Alabastro, Rast, Lac, Hogg, & Crano, 2013; see also Levendusky, 2018). That being said, in the United States, trust in the national leader was also affected by individuals’ political orientation. For example, Alabastro et al. (2013) observed that liberals were still more likely than conservatives to view President Obama as sharing similarities with them. That is, given that President Obama represented liberals (and Democrats), Americans with the same political ideology (and party affiliation) considered President Obama to be more prototypical of Americans than those with opposite political ideology did. Similarly, in the political context of 2020, it is sensible to expect that conservatives (and Republicans) would be more likely than liberals (and Democrats) to consider President Trump to be more prototypical of Americans. Supporting this view, Gaffney, Sherburne, Hackett, Rast, and Hohman (2019) found that Republicans reported higher levels of the perceived prototypicality of Trump as a Republican after he won the 2016 U.S. election. Based on the social identity approach to leadership, we expect that national identification would have a stronger positive association with trust in the Trump administration among individuals with higher levels of conservative ideology, given that these individuals would be more likely to consider President Trump to be representative of Americans. Taken as a whole, we thus expected that in the United States, national identification may also exert a negative influence on disease-preventive behavior, with a negative pathway mediated through trust in the Trump administration to handle COVID-19, particularly among political conservatives. Therefore, we predicted a moderated mediation effect.

**H3**: National identification would have a negative indirect effect on disease-preventive behavior in the United States via trust in the Trump administration among political conservatives.

### Change in National Identification in Response to COVID-19

Threatening events (e.g., terrorist attacks, economic recession, natural disasters) may increase people’s ingroup identification. For example, Americans became more patriotic and identified more with their fellow citizens after the 9/11 attacks (Li & Brewer, 2004). Social psychology studies have offered multiple theories to explain this change in ingroup identity. The terror management theory posits that ingroup identification helps individuals deal with death anxiety by providing them with self-worth (Pyszczynski, Solomon, & Greenberg, 2015). Other models of social cognition also
suggest that these threatening events could dampen people’s sense of personal control, and people refer to their ingroup identification as an alternative means to regain control (Greenaway et al., 2015). To the best of our knowledge, only one study has documented how national identification changed in response to COVID-19 (Sibley et al., 2020). In particular, Sibley and colleagues found that New Zealanders’ national identification increased from pre- to post-nationwide lockdown. We aim to advance this knowledge by examining how national identification changed in China and the United States across different periods of the outbreak. Based on existing theories and evidence, we expected to see an increase in national identification over time.

H4: There is an increase in national identification over time in both China and the United States.

The Influence of Disease-Preventive Behavior on National Identification

The above theoretical viewpoint considers the change in national identification to be a psychological response to the threat of COVID-19. In this research, we propose an additional mechanism to understand how national identification might have changed during the COVID-19 pandemic. From a social identity approach, investing efforts in achieving shared group goals and performing identity-consistent behaviors should strengthen one’s ingroup identification. This prediction is also consistent with the self-perception theory (Bem, 1972), which posits that individuals construe their self-understanding through reflecting on their behaviors. It follows that contribution to the group goal would encourage one to consider oneself a significant member of the group. Studies have found that participation in collective actions and ritualized collective events strengthen one’s ingroup identification (Khan et al., 2016; van Zomeren, Leach, & Spears, 2010). For example, in a longitudinal study, Thomas, Zubielevitch, Sibley, and Osborne (2020) found that participation in collective action was related to higher identification with the (ethnic) group over time. With the national goal of curbing the spread of COVID-19, disease-preventive behavior can be seen as a collective action for the good of the group. Accordingly, we expect that engagement in disease-preventive behavior will also relate to an increase in national identification over time.

H5: The change in national identification is positively influenced by prevention behavior in both China and the United States.

Overview of the Present Research

The present research adopts a social identity approach to understand (1) people’s change in national identification during the COVID-19 pandemic and (2) their change in engagement in disease-preventive behavior over time. We tested our hypotheses using two longitudinal survey studies with samples of participants from China (Study 1; Hypotheses 1, 4, and 5) and the United States (Study 2; Hypotheses 2 through 5). Although it would be ideal to test a parallel of Hypothesis 3 in China (i.e., the effect of trust in President Xi and his administration), the political sensitivity of the topic did not allow us to measure that construct in our survey in China. We admit that this is a limitation of Study 1. Figures 1 and 2 illustrate the similarities and differences of our predictions for China (Study 1) and the United States (Study 2) respectively.

Past studies have revealed that risk perception, negative and positive emotions toward the disease outbreak, and confidence in the government’s ability to tackle the outbreak are key motivational factors underlying disease-preventive behaviors in the current pandemic (Graham et al., 2020) and other disease outbreaks (Zika virus; Pilitch-Loeb et al., 2019). To rule out alternative explanations based on
these factors and to demonstrate the unique contribution of national identification to disease-preventive behavior, we measured and included the three constructs (risk perception, negative and positive emotions toward COVID-19, and confidence in the government’s ability to tackle COVID-19), and demographic variables were controlled. The solid lines denote links supported by the empirical results.

Finally, because of limitations in resources and logistics, we conducted the two studies in different time periods and with some differences in design. Specifically, we conducted Study 1 in China with a two-wave longitudinal online survey covering the period during the outbreak (Time 1: February to March 2020; when the total confirmed cases ranged from 40,171 to 81,470; with an average of 939 new cases confirmed per day during this period) and after the outbreak had been largely contained (Time 2: April 2020; when the total confirmed cases ranged from 82,788 to 82,862; with an average new confirmed case count of 11 per day). Therefore, the engagement of preventive behaviors is likely to be lower on average in Time 2 than in Time 1. However, because government enforcement and monitoring of people’s preventive behaviors were also relaxed during Time 2 (Oxford COVID-19 Government Response Tracker; Hale et al., 2020; see also Yan et al., 2020), participants’ preventive behaviors in this time would reflect their voluntary engagement to a good extent. This helps refute
the possibility that participants’ engagement in preventive behaviors was largely nonvoluntary due to
the Chinese government’s austere enforcement.

Study 2 was conducted in the United States in a five-wave longitudinal online survey covering
the period from late March (Time 1; when the total confirmed cases ranged from 85,356 to 239,279;
with new confirmed cases averaging 18,874 per day) to late May (Time 5; when the total confirmed
cases ranged from 1,528,235 to 1,678,843; with an average of 22,793 new confirmed cases per day),
which captured a surge of confirmed COVID-19 cases over time. Despite these differences in the
timing and infection rates in China and the United States, we should still be able to test our proposed
hypotheses in the two countries independently.

STUDY 1 (CHINA)

Method

Participants

We conducted a two-wave longitudinal survey study during the outbreak (Time 1: February to
March) and after it had been largely contained (Time 2; late April). We recruited Chinese participants
from Wenjuanbao (https://www.justvoting.com/), a crowdsourcing online platform that resembles
the Amazon Mechanical Turk. The Time 1 data belonged to a larger project which originally involved
3025 participants. The sample size of the Time 2 data is 1200, which was determined a priori to data
collection, with the aims of achieving a statistical power of 80% for detecting a small effect ($r = .10$
)) at alpha .05 level. That is, we stopped recruiting Time 1 participants to participate in Time 2 when
the quota of 1200 was filled. All the main analyses were based on data from those participants who
completed both waves (i.e., $N = 1200$; 565 females). The mean age of the participants was 31.10 years
($SD = 8.86$). We conducted attrition analysis to examine the differences between participants who
completed both waves and those who completed only the first wave; results showed that the attrition
did not affect our main findings. See details in Appendix S2 in the online supporting information.

Procedures and Measures

Participants completed an online survey at each time point. All the materials were presented in
Chinese. For the measures that were originally created in English, we followed the standard trans-
lation and then the back-translation procedure to create the Chinese version of the measure. All
data-collection procedures and research materials were reviewed and approved by the Committee
on Research Practices of the university. Table 1 shows the mean, standard deviation, and reliability

| Variable                                | Time 1 Mean (SD) | Cronbach’s $\alpha$ | Time 2 Mean (SD) | Cronbach’s $\alpha$ |
|-----------------------------------------|------------------|----------------------|------------------|----------------------|
| National identification                 | 5.02 (.88)       | .60                  | 5.07 (.86)       | .62                  |
| Disease-preventive behavior             | 4.42 (.56)       | .85                  | 4.25 (.61)       | .86                  |
| Risk perception                         | 2.30 (1.00)      | .85                  | 2.19 (.89)       | .86                  |
| Negative emotions toward COVID-19       | 3.16 (1.35)      | .90                  | 2.86 (1.20)      | .89                  |
| Positive emotions toward COVID-19       | 4.71 (1.21)      | .84                  | 5.04 (1.19)      | .86                  |
| Confidence in the institution$^a$       | 5.61 (1.25)      | .74                  | 5.62 (1.26)      | .77                  |

$^a$We reported interitem correlation for constructs that had only two items, instead of Cronbach’s $\alpha$. 

Table 1. Descriptive Summary of Variables of Chinese Participants (Study 1)
of the measures. We present the details of the scale items in Appendix S1 in the online supporting information.

**National Identification**

To assess participants’ national identification, we adapted a four-item private collective-esteem measure from Luhtanen and Crocker (1992). Specifically, participants reported on a 6-point scale (1 = strongly disagree to 6 = strongly agree) to indicate the extent to which they agree or disagree with four statements at the moment (e.g., “I feel good about being Chinese.”).

**Disease-Preventive Behavior**

We created a 10-item disease-preventive behavior measure based on the practices recommended by the Chinese Center for Disease Control and Prevention (e.g., “wear a mask in public places”). Participants indicated how frequently they performed these behaviors in the past week (1 = never to 5 = always).

**Covariate Variables**

**Risk perception** We created a three-item risk-perception measure based on past studies (e.g., Pilch-Loeb et al., 2019). Participants reported on a 7-point scale (1 = not at all likely to 7 = extremely likely) to indicate how likely they believed themselves or someone in their family or local community to become infected with COVID-19.

**Negative and positive emotions toward COVID-19** We identified eight emotional state items. Negative emotions were captured by five items: afraid, threatened, anxious, tense, and disgusted. Positive emotions were captured by three items: optimistic, calm, and hopeful. Participants indicated the extent to which they experienced the emotional state at the moment (1 = not at all to 7 = extremely). We averaged the items to create a mean score for negative emotions and positive emotions, respectively.

**Confidence in the institution’s ability to tackle COVID-19** We created a two-item measure to capture participants’ perceived institutional confidence based on past studies (e.g., Pilch-Loeb et al., 2019). Participants reported on a 7-point scale (1 = not at all to 7 = extremely) to indicate the extent to which they were confident in Chinese scientists’ and the Chinese governments’ ability to control the spread of COVID-19.

**Demographic information** Participants also reported their age, gender, education level (1 = primary school or below to 7 = doctoral degree), and annual household income (1 = less than 1000 RMB to 10 = more than 100,000 RMB). We included these demographic variables as covariates in our main analyses.

**Data Analysis Strategies**

We conducted all the analyses with SPSS 22.0. We tested the concurrent and longitudinal effect of national identification on disease-preventive behavior with a series of multiple regression analyses. We tested the longitudinal effect of Time 1 national identification on Time 2 disease-preventive behavior by controlling for the effect of Time 1 disease-preventive behavior (i.e., the stability effect). This step enabled us to test the effect of Time 1 national identification on the change in disease-preventive behavior over time (see Adachi & Willoughby, 2015). For all analyses, we included risk
perception, negative and positive emotions, confidence in the institution, and demographic variables as the covariates.

We tested the change in national identification in two steps. First, we conducted a paired $t$-test to examine if there was a significant increase in national identification. Next, we conducted a multiple regression analysis to examine the longitudinal effect of Time 1 disease-preventive behavior on the change in national identification by controlling the effect of Time 1 national identification (i.e., the stability effect; see Adachi & Willoughby, 2015). We also included the same set of covariates as the above analysis.

### Results and Discussion

To test Hypothesis 1, we examined both the concurrent and longitudinal effect of national identification on disease-preventive behavior. Tables 2 and 3 show the results. Consistent with Hypothesis 1, national identification was a positive and significant predictor of disease-preventive behavior both concurrently (Time 1 national identification $\rightarrow$ Time 1 behavior: $b = .15$, $SE = .02$, $p < .001$, 95% CI = [.11, .18]; Time 2 national identification $\rightarrow$ Time 2 behavior: $b = .17$, $SE = .02$, $p < .001$, 95% CI = [.13, .22]; Time 1 national identification $\rightarrow$ Time 2 behavior: $b = .13$, $SE = .02$, $p < .001$, 95% CI = [.09, .17]), and longitudinally (Time 1 national identification $\rightarrow$ Time 2 behavior, controlling Time 1 behavior: $b = .04$, $SE = .02$, $p = .024$, 95% CI = [.01, .08]). Among all the predictors, only Time 1 national identification and Time 1 positive emotions were related to the increase in Time 2 disease-preventive behavior. Taken as a whole, these findings support the importance of national identification in promoting disease-preventive behavior over time, despite a general decrease in preventive behaviors observed in Time 2 when the disease had been largely contained ($mean\ difference = .17, SE = .02, t = 10.81, df = 1199, p = .000, 95% CI = [.14, .20], Hedge’s $g = 0.28$).

Next, to test Hypothesis 4, we examined the change in national identification over time in two steps. There was only a slight change in national identification ($mean\ difference = .05, SE = .02, t = 2.127, df = 1199, p = .034$, Hedge’s $g = 0.06$). Although the mean difference is statistically

### Table 2. Estimates of the Concurrent Multiple Regression Analysis With Disease-Preventive Behavior as the Outcome Variable

|                     | Time 1 (with Time 1 Predictors) | Time 2 (with Time 2 Predictors) |
|---------------------|---------------------------------|---------------------------------|
| DV: Disease-Preventive Behavior at Time 1 | $b$ (SE) | $p$-Value | 95% CI | $b$ (SE) | $p$-Value | 95% CI |
| Intercept           | 2.89 (.15) | .000     | [2.59, 3.20] | 2.57 (.18) | .000     | [2.22, 2.92] |
| Control variables   |                   |          |                |                    |          |        |
| Gender              | .12 (.03) | .000     | [.06, .18]     | .06 (.03) | .092     | [−.01, .12] |
| Age                 | .01 (.00) | .000     | [.00, .01]     | .01 (.00) | .000     | [.00, .01] |
| Education level     | −.02 (.01) | .183     | [−.04, .01]    | .00 (.01) | .969     | [−.03, .03] |
| Annual household income | .00 (.01) | .805     | [−.01, .02]    | .03 (.01) | .001     | [.01, .05] |
| Negative emotions toward COVID-19 | .01 (.01) | .483     | [−.02, .03]    | .03 (.02) | .063     | [.00, .06] |
| Positive emotions toward COVID-19 | .04 (.01) | .011     | [.01, .07]     | .01 (.02) | .696     | [−.03, .04] |
| Risk perception     | −.05 (.02) | .002     | [−.09, −.02]   | −.08 (.02) | .000     | [−.12, −.04] |
| Confidence in the institution | .06 (.01) | .000     | [.03, .09]     | .08 (.01) | .000     | [.05, .10] |
| National identification | .15 (.02) | .000     | [.11, .18]     | .17 (.02) | .000     | [.13, .22] |
| Adjusted $R^2$         | .148           | .153           |
| $R^2$ by national identification | .042     | .000     | .048 | .000 | |

Bold is used to highlight the key variable of interest.
significant and consistent with Hypothesis 4, the effect size indicates that the change is negligible. One possible reason is that the level of national identification was already high at Time 1 (mean = 5.02, SD = .88) and significantly higher than the midpoint of the scale (i.e., 3.50; t = 60.138, df = 1999, Cohen’s d = 1.74). This already high level of national identification might have prevented us from observing a further increase in national identification at Time 2. It thus appears that the Chinese national identification maintained a high level both during the outbreak and after it had been contained.

Second, to test Hypothesis 5, we examined the longitudinal association between Time 1 disease-preventive behavior and Time 2 national identification. Table 3 displays the results. As expected, Time 1 disease-preventive behavior was a positive and significant predictor of Time 2 national identification (b = .12, SE = .04, p = .003, 95% CI = [.04, .19]), even after we controlled for the effect of Time 1 national identification, Time 1 covariates, and demographic variables. This indicates that prior engagement in disease-preventive behavior did increase national identification over time, supporting Hypothesis 5.

In summary, our findings reveal a reciprocal relationship between national identification and disease-preventive behavior. We found that Time 1 national identification was related to an increase in Time 2 disease-preventive behavior (Hypothesis 1), and Time 1 disease-preventive behavior was related to the rise in Time 2 national identification (Hypothesis 5). These findings support the social identity approach as a useful framework for understanding how people respond to disease outbreaks. We only observed a negligible increase in national identification over time; our findings suggest that Chinese national identification remained high across both time points and thus did not provide strong support for Hypothesis 4.

**STUDY 2 (UNITED STATES)**

In Study 2, we aimed at testing the effect of national identification on disease-preventive behavior with a sample of participants from the United States. We conducted a five-wave longitudinal survey study to test our hypotheses. As the severity of COVID-19 in the United States changed
rapidly, we adopted a more time-sensitive design (as compared with Study 1) to capture the changes occurring from late March to late May. Furthermore, this design allowed us to investigate the over-time trajectories of national identification and disease-preventive behaviors through the latent growth model (Preacher, Wichman, MacCallum, & Briggs, 2008), which provides more detailed information about how these constructs have changed over the course of the outbreak.

Method

Participants

We conducted a five-wave longitudinal survey study using CloudResearch—an online platform that allows researchers to recruit participants from the Amazon Mechanical Turk (MTurk) for panel studies. This study covered the period from late March to late May (March 25 to May 25, 2020), with data collection taking place every 14 days. All data-collection procedures and research materials were reviewed and approved by the Committee on Research Practices of the university. For Wave 1, we recruited 1001 participants, with an expected 20% attrition rate at each consecutive time point. For Waves 2, 3, 4, and 5, we retained 818, 690, 599, and 511 participants, respectively. The average attrition rate was 15.45% at each consecutive time point and the overall attrition rate was 48.95%. The mean age of the participants was 39.38 (SD = 13.24). As in Study 1, we conducted attrition analysis to examine the differences between participants who completed all waves and those who did not; participants who completed all five waves reported slightly lower Time 1 disease-preventive behavior (Hedge’s g = .13). From Time 2 to Time 4, there was no significant difference in national identification and disease-preventive behavior between the two groups. See details in Appendix S3 in the online supporting information.

Procedures and Measures

Participants completed an online survey at each time point. All materials were presented in English. Table 5 displays the mean, standard deviation, and reliability of the measures. All variables

| Table 4. Estimates of the Longitudinal Multiple Regression Analysis With National Identification as the Outcome Variable |
|---------------------------------------------------------------|
| DV: Time 2 National Identification | Model 1 (without Controlling Time 1 Outcome Variable) | Model 2 (Controlling Time 1 Outcome Variable) |
| | b (SE) | p-Value | 95% CI | b (SE) | p-Value | 95% CI |
| Intercept | 2.80 (.25) | .000 | [2.31, 3.30] | 1.65 (.23) | .000 | [1.19, 2.10] |
| Control variables | | | | | | |
| Gender | .14 (.05) | .003 | [.05, .23] | .10 (.04) | .014 | [.02, .18] |
| Age | −.01 (.00) | .000 | [−.02, −.01] | .00 (.00) | .097 | [−.01, .00] |
| Education level | .02 (.02) | .023 | [.01, .06] | .02 (.02) | .356 | [−.02, .05] |
| Annual household income | .00 (.01) | .907 | [−.02, .03] | −.01 (.01) | .364 | [−.03, .01] |
| Time 1 national identification | − | − | − | .46 (.03) | .000 | [.41, .51] |
| Negative emotions toward COVID-19 | .01 (.02) | .454 | [−.02, .05] | .01 (.02) | .626 | [−.03, .04] |
| Positive emotions toward COVID-19 | .06 (.02) | .005 | [.02, .10] | .06 (.02) | .003 | [.02, .09] |
| Risk perception | −.09 (.03) | .000 | [−.14, −.04] | −.07 (.02) | .004 | [−.11, −.02] |
| Confidence in the institution | .18 (.02) | .000 | [.14, .22] | .07 (.02) | .000 | [.04, .11] |
| Disease-preventive behavior | .27 (.04) | .000 | [.18, .35] | .12 (.04) | .003 | [.04, .19] |
| Adjusted R-squared | .194 | .364 |
| R-squared by disease-preventive behavior | .027 | .000 | .005 | .003 |
|                         | Time 1     | Cronbach's α | Time 2     | Cronbach's α | Time 3     | Cronbach's α | Time 4     | Cronbach's α | Time 5     | Cronbach's α |
|-------------------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|------------|---------------|
| National identification | 4.39 (.121)| .88           | 4.31 (.129)| .89           | 4.26 (.129)| .91           | 4.23 (.132)| .91           | 4.21 (.132)| .92           |
| Disease-preventive behavior | 3.73 (.63)| .83           | 3.93 (.65)| .83           | 4.02 (.72)| .87           | 4.05 (.71)| .87           | 4.03 (.75)| .88           |
| Risk perception         | 4.28 (.141)| .82           | 4.23 (.131)| .78           | 4.08 (.134)| .80           | 3.97 (.135)| .82           | 3.87 (.138)| .83           |
| Negative emotions toward COVID-19 | 3.71 (.53)| .90           | 3.45 (.55)| .91           | 3.06 (.52)| .91           | 2.89 (.49)| .91           | 2.78 (.50)| .91           |
| Positive emotions toward COVID-19 | 3.65 (.46)| .86           | 3.69 (.42)| .86           | 3.79 (.47)| .87           | 3.81 (.55)| .89           | 3.87 (.54)| .89           |
| Confidence in the institutiona | 3.79 (.45)| .55           | 3.72 (.44)| .46           | 3.67 (.42)| .45           | 3.59 (.42)| .44           | 3.55 (.42)| .41           |
| Trust in the Trump administrationa | 3.08 (.208)| .89          | 2.99 (2.11)| .90           | 2.88 (2.06)| .90           | 2.80 (2.08)| .92           | 2.73 (2.06)| .92           |
| Political orientationa | 3.51 (.192)| .77           | 3.52 (.195)| .76           | 3.51 (.199)| .79           | 3.52 (2.03)| .84           | 3.56 (2.01)| .81           |
| N                       | 1001       |               | 818        |               | 690        |               | 599        |               | 511        |               |

*aWe reported interitem correlation for constructs that had only two items, instead of Cronbach's α.
were measured at each time point, except for demographic variables (which were only measured at Time 1). We present the details of the scale items in Appendix S1 in the online supporting information.

National Identification

We adopted the same measure as in Study 1, except that we changed “Chinese” to “American” to capture the U.S. national identification.

Disease-Preventive Behavior

We updated the list of behavior in Study 1 by referring to the recommended practices by the U.S. CDC. We created a list of 15 disease-preventive behaviors. Similar to Study 1, participants reported on a 5-point scale (1 = never to 5 = always) to indicate how frequently they performed each behavior.

Trust in the Trump Administration

We created a two-item measure to capture individuals’ trust in the Trump administration. The first item captures a general faith in the Trump administration, and the second item captures a specific approval for Trump in handling COVID-19. Participants reported on a 7-point scale for both items, with higher scores indicating higher levels of trust.

Political Orientation

We used a two-item measure to capture the extent to which participants endorse conservative political ideology and liberal political ideology. They reported on a 7-point scale to indicate their level of endorsement (1 = strongly disagree to 7 = strongly agree). Since the two items are strongly correlated ($r = −.77$), we computed an average score to reflect an overall score of political orientation, with higher scores indicating stronger endorsement of conservative ideology. In addition, participants also indicated their political-party affiliation by selecting Democrat, Republican, Independent, or none of the above. In the main analysis, we opted to use the liberal-conservative political orientation as the moderator variable because it is a continuous variable. We used political affiliation to check the robustness of our findings (Appendix S4; see Tables S4.6 and S4.7 in the online supporting information). The findings were consistent with those reported in the next section.

Covariate Variables

Risk perception, negative and positive emotions, and confidence in the institution We adopted the same scale to measure risk perception, negative emotions toward COVID-19, and positive emotions toward COVID-19 as in Study 1. We also adopted the same institutional confidence measure as in Study 1, such that participants reported on a 7-point scale (1 = not at all to 7 = extremely) to indicate the extent to which they were confident in American scientists’ and government’s ability to control the spread of COVID-19. We computed an average score to reflect overall confidence in the institution.

Demographic information Participants reported their gender, age, education level (1 = primary school or below to 8 = professional or PhD), and annual household income (1 = less than $10,000 USD to 5 = $100,000 USD or more). We included these demographic variables as time-invariant covariates in our analyses.
Data Analysis Strategies

We conducted latent growth model analyses to examine the change of disease-preventive behavior and the change of national identification, respectively. In each set of analyses, we tested (1) the change in the outcome variable over time and (2) how this change is related to the initial level (Time 1) predictor variables. Specifically, because we did not have an a priori assumption about how the change should occur, we estimated both linear (predefined the factor loadings of the latent growth factor to be fixed at 0, 1, 2, 3, 4 for Time 1, Time 2, Time 3, Time 4, and Time 5, respectively) and nonlinear growth models (allowed the factor loadings of the latent growth factor to vary freely, except for fixing it at 0 for Time 1 and 1 for Time 5). We tested which models fit the data better empirically (see Wu & Lang, 2016) and evaluated the models based on commonly used model fit indices: the comparative fit index (CFI, with a cutoff value of larger than .90), the root mean square error of approximation (RMSEA, with a cutoff value of less than .08), and the standardized root mean square residual (SRMR, with a cutoff value of less than .08). We also reported the Akaike Information Criterion (AIC) and the Bayesian Information Criterion (BIC) for model comparisons in which smaller AIC and BIC indicated a better model. To address the missing data, we adopted the full-information maximum-likelihood estimation (Arbuckle, 1996; Enders, 2010). We conducted all analyses using the “lavaan” package of R (Rosseel, 2012).

Results and Discussion

We first constructed a latent growth model to examine the change in disease-preventive behavior over time. The nonlinear growth model showed a better fit ($\chi^2 = 39.320$, $df = 7$, $p < .001$; AIC = 4377.226; BIC = 4441.347; CFI = .990; RMSEA = .067; SRMR = .034) compared with the linear growth model ($\chi^2 = 188.410$, $df = 10$, $p < .001$; AIC = 4520.315; BIC = 4569.640; CFI = .946; RMSEA = .132; SRMR = .061). We therefore adopted the nonlinear growth model. The mean of the latent growth factor was positive and significant ($b = .34$, $SE = .02$, $Z = 18.44$, $p < .001$, 95% CI = [.30, .37]), indicating that there was an increasing trend in disease-preventive behavior. Furthermore, the variance of the latent growth factor was significant ($\text{var} = .17$, $SE = .03$, $Z = 6.10$, $p < .001$, 95% CI = [.12, .23]), indicating that the change in disease-preventive behavior varies across individuals.

Next, to test Hypotheses 2 and 3, we included Time 1 national identification and Time 1 trust in the Trump administration as the predictors of the latent intercept and the latent growth factor. We also included Time 1 national identification, Time 1 political orientation, and Time 1 National Identification × Political Orientation as the predictors of Time 1 trust in the Trump administration. To rule out alternative explanations that the change in disease-preventive behavior was related to risk perception, emotions, confidence in the institution, we included these variables and demographic variables as the time-invariant covariates. Table 6 shows the results. As expected, Time 1 national identification was a positive and significant predictor of the latent growth factor ($b = .05$, $SE = .02$, $Z = 2.20$, $p = .028$, 95% CI = [.01, .09]), indicating that people with strong national identification had a faster increase of disease-preventive behavior, thereby supporting Hypothesis 2. Consistent with our prediction, Time 1 national identification ($b = .33$, $SE = .06$, $Z = 6.04$, $p < .001$, 95% CI = [.23, .44]) and Time 1 political orientation ($b = 1.14$, $SE = .05$, $Z = 21.20$, $p < .001$, 95% CI = [1.03, 1.25]) were both positive and significant predictors of Time 1 trust in the Trump administration. Importantly, Time 1 National Identification × Political Orientation interaction was positive and significant in predicting Time 1 trust in the Trump administration ($b = .25$, $SE = .04$, $Z = 6.23$, $p < .001$, 95% CI = [.17, .32]), indicating a stronger association between national identification and trust in the Trump administration among political conservatives (versus liberals). Consistent with Hypothesis 3, Time 1 trust in the Trump administration was a negative and significant predictor of the latent growth factor ($b = -.06$, $SE = .01$, $Z = -5.12$, $p < .001$, 95% CI = [−.08, −.03]), indicating that people with strong trust in
### Table 6. Parameter Estimates of the Latent Growth Model of Disease-Preventive Behavior

| N = 996 | Trust in the Trump Administration | Latent Intercept | Latent Growth Factor |
|---------|----------------------------------|-----------------|---------------------|
|         | $b$ (SE) $p$-Value 95% CI        | $b$ (SE) $p$-Value 95% CI | $b$ (SE) $p$-Value 95% CI |
| Intercept of latent variables | – – – | 3.02 (.18) .000 [2.68, 3.36] | .73 (.28) .009 [20, 1.26] |
| Time 1 national identification | .33 (.06) .000 [.23, .44] | .03 (.02) .269 [−.02, .07] | .05 (.02) .035 [.00, .10] |
| Time 1 trust in the Trump administration | – – – | −.02 (.01) .118 [−.04, .01] | −.06 (.01) .000 [−.08, −.03] |
| Time 1 political orientation | 1.14 (.05) .000 [1.03, 1.25] | – – – | – – – | – – – |
| Time 1 National Identification × Political Orientation | 25 (.04) .000 [.17, .32] | – – – | – – – | – – – |
| Latent intercept of disease-preventive behavior | – – – | – – – | – – | −.12 (.07) .085 [−.24, .03] |

**Time 1 covariates**

| Risk perception | −.04 (.04) .265 [−.11, .03] | .02 (.02) .255 [−.02, .05] | .02 (.02) .164 [−.01, .06] |
| Negative emotions toward COVID-19 | .15 (.03) .000 [.09, .21] | .13 (.02) .000 [.11, .17] | −.02 (.02) .148 [−.06, .01] |
| Positive emotions toward COVID-19 | .25 (.03) .000 [.18, .32] | .02 (.02) .145 [−.01, .05] | −.04 (.02) .029 [−.07, −.01] |
| Confidence in the institution | .28 (.04) .000 [.21, .35] | .03 (.02) .086 [.00, .06] | .03 (.02) .041 [.00, .06] |

**Demographic covariates**

| Gender | .10 (.09) .222 [−.06, .28] | −.09 (.04) .207 [−.16, −.01] | −.02 (.04) .549 [−.10, .05] |
| Age | .00 (.00) .439 [.00, .01] | .00 (.00) .017 [.00, .01] | .00 (.00) .108 [.00, .01] |
| Education | .08 (.04) .040 [.01, .16] | −.03 (.02) .169 [−.08, .01] | .03 (.02) .277 [.02, .07] |
| Annual household income | .00 (.04) .938 [−.08, .07] | .02 (.02) .236 [−.01, .06] | .00 (.02) .994 [−.04, .03] |

(Continues)
### Table 6. (Continued)

|                                    | Trust in the Trump Administration | Latent Intercept | Latent Growth Factor |
|------------------------------------|------------------------------------|------------------|----------------------|
|                                    | $b$ (SE)   | $p$-Value | 95% CI | $b$ (SE)   | $p$-Value | 95% CI | $b$ (SE)   | $p$-Value | 95% CI |
| Indirect effect of national identifi-
  cation via trust in the Trump admin-
  istration | – – – – – – − | − .02 (.01) | .000 [− .03, − .01] | – – – – – – − | .03 (.02) | .153 [− .01, .08] | – – – – – – − | − .01 (.00) | .000 [− .02, − .01] |
| Total effect of national identifi-
  cation | – – – – – – − | – – – – – – − | .03 (.02) | .153 [− .01, .08] | – – – – – – − | − .01 (.00) | .000 [− .02, − .01] |
| Moderated mediation index | – – – – – – − | – – – – – – − | .16 (.02) | .000 [1.11, .20] | – – – – – – − | − .01 (.00) | .000 [− .02, − .01] |

Note. Model fit index: Chi-square = 125.779, $df$ = 48, $p$ = .000; AIC = 7480.552; BIC = 7701.220; CFI = .982; RMSEA = .040; SRMR = .020. Parameter estimates of latent growth factor were fixed at Time 1 (=0) and Time 5 (=1) and allowed to vary freely from Time 2 to Time 4 (Time 2 = .57, Time 3 = .86, and Time 4 = .98).

*Results remained consistent without including the covariate variables in the model.*
the Trump administration had a slower increase of disease-preventive behavior. We estimated the indirect effect of national identification via trust in the Trump administration through bootstrapping the standard error of the estimates (with 1,000 bootstrapped samples) (Hayes & Scharkow, 2013). The indirect effect was negative and significant (indirect = −.01, boot SE = .00, 95% CI = [−.02, −.00]; partially standardized indirect effect = −.02), suggesting that national identification was related to a slower increase in disease-preventive behavior by way of trust in the Trump administration. Furthermore, the moderated mediation index was also negative and significant (index = −.02, boot SE = .00, 95% CI = [−.02, −.01]), indicating that the negative indirect effect was stronger among political conservatives (versus liberals). These findings support Hypothesis 3. It is noteworthy that our findings remained consistent with or without controlling the effects of the Time 1 covariate variables. Together, our findings suggest that national identification has a positive direct effect (supporting Hypothesis 2) and a negative indirect effect via trust in the Trump administration on the change in disease-preventive behavior, especially among political conservatives (supporting Hypothesis 3). It is also noteworthy that the total effect of national identification on the latent growth factor was positive but nonsignificant \((ab + c' = .03, SE = .02, Z = 1.43, p = .153, 95\% \text{ CI} = [−.01, .08])\).

We constructed another series of latent growth model analyses to test how national identification changes over time and how such change is related to Time 1 disease-preventive behavior. Specifically, to test Hypothesis 4, we first tested whether a linear or nonlinear growth model showed a better fit with the data. The linear growth model showed a good fit \((\chi^2 = 34.017, df = 10, p < .001; \text{AIC} = 7554.717; \text{BIC} = 7604.041; \text{CFI} = .995; \text{RMSEA} = .048; \text{SRMR} = .025)\), whereas a nonlinear growth model failed to converge. The mean of the latent growth factor was negative and significant \((b = −.05, SE = .01, Z = −8.07, p < .001, 95\% \text{ CI} = [−.06, −.04])\), indicating a decrease in national identification over time. Contrary to Hypothesis 4, Americans’ national identification showed a decrease rather than an increase. This decreasing trend was inconsistent with Study 1 and past studies in other countries (e.g., in New Zealand as reported by Sibley et al., 2020). The variance of the latent growth factor was significant \((\text{var} = .006, SE = .002, Z = 2.76, p = .006, 95\% \text{ CI} = [.002, .010])\), indicating that the change in national identification varies between individuals as well.

Next, to test Hypothesis 5, we included Time 1 disease-preventive behavior and Time 1 trust in the Trump administration as the predictors of both latent intercept and growth factor of national identification. We also included the same set of Time 1 covariates in the model. Table 7 shows the results. Contrary to Hypothesis 5, Time 1 disease-preventive behavior was unrelated to the latent growth factor \((b = −.01, SE = .010, Z = −.45, p = .655, 95\% \text{ CI} = [−.03, .02])\). Overall, none of the Time 1 variables (including trust in the Trump administration) was related to the latent growth factor.

In sum, the findings of Study 2 support national identification having a positive influence on the adoption of disease-preventive behavior, replicating the findings in Study 1. In addition, we also found a negative indirect effect of national identification on disease-preventive behavior via trust in the Trump administration, and this negative indirect effect was stronger among political conservatives.\(^1\) This effect is independent of how much confidence people have in their institutions’ ability to tackle the spread of COVID-19. It thus supports our proposition that the COVID-19 discourse delivered by the Trump administration discouraged people from engaging in disease-preventive behaviors. Inconsistent with Study 1 (and contrary to Hypotheses 4 and 5), we found that national identification decreased over time, and this change in national identification was unrelated to disease-preventive behavior. We will come back to this point in the general discussion.

\(^1\)An alternative way to analyze the hypothesized links between national identification, disease-preventive behavior, and trust in the Trump administration was to construct a multivariate latent growth model. This model simultaneously considered the change of the three variables. We present these findings in Appendix S4 (see Table S4.8 in the online supporting information); they were consistent with those reported in the main text. National identification was positively and directly related to the change in disease-preventive behavior and had a negative indirect effect via trust in the Trump administration.

National Identification and Preventive Behavior
The central purpose of this study is to understand how people respond to the COVID-19 outbreak from a social identity approach. By considering COVID-19 as a collective crisis, the present research put forward that national identification would motivate people to engage in disease-preventive behavior—a set of actions aimed at curbing the spread of the disease among the collective. We found supporting evidence to this proposition with two longitudinal survey studies conducted in China and the United States. Our findings also demonstrate that national identification has a unique effect on the change in disease-preventive behavior, above and beyond the influence of commonly identified factors (i.e., risk perception, positive and negative emotions toward COVID-19, and confidence in the institution). These findings are consistent with Van Bavel et al.'s (2020, September 2) preprint, which revealed a positive relationship between national identification and disease-preventive behaviors in a cross-sectional study that involved 67 countries. These findings suggest that the positive role of national identification is not unique to countries with authoritarian government, such as China, and support the main thesis of the social identity approach that love toward one’s national membership (national identification) promotes behaviors benefiting the welfare of national ingroup members.
in diverse political contexts. Together, these findings support the use of a social identity approach in promoting disease-preventive behavior.

To elaborate, curbing the spread of infectious disease requires people’s joint effort in following disease-prevention practices, especially with diseases that are highly contagious. Notably, some of these practices (such as wearing a face mask and maintaining social distance) could undermine personal comfort and freedom. Forcing people to comply with these practices may intrude upon one’s sense of liberty and thus invoke resentment. Indeed, there were protests against mandatory mask wearing in the United States and Germany in July 2020. The social identity approach could be an alternative way to deal with this reactionism, given that ingroup identification guides individuals from concerns for personal interest (e.g., personal comfort, sense of liberty) to concerns for collective interest (e.g., public health, fighting COVID-19). Our findings suggest that the social identity approach is a viable way to promote behavioral change in disease-preventive behavior (for a discussion, see also Templeton et al., 2020). Future studies would benefit from incorporating factors in collective-action models (e.g., collective efficacy, group-based emotions; van Zomeren, Kutlaca, & Turner-Zwinkels, 2018) into understanding disease-preventive behavior. In line with this, some scholars also called for the use of collective-action framing to promote people’s compliance with disease-preventive measures (Jackson et al., 2020 April 27; Wolf, Haddock, Manstead, & Maio, 2020).

Additionally, it will be crucial for future studies to compare the influence of different types of collective identity (e.g., global identity, regional identity, national identity, local identity) and examine which of them would play a significant role in mobilizing people to adopt disease-preventive behaviors. For example, in a recent study, Vignoles, Jaser, Taylor, and Ntontis (2020) examined the relationship between four types of collective identity (family, community, nation, and humanity) and COVID-19-related behaviors among a sample of U.K. participants. They found that family identification was positively related to disease-preventive behaviors, while national identification and humanity identification were positively related to prosocial behaviors. Future studies could identify the circumstances under which certain identity types exert stronger influences on people’s adoption of disease-preventive practices than other types.

We observed similarities and differences in the relationship between national identification and disease-preventive behavior between China and the United States. These findings suggest that mobilizing citizens via national identification could be more effective in certain political contexts than in others. Results from the Chinese sample show that national identification contributes to greater engagement in disease-preventive behavior, even when the disease has been largely contained and government regulations have been relaxed, as in late April. This observation is consistent with the high compliance rate in social distancing even in Chinese cities that had less stringent regulations (e.g., Zhang et al., 2020). In contrast, in the United States, we observed that the effect of national identification on disease-preventive behavior was ambivalent. Although national identification had a positive direct effect on the growth in disease-preventive behavior, it also had a negative indirect effect via trust in the Trump administration, suggesting that those who had stronger trust in Trump and his administration were significantly slower in adopting preventive behaviors despite the surge in infection cases over the study period. This negative indirect effect was more pronounced among political conservatives (or Republicans and Independents; see the online supporting information [Appendix S4]), compared with political liberals (or Democrats).

We also explored how national identification has changed in response to the COVID-19 pandemic. Our findings suggest that COVID-19 has had a diverse impact on people’s national identification in different countries. Whereas the national identification among Chinese participants remained at a high level throughout the pandemic, the national identification among U.S. participants declined over time. These findings are inconsistent with past studies, which have found that the occurrence of collective crises should strengthen people’s national identification (e.g., Li & Brewer, 2004; Maki et al., 2019). We have two speculations for these inconsistent findings. The first speculation focuses
on the time points covered by the present study. Although we compared national identification over time, we might have failed to capture the critical point in time at which people’s national identification increased. However, this speculation may not explain the decline in national identification among U.S. participants. Indeed, other research has also shown a declining trend in national pride among Americans from 2016 to 2020 (Brenan, 2020).

The other speculation concerns the effectiveness of the government in curbing the spread of COVID-19. People’s ingroup identification may be contingent on the group’s reputation (see Oishi, Ishii, & Lun, 2009). For example, in a classic study, Cialdini et al. (1976) found that American college students used “we” to describe their school’s football team when the team won but not when the team lost. This conditional ingroup-identification phenomenon suggests that people sometimes attach to a glorified group to enhance their self-esteem (Oishi et al., 2009). In the case of COVID-19, the majority of Americans felt their country had done a poor or only fair job in dealing with the disease outbreak (Pew Research Center, 2020). The poor performance of the country may drive people away from using “we Americans” to describe themselves and thus would result in a decreasing trend in national identification. Future studies can adopt experimental designs to test how framing the U.S. government’s performance in curbing the spread of COVID-19 as success versus failure (or Americans who support or fail to adopt disease-preventive behavior) might influence Americans’ national identification. Furthermore, given the political divide in people’s response to COVID-19, Americans with different political orientations may want to distance themselves from others by rejecting the use of “we Americans.” Future studies can test this dynamic relationship by gauging people’s change in attitude towards political outgroups and national identity as a function of framing success versus failure in curbing COVID-19.

There are several limitations to the present research. First, we relied on self-reported disease-preventive behavior rather than actual observed behavior. People may overreport or underreport their behaviors depending on whether the behavior is socially desirable or undesirable. However, we believe that self-reported behavior is still useful in the present research context, as some of the disease-preventive behaviors are difficult or unable to be observed by others (e.g., handwashing for 20 seconds, maintaining personal hygiene).

Second, we only measured the private-evaluation dimension of national identification. National identification is a multidimensional construct, which includes the component of self-categorization, evaluation, importance, and attachment (for a review, see Ashmore et al., 2004). Inclusion of only private evaluation may thus overlook the influence of other dimensions. Provided that ingroup identification would make one feel concern for the well-being of the group, we believe that other dimensions of national identification would also yield a similar positive effect on disease-preventive behavior as observed in the present study. Supporting this view, our results are consistent with Van Bavel et al. (2020), in which the authors operationalize national identification in terms of self-categorization and importance (the centrality of one’s identity). Yet, it is also possible that the change in national identification is subject to one or more different dimensions of national identification, given that some dimensions may be more subject to the influence of group performance than others (e.g., private regard versus self-categorization; Ashmore et al., 2004). Furthermore, although we have instructed participants to report their national identification based on their feeling at the moment, the use of phrases such as “often” or “in general” in some items may reduce the sensitivity of the measure in capturing changes. Future studies would benefit from using more state-like phrases, such as “right now.”

Third, we have not measured the contents of national identity, which may matter (cf. van Zomeren et al., 2018). For instance, we found that the negative pathway through which national identification influences the change of disease-preventive behavior was more pronounced among individuals with higher levels of conservative than liberal political ideology. People with different political orientations may have different understanding of what Americans value and stand for (e.g., Bonikowski &
DiMaggio, 2016). In particular, political conservatives may consider President Trump as promoting “American values,” while political liberals may consider him to be dampening them. Consequently, political conservatives would have stronger trust and support for President Trump than political liberals. We did not measure identity contents and thus were unable to test this. Furthermore, identity contents may have a direct influence on whether or not people would support disease-preventive measures. For example, people who consider individual liberty to be core to American identity would be more likely to reject the idea of mandatory disease-preventive measures. Relatedly, we only measured the conservative-liberal political orientation in the United States, but not the communitarian-libertarian divide that may also have contributed to the adoption (or rejection) of disease-preventive behaviors. It would be useful for future studies to demonstrate how the specific contents of national identity and other political orientations relate to people’s response to disease outbreak.

Last, it is crucial to note that the effect sizes of the longitudinal association between national identification and disease-preventive behavior appear to be small. One possible reason for this small effect is the high stability of national identification and disease-preventive behaviors over time (rs ranged from .57 to .88). Adachi and Willoughby (2015) suggested that the small longitudinal association could be meaningful when the outcome variables showed strong stability over time. Past studies revealed that, when controlling for this strong stability effect, the effect size of a bivariate relationship between an earlier predictor and a later outcome would be reduced substantially (e.g., Martin & Liem, 2010; for a review, see Adachi & Willoughby, 2015). Indeed, the effect sizes observed in our longitudinal analysis were comparable to past studies that examine the longitudinal associations between ingroup identification and collective action (e.g., Thomas et al., 2020).

To conclude, the current research shows that national identification did predict more adoption of disease-preventive behaviors over time in both China and the United States. By contrast, the reciprocal effect of preventive behaviors on national identification was only observed in China, not in the United States. To the extent that a wider engagement in disease-preventive behaviors by citizens is effective in curbing a pandemic and thus enhancing the well-being of a country, a strong national identification seems to be a protective factor in the face of a pandemic. Unfortunately, this protective effect of national identification can be undermined by a national leader who discourages preventive behaviors, according to our findings in the United States. In sum, this research demonstrates dual routes of the impact of national identification on disease-preventive behaviors, thereby shedding light on related theories and social policies.

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher’s web site:

**Appendix S1.** Scale Items for Key Variables

**Appendix S2.** Attrition Analysis of Study 1
Table S2.1. Mean-level Comparison of Time 1 Variables (Study 1)

Table S2.2. Estimates of Multiple Regression Analysis with Time 1 Disease-Preventive Behavior as the Outcome Variable

Table S2.3. Estimates of Multiple Regression Analysis with Time 1 National Identification as the Outcome Variable

Appendix S3. Attrition Analysis of Study 2

Table S3.4. Mean-level Comparison between Participants who Dropped-out vs. Completed All Five Surveys

Table S3.5. Demographic Information of Participants Retained at Each Time-point

Appendix S4. Supplementary Analysis

Table S4.6. Parameter Estimates of the Latent Growth Model of Disease-Preventive Behavior

Table S4.7. Parameter Estimates of the Latent Growth Model of National Identification

Table S4.8. Parameter Estimates of the Multivariate Latent Growth Model