



A Longitudinal Analysis of Handwashing and Mask-Wearing During COVID-19

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The COVID-19 pandemic has seen health preventive behaviors to prevent spread of the virus become highly politicized in the United States. A clear division exists between Democrats favoring health preventive measures and Republicans often defying such measures. Amid increasing fear of the virus, the 2020 United States presidential election became central to how the pandemic should be managed. This longitudinal study examines whether the frequency of handwashing and mask-wearing changed after the United States election. The study further explores whether political partisanship played a part in the change. Results show that handwashing and mask-wearing increased among Democrats after the election. However, Republican's use of masks and handwashing decreased. These results are explained in terms of loyalty to outgoing President Trump among Republicans and renewed feelings of efficacy among Democrats.

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INTRODUCTION

As of April 2021, the COVID-19 pandemic has seen 127 million cases and over 2.8 million deaths globally (Johns Hopkins Coronavirus Resource Center, 2020). As the virus spreads, a critical debate has been the efficacy of preventive measures. The efficacy and necessity of lockdowns, handwashing, and mask-wearing have been debated by local, state, and federal governments, as well as international organizations. The World Health Organization (WHO) has been inconsistent in its recommendations around the use of masks, while consistently recommending handwashing. From the start of the pandemic, The Centers for Disease Control (CDC) advised handwashing, but only recently advised mask-wearing in public to combat the spread of the virus (WHO, 2020). Nations such as Canada, South Korea, the Czech Republic, and New Zealand, among others, have required or advised their citizens to wear masks in public places (Croucher et al., 2021; Government of Canada, 2020; Government of the Czech Republic, 2020; Lee, 2020). Despite mounting evidence showing public mask-wearing decreases the chance of COVID-19 transmission (Clase et al., 2020; Liao et al., 2021), mask-wearing remains highly politicized (Latkin et al., 2021) and controversial, with many, particularly in the United States, still choosing not to wear a mask. Thus, the purpose of this paper is to examine these preventive behaviors. Specifically, this paper analyses public (mask-wearing) and private (handwashing) preventive behaviors during the COVID-19 pandemic in the United States. Following theories of health behavior, individuals' likelihood to adopt these behaviors is measured longitudinally before and after the 2020 United States presidential election.

HEALTH BEHAVIORS

In a pandemic situation where the preventive health behaviors of mask-wearing and handwashing are strongly encouraged, it is necessary to determine what motivational factors increase or decrease the chance of adopting these behaviors. Evidence suggests wearing masks and handwashing are beneficial for limiting the spread of COVID-19 and other infections (Eikenberry et al., 2020; Li et al., 2020; Scerri and Grech, 2020). However, this information is not necessarily enough to encourage this hygienic behavior.

There are several social-cognitive models of health behavior that describe the potential interactions of variables in health behavior intentions and implementation. The most widely known is the Health Belief Model (HBM) (see Abraham and Sheeran, 2005; Jones et al., 2015). The HBM states behavioral intention/implementation is based on an individual's judgment of perceived susceptibility to an illness and the perceived severity of the consequences of the illness, in addition to an evaluation of behaviors to address the threat. Adding to this understanding, the Protection Motivation Theory (PMT) includes self-efficacy in understanding health intentions and behaviors, while the Theory of Planned Behavior (TPB) introduces the influence of subjective norms of significant others (Conner and Norman, 2005). These latter theories are of most interest in the current study.

Rogers (1975) originally developed the PMT to understand how fear-based messages motivated individuals to alter their behaviors toward those that were health enhancing. In the PMT's current form, the willingness of an individual to adopt health enhancing behaviors to protect against health threats relies on four factors: "perceived vulnerability to the health threat, perceived severity of the health threat, outcome efficacy of behaviors that would reduce the health threat, and self-efficacy" (Kowalski and Black, 2021, p. 16). Recent research using the PMT has examined people's willingness to use preventive behaviors to protect themselves from a number of health threats including skin cancer (Babazadeh et al., 2017), pro-environmental behavioral intentions (Raine and Christensen, 2017), and tourists' protective behaviors against risks while traveling (Wang et al., 2019). Perhaps more important for this study, is the recent research on the severity of COVID-19 and mental health (Yıldırı and Güler, 2020), age-related factors affecting the use of protective behaviors against COVID-19 (Kim and Crimmins, 2020), the use of protective measures against COVID-19 among healthcare workers (Bashirian et al., 2020). These studies illustrate how perceptions of vulnerability and severity, combined with appraisals of coping with risk, are useful predictors of behavioral intention (Bashirian et al., 2020). However, Kowalski and Black (2021) argued messages discussing the severity of a threat (like COVID-19) and the efficacy of preventive behaviors might work better to encourage health preventive behaviors than those that solely heighten perceptions of vulnerability.

An individual's perception of risk to themselves and their self-efficacy in addressing that risk influence the uptake of health preventive behaviors (Jørgensen et al., 2020). Fear is one part of an individual's analysis of risk, and subsequent health behaviors

in the COVID-19 pandemic such as handwashing, mask-wearing, and physical distancing are enhanced by feelings of fear (Harper et al., 2020; Jørgensen et al., 2020; Qanche et al., 2021).

However, feelings of self-efficacy are also important in predicting preventive health behaviors in concert with fear (Jørgensen et al., 2020). Health messages based on fear are claimed, by some, as a form of fearmongering that can lead to an increased mental health burden in the general population (Harper et al., 2020; Lin et al., 2020), and have little effect on those who perceive little to no risk to themselves (Jørgensen et al., 2020). A meta-analysis of fear appeals by Witte and Allen (2000) noted high-fear appeals, when combined with low-efficacy messages, tended to result in avoidant and reactive behaviors; whereas high-fear with high-self-efficacy messages were the most useful in encouraging preventive health behaviors. Jørgensen et al. (2020) also found including messages of efficacy in health messaging can generate engagement with preventive health behaviors even when personal risk is considered low.

Research is increasingly exploring the links between fear and COVID-19 preventive behaviors (Adunlin et al., 2020). Fear of COVID-19 and anxiety about the disease predict the adoption of health preventive behaviors (Harper et al., 2020). Malecki et al. (2021) argued mask-wearing reduces fear of COVID-19 spread. Hornik et al. (2021), in a longitudinal analysis, found a positive relationship between belief in health consequences and adoption of preventive behaviors, such as mask-wearing. Rieger (2020) for example found that increased fear of the COVID-19 predicted higher likelihood to wear masks to protect oneself against it. In other words, those who worry about disease are more likely to keep their distance from those they do not know (Jørgensen et al., 2020).

The TPB, while containing features of the PMT and HBM models, introduces the concept of subjective norms, the influence of these norms on subjective judgements, and subsequent public and/or private behaviors (Connor and Norman 2005). State subjective norms are "the subjective likelihood that specific salient groups or individuals (referents) think the person should perform the behavior, multiplied by the person's motivation to comply with that referent's expectation" (p. 10). In addition, researchers have argued fears of a health/medical condition influence the development of norms, and therefore our behaviors (Abrams et al., 1998; Stephenson et al., 2008; Dessie et al., 2015). Given the socio-political focus of this study, the impact of subjective norms, particularly political and fear toward COVID-19, must be considered in determining intention and subsequent health behavior engagement.

One way subjective norms develop is from political ideologies and the current socio-political climate. Baum (2011) argued political partisanship can lead to a polarization in public attitudes to health. These attitudes are affected by niche media such as the Internet, cable news channels, and political radio stations where conflicting or opposing views are not generally presented equally. The most obvious differentiation, in terms of political ideologies, and therefore differences in subjective norms in the United States, appears to be between Republicans and Democrats. In their study of adults 60 years and older, Callow et al. (2020) found health behavior intentions with respect to

COVID-19 and social isolation were influenced by attitudes, subjective norms, messaging strategies, and political affiliations. They stated self-identified Democrats held positive attitudes toward health preventive behaviors, such as social isolation, whereas Republicans had the lowest positive attitude scores. In June 2020, The (Pew Research Center, 2020) found similar results in the divide between Democrats and Republicans over mask-wearing, with self-reported rates of regular wearing at 76 and 53%, respectively.

Political Affiliation and Health Behaviors

In empirical analyses of the politicizing of preventive behaviors, research has consistently shown Republicans are far less likely to comply with “stay-at-home” orders and handwashing as preventive measures. They are also less likely to engage in social distancing, but more likely to believe misinformation about preventive behaviors (Allcott et al., 2020; Clinton et al., 2020; Hao et al., 2021). Hornik et al. (2021) examined misinformation and found that belief in misinformation is negatively related to mask-wearing. Additional research has shown Trump supporters are less likely to wear masks to combat the spread of COVID-19. Goldberg et al. (2020) showed democratic voters were more likely to support mask initiatives and mask-wearing. Similarly, Kahane (2021) showed the tendency to wear a mask was significantly lower in counties Trump won in the 2016 presidential election.

The willingness to adopt health preventive behaviors against COVID-19 based on one’s political affiliation is an example of extrinsic motivation. Human behaviors are influenced to a great extent by personal and contextual motivational factors. The Social Determination Theory (SDT) claims there are two forms of controlled extrinsic motivation regulation: introjected regulation and external regulation. Introjected regulation concerns motivation by contingent self-esteem and desire for self- or other-approval. External regulation is less self-determined, as it represents behaviors motivated by external pressures or contingent rewards. Using the SDT as a framework, it could be suggested a person’s political affiliation might influence their decision to adopt health preventive behaviors because they desire to seek approval from others affiliated with that particular political ideology and/or alternatively they feel pressured by those with similar political affiliations.

The 2020 United States presidential election was a key focal point in the COVID-19 debate. The election took place in the midst of growing COVID-19 cases, debates over the efficacy of mask-wearing, other preventive behaviors (like social distancing), rampant misinformation about COVID-19, growing fears over the virus, and mounting economic and political division in the nation (Baccini et al., 2021; Croucher, Nguyen, & Rahmani, 2020; Sample, 2020). The political ideology from the U.S. federal government, led by then President Donald Trump, was mask-wearing and other preventive behaviors (including lockdowns) were not necessary, while actions such as handwashing were encouraged. Many governors agreed with President Trump’s assertion and refused to implement mask or preventive measure mandates (Reimann, 2020). After the inauguration of

Joe Biden, the federal government’s rhetoric toward preventive measures changed and Americans were encouraged to wear masks (Morrison, 2021). The current study explores if frequency of handwashing and mask-wearing in the United States changed after the presidential election. Following the TPB, focusing particularly on fears and subjective norms, this study explores whether political partisanship leads to a polarization of public attitudes toward preventive health behaviors, such as mask-wearing and handwashing. Using the 2020 United States presidential election as a point of comparison, this longitudinal study examines the following four research questions:

RQ1: To what extent will frequency of mask-wearing change before and after the 2020 United States Presidential election?

RQ2: To what extent will frequency of handwashing change before and after the 2020 United States Presidential election?

RQ3: To what extent will fear of COVID-19 affect change in mask-wearing frequency?

RQ4: To what extent will fear of COVID-19 affect change in handwashing frequency?

METHODS

A longitudinal-panel study was conducted to assess these differences and relationships. After ethical approval, data for this study were collected in September and December 2020 in the United States ($n = 345$). All participants were self-identified Christians, Caucasians, native born to the United States, and either registered Democrats or Republicans. These particular demographics were chosen to ascertain how the dominant ethnic and social population has responded to the COVID-19 pandemic and preventive measures. Data were collected via Qualtrics. Online panels, such as those from Qualtrics are comparable in composition to face-to-face data panels (Troja and Graham, 2017). The survey included demographic questions, a question assessing how often participants washed their hands after being in a public place, a question measuring how often participants wore a mask in public, and a Fear of COVID-19 scale modified from the Fear of HIV/AIDS Scale (Bouton et al., 1987). The questions assessing frequency of handwashing and mask-wearing were assessed on a scale of 1 (never) to 5 (always).

TABLE 1 | Participant demographics.

| Variable | <i>n</i> | <i>M</i> | <i>SD</i> |
|----------------------------|-------------|----------|-----------|
| Sex | | | |
| Male | 174 (50.4%) | | |
| Female | 171 (49.6%) | | |
| Political affiliation | | | |
| Democratic | 154 (44.6%) | | |
| Republican | 191 (55.4%) | | |
| Highest level of education | | | |
| High school | 78 (22.6%) | | |
| 2 Year degree/equivalent | 49 (14.2%) | | |
| 4 Year degree/equivalent | 151 (43.8%) | | |
| Master’s/equivalent | 44 (12.8%) | | |
| Doctorate/equivalent | 23 (6.7%) | | |
| Age | | 32.5 | 4.92 |

Table 1 shows the demographic information for the participants. The **Supplementary Appendix** includes the survey items.

Fear of COVID-19

To measure the extent to which individuals perceive COVID-19 as a threat, 14 items from Bouton et al. (1987) were used. While initially developed to measure fear of HIV/AIDS, the items were modified to focus on COVID-19. The scale measures personal fear of the virus, fear of contact with the virus, and belief that the virus is a public health concern. Sample items included: "I am afraid I will get COVID-19," "COVID-19 will become a severe and widespread epidemic," and "the seriousness of COVID-19 is greatly overblown by the media." Reliabilities have ranged from 0.78 to 0.91 (Bouton et al., 1987; Croucher et al., 2021). Confirmatory factor analysis (CFA) was conducted following standards set by Hu and Bentler (1999) to ensure validity of the measure. The analysis confirmed fit, CFI = 0.97, SRMR = 0.05, RMSEA = 0.06, $\chi^2(24) = 42.01$, $p < 0.01$.

RESULTS

To explore RQ1 and RQ2, paired samples *t*-tests were conducted. The following results are for the combined sample, Democrats and Republicans. In answering RQ1 for the combined sample, there was not a significant change from before the election ($M = 3.15$, $SD = 1.41$) to after the election ($M = 3.27$, $SD = 1.54$), $t(344) = -1.15$, $p = 0.25$, $r = 0.20$. For self-identified Democrats there was a significant increase in mask-wearing from before the election ($M = 2.86$, $SD = 1.35$) to after the election ($M = 4.26$, $SD = 1.00$), $t(153) = -12.61$, $p < 0.001$, $r = 0.35$. For self-identified Republicans, there was a significant decrease in mask-wearing from before the election ($M = 3.39$, $SD = 1.41$) to after the election ($M = 2.47$, $SD = 1.44$), $t(190) = 8.19$, $p < 0.001$, $r = 0.41$.¹

In answering RQ2 for the combined sample, there was a significant increase in handwashing from before the election ($M = 2.97$, $SD = 1.30$) to after the election ($M = 3.59$, $SD = 1.40$), $t(344) = -6.65$, $p < 0.001$, $r = 0.18$. For self-identified Democrats there was a significant increase in handwashing from before the election ($M = 3.00$, $SD = 1.31$) to after the election ($M = 4.05$, $SD = 1.04$), $t(153) = -19.35$, $p < 0.001$, $r = 0.32$. For self-identified Republicans there was a significant decrease in handwashing from before the election ($M = 2.95$, $SD = 1.30$) to after the election ($M = 3.23$, $SD = 1.54$), $t(190) = -2.02$, $p < 0.05$, $r = 0.11$.²

¹When comparing the difference between Republicans and Democrats on the overall change in mask wearing (difference), a follow-up independent samples *t*-test revealed a significant difference between Democrats ($M=1.40$; $SD=1.37$) and Republicans ($M=-.92$; $SD = 1.55$) in overall change in mask wearing: $t(343) = 14.50$, $p < 0.001$.

²When comparing the difference between Republicans and Democrats on the overall change in handwashing (difference), a follow-up independent samples *t*-test revealed a significant difference between Democrats ($M=1.05$; $SD=1.39$) and Republicans ($M=.28$; $SD = 1.90$) in overall change in handwashing: $t(343) = 12.81$, $p < 0.001$.

TABLE 2 | Regression model for change in Mask-wearing.

| Regressor | Model 1 |
|---|---------|
| Whole sample | |
| Constant | 0.07 |
| Difference in personal fear | 30** |
| Difference in fear of contacting | .07 |
| Difference in belief of public health concern | .01 |
| <i>F</i> | 13.40** |
| <i>R</i> ² | 0.11 |
| <i>R</i> ² _{adj} | 0.10 |
| Democrats | |
| Constant | 1.35 |
| Difference in personal fear | 0.23** |
| Difference in fear of contacting | -0.17* |
| Difference in belief of public health concern | 0.11 |
| <i>F</i> | 3.51* |
| <i>R</i> ² | 0.07 |
| <i>R</i> ² _{adj} | 0.05 |
| Republicans | |
| Constant | -0.89 |
| Difference in personal fear | 0.27** |
| Difference in fear of contacting | -0.09 |
| Difference in belief of public health concern | 0.07 |
| <i>F</i> | 5.07** |
| <i>R</i> ² | 0.08 |
| <i>R</i> ² _{adj} | 0.06 |

Note: * $p < 0.05$, ** $p < 0.001$.

TABLE 3 | Regression model for change in handwashing.

| Regressor | Model 1 |
|---|---------|
| Whole sample | |
| Constant | 0.56 |
| Difference in personal fear | 0.32** |
| Difference in fear of contacting | -0.05 |
| Difference in belief of public health concern | 0.08 |
| <i>F</i> | 11.89** |
| <i>R</i> ² | 0.10 |
| <i>R</i> ² _{adj} | 0.09 |
| Democrats | |
| Constant | 0.89 |
| Difference in personal fear | 0.38** |
| Difference in fear of contacting | -0.20* |
| Difference in belief of public health concern | 0.09 |
| <i>F</i> | 8.41** |
| <i>R</i> ² | 0.15 |
| <i>R</i> ² _{adj} | 0.13 |
| Republicans | |
| Constant | -0.31 |
| Difference in personal fear | 0.25** |
| Difference in fear of contacting | -0.04 |
| Difference in belief of public health concern | 0.06 |
| <i>F</i> | 3.73** |
| <i>R</i> ² | 0.06 |
| <i>R</i> ² _{adj} | 0.04 |

Note: * $p < 0.05$, ** $p < 0.001$.

To answer RQ3, to what extent will fear of COVID-19 affect change in mask-wearing frequency, simple linear regression was employed. Three regressions were conducted. The first regression included the combined sample, while the second and third

regressions were on self-identified Democrats and Republicans separately. In each regression, difference in mask-wearing frequency served as the dependent variable. The three independent variables were: difference in personal fear of the virus, difference in fear of contact with the virus, and difference in belief that the virus is a public health concern. Full regression results are presented in **Table 2**. Regarding the whole sample, results revealed: difference in personal fear of the virus ($b = 0.30$) had a positive effect on change in mask-wearing frequency. For Democrats, difference in personal fear of the virus had a significant positive effect on change in mask-wearing frequency ($b = 0.23$), and difference in fear of contact with the virus had a negative effect ($b = -0.17$). For Republicans, difference in personal fear of the virus also had a significant positive effect on change in mask-wearing frequency ($b = 0.27$).

To answer *RQ4*, to what extent will fear of COVID-19 affect change in handwashing frequency, simple linear regression was employed. Three regressions were conducted. The first regression included the combined sample, while the second and third regressions were on self-identified Democrats and Republicans separately. In each regression, difference in handwashing frequency served as the dependent variable. The three independent variables were: difference in personal fear of the virus, difference in fear of contact with the virus, and difference in belief that the virus is a public health concern. Full regression results are presented in **Table 3**. Regarding the whole sample, results revealed: difference in personal fear of the virus ($b = 0.32$) had a significant positive effect on change in handwashing frequency. For Democrats, difference in personal fear of the virus had a significant positive effect on change in handwashing frequency ($b = 0.38$), and difference in fear of contact with the virus had a negative effect ($b = -0.20$). For Republicans, difference in personal fear of the virus also had a significant positive effect on change in handwashing frequency ($b = 0.25$).

DISCUSSION

The purpose of this study was to examine the extent to which individuals' likelihood to adopt COVID-19 preventive behaviors changed longitudinally. The analysis revealed the following key results: First, after the 2020 United States presidential election, mask-wearing and handwashing frequency increased among Democrats, while frequency decreased among Republicans. Second, personal fear of COVID-19 had a positive effect on change in frequency of handwashing and mask-wearing among the entire sample (Democrats and Republicans). Third, difference in belief that the virus is a public health concern had no effect on frequency of handwashing and mask-wearing. Fourth, difference in fear of contact with the virus had a significant negative effect on change in frequency of handwashing and mask-wearing.

The evidence supports Social Determination Theory (SDT), particularly in relation to how SDT explains the link between political affiliation and motivation to enact behavioral change. Previous research has demonstrated a person's political affiliation

influences their decision to adopt health preventive behaviors (Allcott et al., 2020; Hao et al., 2021), as individuals desire approval from others in their political ingroup. The results of the current study add to this body of research by demonstrating that during a period of heightened attention to political ideologies (a national election), one's adherence to a particular ideology heightens an individual's behavior response. For Democrats, over time the response was an increased likelihood to wear a mask and wash hands. In contrast, for Republicans it was a decreased likelihood to wear a mask and wash hands to combat COVID-19.

Increased mask-wearing and handwashing among Democrats after the United States election may be the result of several factors. United States President-elect Joe Biden and Vice President-elect Kamala Harris both appeared speaking wearing masks when the election result was clear. They may have acted as strong role models to Democrats illustrating how easy it was to wear masks in public, thereby increasing feelings of self-efficacy among their supporters to wear masks and increase their handwashing. As the PMT predicts, if individuals have strong feelings of self-efficacy, then they are more likely to engage in health preventive behaviors. Furthermore, Biden's victory may have acted as a mandate for Democrats to wear masks in public. Therefore, in accordance with the SDT, Democrats may have been more inclined to wear masks because of contingent rewards and social approval they would receive after the election, when the political rhetoric had changed to encourage mask-wearing and other health preventive behaviors. Prior to the election, mask-wearing may have brought them into conflict with pro-Trump supporters due to the espoused anti-mask-wearing rhetoric. In contrast, the drop in Republicans wearing masks may be explained by their faith in then President Trump who downplayed the need for mask-wearing and social distancing and even encouraged defiance of such measures (Graham et al., 2020). When combined with President Trump's constant rhetoric of election fraud, those who believed in Trump may have increased their defiance of such measures to show their continued loyalty to the now former president.

The results of the current study were consistent with research that shows an individual's perception of personal risk leads to increased likelihood of adopting health preventive behaviors (Harper et al., 2020; Jørgensen et al., 2020). Among Democrats, the perception that COVID-19 was a personal risk to one's own health had a positive effect on change in likelihood of mask-wearing and handwashing. Essentially, as fear of COVID-19 increased, so did engaging in preventive behaviors such as handwashing and mask-wearing. For Republicans, the results were counter to previous literature. For Republican respondents, the results showed the more fear of the virus increased, the more they did not wear a mask or wash hands, as both behaviors decreased in likelihood after the election. While fear is an important factor in fostering preventative behaviors, it is also known that feelings of efficacy in enacting those health behaviors is also a major influence (Jørgensen et al., 2020). It may be that Republican's felt more fear of the virus post-election (as evidenced here), while simultaneously feeling lower levels of self-efficacy, leading to a decrease in health preventive behaviors. Trump's departure from office did lead to disbelief among his

supporters (something that was regularly reported by news media), potentially introducing a helpless state of mind.

Fear of exposure to the virus had a negative effect on handwashing and mask-wearing with Democrats lowering their likelihood to engage in these activities. The questions in the scale examined attitudes about exposure to the virus through interactions with people to whom they have close contact. Jørgensen et al. (2020) found people who fear the virus tended to avoid others they do not know, therefore by default exercising social distancing, while Dijker et al. (1996), in a study examining attitudes toward people with AIDS (PWA), found those who displayed more prosocial emotions, for example pity, were more likely to physically engage with people with AIDS. These prosocial emotions may have also been reinforced by President-elect Joe Biden, who called for people to come together and stated his COVID-19 recovery plan "...will be built on bedrock science. It will be constructed out of compassion, empathy and concern" (Washington Post, 2020).

LIMITATIONS AND FUTURE RESEARCH

This research has limitations that should be considered when interpreting the results. First, while sampling from firms such as Qualtrics is comparable to other populations in published research, it is convenience sampling. Thus, the findings need to be interpreted with this knowledge. Second, participants were asked to self-identify their political affiliation, though strength of political affiliation was not measured. Thus, while an individual might identify as a Democrat or Republican, the results do not indicate the strength of that identification. Third, as a longitudinal study, the design is not experimental in nature, and therefore does not include a control group nor random assignment. Thus, while the results showed change around the time of the election, it is critical to note that the study does not and cannot prove that the election caused such changes to occur.

While the results of the present study offer theoretical contributions to our understanding of preventive health behaviors, there are directions for future research. First, the current study only included native-born individuals. Future studies should include immigrants to better understand preventive health behaviors among a more representative United States population. Second, the current study was longitudinal in its exploration of change in handwashing and mask-wearing behaviors before and after the 2020 United States presidential election. Future research would benefit from an experimental (or at least quasi-experimental) design, which would provide more evidence that change in the dependent

variables was caused by and not related to the prevailing political climate. Third, to better understand change in behaviors, future research could also examine the impact of misinformation on the likelihood of adopting such behaviors. Misinformation online has significantly distorted COVID-19 policies and behaviors and it is difficult to know the full extent of its impact (Rothwell and Desai, 2020). Fourth, it is necessary to further investigate the contribution of fear and self-efficacy as motivators for preventive health behaviors separately and in a combined fashion. Different populations may require different health messaging to encourage wanted behaviors dependent on their levels of fear, self-efficacy, and the potential mediating variable of political ideology.

This research has advanced our understanding of health behavior. Specifically, this study has longitudinally demonstrated how individuals adopt preventive behaviors during a politically charged pandemic response. It is vital to continue exploring individuals' behavioral responses in pandemic situations, as understanding and improving such responses are critical to enhancing our collective response to current and future pandemics.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusion of this article will be made available by the authors, without undue reservation.

ETHICS STATEMENT

The studies involving human participants were reviewed and approved by Massey University. Written informed consent for participation was not required for this study in accordance with the national legislation and the institutional requirements.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fcomm.2021.689974/full#supplementary-material>

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Conflict of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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