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Longitudinal trajectories of coronavirus anxiety and health behavior use before and after the U.S. 2020 presidential election: The effects of political orientation

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ABSTRACT

Although heightened anxiety and health behavior use (i.e., masking, hand washing) may be viewed as an adaptive response to the coronavirus (COVID-19) pandemic, it is unclear how the politicization of the pandemic has influenced the trajectory of such responses. Accordingly, the present study examined differences between those that identify as more conservative or liberal in the trajectory of anxiety and health behaviors during the pandemic. This study also examines shifts in this trajectory before and after the presidential election. As part of a larger study, participants ($N = 374$) completed a symptom survey starting on May 27, 2020 every 2 weeks for a total of 15 timepoints over 30 weeks. The findings showed that more conservative participants reported lower levels of COVID-19 anxiety and less health behavior use compared to more liberal participants. In fact, anxiety levels increased slightly for more liberal participants and decreased slightly for more conservative participants during the pre-election time frame. Health behavior use also decreased more rapidly for conservative participants than for liberal participants during the pre-election time frame. However, COVID-19 anxiety and health behavior use rose sharply and similarly for both liberal and conservative individuals after the election. Importantly, these patterns were independent of state level variability in COVID-19 positivity and death rates. Subsequent analysis also revealed significant relations between COVID-19 anxiety and health behavior use that was slightly stronger among conservatives. Implications of these findings for navigating the influence of political ideology on anxiety-related responses during a public health emergency like the COVID-19 pandemic are discussed.

An outbreak of pneumonia in Wuhan, Hubei province, China in December 2019 led to the identification of a novel coronavirus with the resulting infection named coronavirus condition 2019 (COVID-19) (Wang, Horby, Hayden, & Gao, 2020). COVID-19 quickly spread worldwide, and the World Health Organization (WHO) declared the outbreak a pandemic on March 11, 2020 (WHO, 2020). COVID-19 is highly contagious and can be spread by asymptomatic, presymptomatic, and symptomatic carriers (Wiersinga, Rhodes, Cheng, Peacock, & Prescott, 2020). Furthermore, COVID-19 symptoms (i.e., shortness of breath or dyspnea, fatigue or exhaustion) can persist beyond the acute phase of infection (Nasserie, Hittle, & Goodman, 2021). When also considering the high rates of "excess deaths," calculated as the difference between the number of deaths from all causes that occurred during the course of the pandemic and the expected number of deaths based on a historical baseline from recent years (Islam et al., 2021; Woolf, Chapman, Sabo, & Zimmerman, 2021), contracting COVID-19 has been a significant source of anxiety for many since the onset of the pandemic.

COVID-19 poses a serious threat to public health, and Internet searches showed an acute anxiety that spiked early during the pandemic (Ayers et al., 2020). Heightened COVID-19 anxiety may be characterized by the (mis)perception of bodily sensations or changes, especially those related to the virus (e.g., coughing, fever, fatigue), as evidence of infection (Asmundson & Taylor, 2020). This catastrophic misinterpretation of bodily sensations and changes during the pandemic not only increases anxiety about COVID-19; it also motives the excessive use of maladaptive coping behaviors. Of note is that researchers have observed an increase in the prevalence of anxiety and its disorders as a result of the pandemic (COVID-19 Mental Disorders Collaborators, 2021). For

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example, Twenge and Joiner (2020) found that compared to U.S. adults in 2019, U.S. adults in April and May 2020 were more than three times as likely to screen positive for anxiety disorders (Twenge & Joiner, 2020). Another study in which participants completed a measure of anxiety before the COVID-19 outbreak (October 2019, Time 1) and again during the pandemic (April 2020, Time 2) revealed a 181.94 % increase in anxiety which was associated with the severity of the pandemic in the region where participants resided (Wu et al., 2021). Anxiety symptoms have clearly increased significantly during the onset of the COVID-19 pandemic (Daly & Robinson, 2021), and studies have begun to identify predictors of this increase (Ojalehto, Abramowitz, Hellberg, Butcher, & Buchholz, 2021). Although one predictor of the marked increase in anxiety during the onset of the COVID-19 pandemic is likely the tendency to misinterpret benign bodily sensations and changes as signs of contracting COVID-19, much remains unknown about the trajectory of COVID-19 anxiety during the pandemic as well as the factors that may influence the trajectory.

To mitigate the spread of COVID-19, the WHO and Centers for Disease Control (2020b, CDC, 2020a, 2020c) recommended the public implement a number of health behaviors including frequent handwashing, physical distancing, and wearing masks or face coverings in public. In the context of high COVID-19 anxiety, such health behaviors may function as 'safety behaviors,' which are overt or covert actions performed to prevent, escape, or minimize a feared catastrophe and/or associated distress (Telch & Lancaster, 2012). Recent research suggests that fear of COVID-19 is a robust predictor of health behavior use (Harper, Satchell, Fido, & Latzman, 2020). Although experiencing anxiety and the subsequent use of health behaviors during the pandemic is an adaptive response to a real threat (Knowles & Olatunji, 2021), research has also shown that safety behavior use is a stronger predictor of COVID-19-related fear than generalized anxiety (Weismüller et al., 2021). However, recent research also suggests that various social cognitive factors may be more important determinants of health behavior use during the pandemic than emotional factors like fear and anxiety (i.e., Hein et al., 2021).

A better understanding of the social cognitive factors that influence the trajectory of anxiety and subsequent health behavior use during the COVID-19 pandemic has important implications for better understanding the range of factors that can modulate anxiety and related responses. One relevant social factor is the observation that the pandemic has been highly politicized, such that conservatives have expressed more skepticism and indifference toward the pandemic than liberals (Rothgerber et al., 2020). In fact, conservatives are more likely to report that COVID-19 was receiving too much media coverage and people were generally overreacting, whereas liberals were more likely to report the government had not done enough in response to the pandemic (Christensen et al., 2020). Consequently, conservatives self-report lower endorsement of social distancing measures (Gadarian, Goodman, & Pepinsky, 2021) and mask-wearing (Cheng, 2020). Recent research has also found that political conservatism inversely predicts compliance with health behaviors aimed at preventing the spread of COVID-19, an effect that is mediated by divergent perceptions of the health risk posed by the virus (Rothgerber et al., 2020). Not surprisingly, mask usage tended to be *lower* in counties with greater support for President Trump and areas with greater interest in *Fox News* (Gonzalez, James, Bjorklund, & Hill, 2021). Although the available data suggest that political orientation influences anxiety and COVID-19-related health behavior use, the extent to which political orientation influences the trajectory of COVID-19 anxiety and health behavior use during the pandemic remains unclear.

Another factor that may influence the trajectory of anxiety about COVID-19 and health behavior use during the pandemic is the presidential election. As a result of liberals being more likely to view COVID-19 as a serious threat (Christensen et al., 2020), counties less supportive of Trump stopped the growth rates of COVID-19 cases and deaths as the summer of 2020 moved into July and August, while counties more supportive of Trump saw a trajectory of increased cases and deaths in July and August (Morris, 2021). Partisan differences in physical distancing were also found to be associated with subsequently higher COVID-19 infection and fatality growth rates in pro-Trump counties (Gollwitzer et al., 2020). A shift to a presidential administration that unambiguously identifies COVID-19 as a major threat would be predicted to influence the trajectory of COVID-19 anxiety and subsequent health behavior use in the general population. Although this trajectory may differ as a function of one's political orientation, no study to date has addressed this research question. Accordingly, the present study was designed to answer the following three questions:

1. Are there differences between those identifying as more conservative versus liberal in the trajectory of COVID-19 anxiety and COVID-19 health behavior use before and after the presidential election?

2. Are the political differences in the trajectories of COVID-19 anxiety and COVID-19 health behavior use before and after the election an artifact of COVID cases and deaths?

3. Is there a relation between COVID-19 anxiety and COVID-19 health behavior use, and does this relation differ as a function of political orientation?

1. Method

1.1. Participants

In 2020, we re-contacted participants from an earlier (2016) study, inviting them to complete the current survey. The original 2016 sample included adults aged 18–65 who were recruited to complete surveys related to sleep and anxiety symptoms ($N = 1262$). The present sample ($N = 374$) was 85.4 % female with a mean age of 44.43 ($SD = 13.15$), ranging from 18 to 65. The ethnicity composition was as follows: White ($n = 335$; 89.6%), African American ($n = 9$; 2.4%), Asian ($n = 9$; 2.4%), Hispanic/Latino ($n = 16$; 4.2%), Other ($n = 5$; 1.5%). Zero participants reported working from home prior to COVID-19, 158 (50%) reported currently working from home at the first timepoint, and 81 (53.7%) reported currently working from home at the final timepoint. Participant occupation, classified according to the International Standard Classification of Occupations, is reported in Supplement A. Participant state of residence is reported in Supplement B.

1.2. Measures

The *Coronavirus Anxiety Inventory* (CAI; Cox, Jessup, Luber, & Olatunji, 2020) is a 9-item self-report measure of fear and anxiety about the COVID-19 pandemic (items are listed in Supplement C). The CAI was adapted from a similar measure of Ebola-related fear, the Ebola Fear Inventory (EFI; Blakey et al., 2015). Items on the CAI are rated on a Likert scale from 1 (*not at all*) to 5 (*very much*), and higher scores indicate higher COVID-19 fear and anxiety. The CAI demonstrated adequate internal consistency ($\alpha = 0.83$) in the present study.

The *Coronavirus Safety Behavior Checklist* (CSBC; Cox et al., 2020) is a 9-item self-report measure of health behaviors engaged in to prevent contracting COVID-19 (items are listed in Supplement C). The CSBC was adapted from a similar measure of Ebola-related safety behaviors, the Ebola Safety Behaviors Checklist (Blakey et al., 2015). Items on the CSBC are rated on a Likert scale from 0 (*none*) to 10 (*extreme amount*), and higher scores indicate more engagement in COVID-19-related health behaviors. The CSBC demonstrated adequate internal

consistency (α = 0.86) in the present study.

Political Orientation was assessed with a single item ("What is your political orientation?") rated on a Likert scale from 1 (*Extremely liberal*) to 7 (*Extremely conservative)*..[1]

Data on cumulative COVID-19 cases and deaths in each state were collected from https://outbreak.info after each timepoint. Outbreak.info is a data aggregation and visualization website that combines COVID-19 data from Johns Hopkins University Center for Systems Science and Engineering, the New York Times, and the COVID Tracking Project.

2. Procedure

Participants were recruited through ResearchMatch, a national health volunteer registry that was created by several academic institutions and supported by the U.S. National Institutes of Health as part of the Clinical Translational Science Award (CTSA) program. ResearchMatch has a large population of volunteers who have consented to be contacted by researchers about health studies for which they may be eligible. Participants were re-contacted with the option to enroll in the present study on April 1, 2020. Data were collected on the CAI and CSBC starting on April 1, 2020; however, the political orientation item was not added until May 27, 2020. Therefore, only data collected on May 27, 2020 and onward was included in the present analysis.

Participants received a survey link via email every 2 weeks for a total of 15 timepoints over 30 weeks. Participants received a reminder email to complete a given timepoint if they had not responded within 1 day. The survey for each timepoint remained open for 7 days. Participants were compensated with a $25 gift card drawing for each timepoint. Study data were collected and managed using REDCap (Research Electronic Data Capture) hosted at Vanderbilt University (Harris et al., 2009). REDCap is a secure, web-based software platform designed to support data capture for research studies, providing (1) an intuitive interface for validated data capture; (2) audit trails for tracking data manipulation and export procedures; (3) automated export procedures for seamless data downloads to common statistical packages; and (4) procedures for data integration and interoperability with external sources. Review and approval for the study and all procedures was obtained from the Vanderbilt University Institutional Review Board.

2.1. Data analytic overview

Participants completed between 5 and 15 waves of data collection (mode = 15, mean = 10.2, SD = 4.5). Missingness was not significantly correlated with any study variable (*ps* > 0.18). Using full information maximum likelihood estimation, we were able include participants with partial data in the primary analyses.

Our first goal was to estimate the trajectories of COVID-19 anxiety and health behaviors before and after the presidential election and to test whether these trajectories were different for people with more conservative versus liberal political orientations. To address these questions, we used multi-level modeling with time (in days) nested within person. For the prediction of CAI scores, the model included a pre-election linear spline (Pre) and a post-election linear spline (Post) as level 1 predictors, with a common intercept (or "knot") occurring at the day when the presidential election results were released: November 7, 2020. For the pre-election spline, time values ranged from − 164–0 (i.e., 164 days before the election up to November 7). The post-election spline time values ranged from 0 to 55 days after the election. The model also included political orientation (PO) as a level 2 predictor, with lower scores reflecting more liberal attitudes, and higher scores reflecting more conservative attitudes. As shown in the equations below, we tested the within-person main effects for Pre and Post, the between-person effect of political orientation, as well as the political orientation x Pre and political orientation x Post interactions:

$$\text{Level1}: CAI_{ij} = \beta_{0j} + \beta_{1j}Pre + \beta_{2j}Post + e_{ij}$$

$$\text{Level2}: \beta_{0j} = \gamma_{00} + \gamma_{01}PO + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}PO + u_{0j}$$

$$\beta_{2j} = \gamma_{20} + \gamma_{21}PO + u_{0j},$$

where γ_{01} represents the main effect of political orientation, γ_{10} represents the Pre-election spline, γ_{20} represents the post-election spline, γ_{11} represents the political orientation x Pre interaction, and γ_{21} represents the political orientation x Post interaction. For the prediction of COVID-19-related health behaviors, we used the same multi-level model with CSBC scores as the level-1 dependent.

Our second goal was to rule out the possibility that the above trends might be due to rising levels of COVID-19 cases and COVID-19-related deaths in each participant's home state. To test this possibility, we added the time-varying number of COVID cases and number of COVID-related deaths (specific to each person's home state) to the above model as level-1 predictors.

Our third goal was to estimate the relation of COVID-19 anxiety and health behaviors and to test whether this relation was moderated by political orientation. Using multi-level modeling, we addressed this question at two levels: (1) within person, did individuals' fluctuations in CAI levels covary with fluctuations in their CSBC scores, and (2) between person, did individuals' typical levels CAI (averaged over time) covary with their average levels of CSBC scores. We began by partitioning CAI scores into two parts. The within-person part captured individual fluctuations by centering each person's time-varying scores around the person means; negative scores therefore reflected fear levels that were below that person's mean, and positive scores reflected levels that were above that person's mean. These scores (represented as CAI^w) served as level-1 predictors of CSBC scores. The between-person part consisted of each person's mean CAI score (averaged over time). These scores (represented as CAI^b) served as a level-2 predictor of CSBC scores. The pre- and post-election splines and political orientation were retained from the previous model. The political orientation x CAI level 2 interaction tested the moderator effect of political orientation. The complete multi-level model was:

$$\text{Level1}: CSB_{ij} = \beta_{0j} + \beta_{1j}CAI^w + \beta_{2j}Pre + \beta_{3j}Post + e_{ij}$$

$$\text{Level2}: \beta_{0j} = \gamma_{00} + \gamma_{01}CAI^b + \gamma_{02}PO + \gamma_{03}PO \times CAI^b + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11}PO + u_{1j}$$

$$\beta_{2j} = \gamma_{20} + u_{2j}$$

$$\beta_{3j} = \gamma_{30} + u_{3j},$$

where γ_{10} represents the correlation of within-person fluctuations in CAI with fluctuations in CSBC scores, and γ_{01} represents the correlation between people's average level of CAI and their average CSBC scores.

3. Results

3.1. Descriptive statistics

Summary statistics for all study variables appear in Table 1. All correlations among political orientation, CAI, and CBSC were significant

1 Footnote

1. Political orientation does not significantly change from time 1(m = 2.78, SD = 1.51) to time 15 (m = 2.79, SD=1.44), t(169) = −0.13, p =.90.

2. It is worth acknowledging that exposure to or trust in partisan liberal messaging has likely also led to greater COVID related concerns among liberals.

Table 1
Descriptive Statistics and Correlations.

Variable	PO	CAI	CSBC	Total Covid Cases	Total Covid Deaths	Mean	SD
PO; conservative	1.000					2.98	1.47
CAI	-0.340***	1.000				24.32	6.16
CSBC	-0.224***	.786***	1.000			48.35	16.09
Total Covid Cases	-0.007	-0.069	-0.052	1.000		256,959	212,816
Total Covid Deaths	-0.014	-0.049	-0.037	0.678***	1.000	7374	8703

Note. PO = Political Orientation, CAI = Coronavirus Anxiety Inventory, CSBC = Coronavirus Safety Behavior Checklist; * $p < .05$, ** $p < .01$, *** $p < .001$

($p < .001$). Correlations with COVID cases and COVID-19-related deaths were nonsignificant.

3.2. Trajectory of COVID-19 anxiety and health behavior use

We estimated COVID-19 anxiety and health behavior use trajectories as a function of political orientation, before and after the election results release date. Results for the CAI appear at the *tops* of Table 2 and Fig. 1. The main effect for political orientation shows that more conservative people reported lower levels of COVID-19 anxiety compared to more liberal people (see $\gamma_{01}, p < .001$). The pre-election spline was moderated by political orientation (see $\gamma_{11}, p < .002$), such that COVID-19 anxiety increased slightly for more liberal people and decreased slightly for more conservative people during the pre-election time frame. After the election, COVID-19 anxiety rose sharply and similarly for both liberal and conservative individuals (see $\gamma_{20}, p < .001$), with no political orientation x Post interaction (see $\gamma_{21}, p = .823$).

Results for COVID-19 health behaviors appear at the *bottoms* of Table 2 and Fig. 1. The main effect for political orientation shows that more conservative people reported using fewer health behaviors compared to more liberal people (see $\gamma_{01}, p < .001$). The pre-election spline was moderated by political orientation (see $\gamma_{11}, p < .004$), such that health behaviors decreased more rapidly for conservative people than for liberal people during the pre-election time frame. After the election, health behaviors rose sharply and similarly for both liberal and conservative individuals (see $\gamma_{20}, p < .002$), with no political orientation x Post interaction (see $\gamma_{21}, p = .759$).

3.3. Effects of COVID positivity rates and deaths

We then examined the possibility that the above trends might be a function of the rising COVID-19 levels over the 2020 calendar year by adding participants' state-specific, time-varying COVID-19 cases and COVID-19-related deaths as level-1 covariates in the previous two multilevel models. Neither covariate had a significant effect on either the CAI or CSBC. Furthermore, neither the direction nor significance of the previously reported effects changed when COVID-19 cases and COVID-19-related deaths were added to the models.

Table 2
Multi-level Model Results for Trajectories of Coronavirus Anxiety and Coronavirus Health Behaviors as a Function of Political Orientation (PO) and Date of Presidential Election Results.

Parameter	Estimate	SE	df	t	p
Dependent variable = Coronavirus Fear Inventory (CAI)					
Intercept: γ_{00}	29.060	0.771	362.06	37.70	0.000
Political orientation (PO; conservative): γ_{01}	-1.633	0.234	369.83	-6.98	0.000
Pre-election spline (Pre): γ_{10}	0.009	0.003	306.02	3.06	0.002
Post-election spline (Post): γ_{20}	0.039	0.009	211.75	4.31	0.000
PO x Pre: γ_{11}	-0.003	0.001	316.60	-3.18	0.002
PO x Post: γ_{21}	0.001	0.003	212.83	0.22	0.823
Dependent variable = Coronavirus Safety Behavior Checklist (CSBS)					
Intercept: γ_{00}	55.712	2.024	357.27	27.52	0.000
Political orientation (PO; conservative): γ_{01}	-3.023	0.614	364.89	-4.92	0.000
Pre-election spline (Pre): γ_{10}	0.002	0.008	292.81	0.33	0.745
Post-election spline (Post): γ_{20}	0.072	0.023	213.49	3.10	0.002
PO x Pre: γ_{11}	-0.007	0.002	302.69	-2.86	0.004
PO x Post: γ_{21}	-0.002	0.007	214.66	-0.31	0.759

Note. CAI = Coronavirus Anxiety Inventory, CSBC = Coronavirus Safety Behavior Checklist

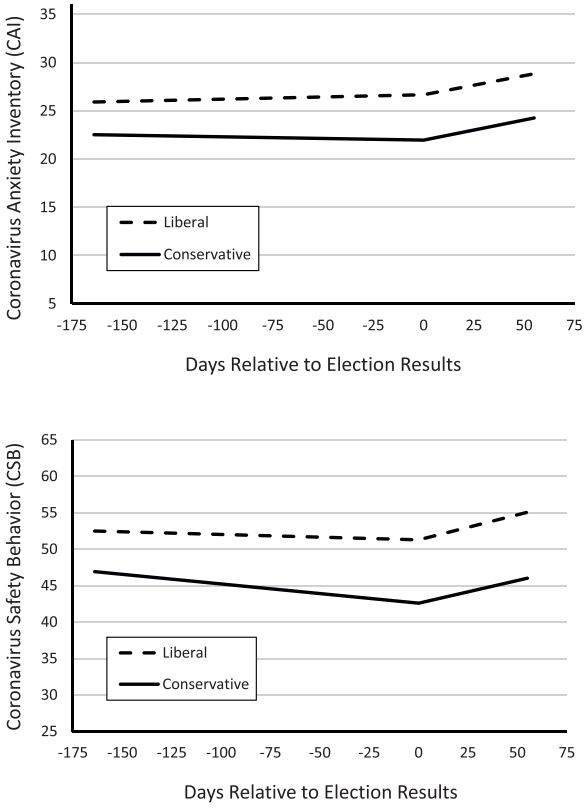

Fig. 1. Trajectories of COVID-19 anxiety (top) and health behavior use (bottom)as a function of political orientation and election results date.

3.4. Association between COVID-19 anxiety and health behavior use

We also estimated both the within-person and between-person relation of COVID-19 anxiety and health behaviors. As shown in Table 3 and Fig. 2, both relations were positive and significant. Within person, individuals' fluctuations in CAI scores were positively associated with their fluctuations in CSBC scores over time ($\gamma_{10} = 2.101, t = 23.62, p < .001$). Between person, individuals' average CAI scores were also associated with their average levels of CSBC scores ($\gamma_{01} = .976, t = 24.59, p < .001$). Furthermore, the political orientation x CAI (between-person) interaction was marginally significant ($\gamma_{03} = .090, t = 1.917, p < .056$), indicating that the positive relation between COVID-19 anxiety and health behaviors was slightly stronger for people who described themselves as more politically conservative. For each 1-point increase on the 7-point political orientation scale, the partial slope of the CAI → CSBC relation increased by.090 (Note: the interaction of political

Table 3
Multi-level Spline Model Results for the Moderator Effects of Political Orientation (PO) on the Within- and Between-person Relations of CAI to CSB.

Parameter	Estimate	SE	df	*t*	*p*
Intercept: γ_{00}	1.792	4.853	371.05	0.37	0.712
Person-mean CAI^{b}: γ_{01} (between-person)	-1.564	1.157	374.83	-1.35	0.177
Person-mean centered CAI^{w}: γ_{10} (within-person)	1.787	0.186	370.59	9.61	0.000
Political orientation (PO): γ_{02}	0.929	0.091	3664.73	10.26	0.000
Pre-election spline (Pre): γ_{20}	-0.017	0.003	300.47	-5.96	0.000
Post-election spline (Post): γ_{30}	0.027	0.009	239.72	2.96	0.003
PO x CAI^{b}: γ_{03}	0.090	0.047	376.07	1.92	0.056
PO x CAI^{w}: γ_{11}	0.015	0.027	3648.22	0.57	0.571

Note. CAI = Coronavirus Anxiety Inventory, CSBC = Coronavirus Safety Behavior Checklist

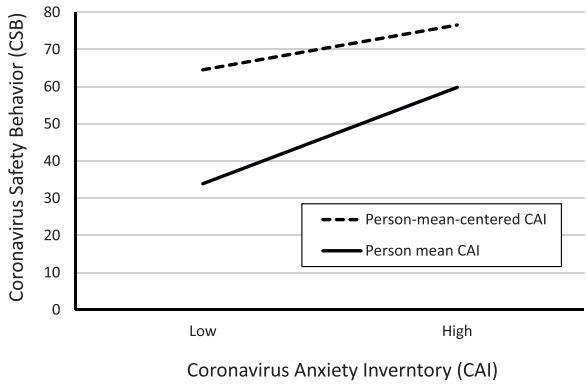

Fig. 2. Within-person and between-person relation of COVID-19 anxiety and health behavior use.

orientation x *within-person* aspect of CAI was not significant.)

4. Discussion

The present study found that more conservative people reported lower levels of COVID-19 anxiety and less use of health behaviors than liberal participants. This finding is consistent with the politicizing of the COVID-19 pandemic (Maglic, Pavlovic, & Franc, 2021), with research showing that conservatives tend to report being less concerned about the pandemic than liberals (Christensen et al., 2020). The present findings are also consistent with recent research showing that conservatives reported less use of various health behaviors, include social distancing and mask-wearing (Cheng, 2020; Gadarian et al., 2021). Three reasons may explain why conservatives report being less concerned about the pandemic than liberals: (1) Motivated Political reasons (conservatives hold COVID-19-specific political beliefs that motivated them to reduce concern), (2) Experiential reasons (conservatives are less directly affected by the outbreak than liberals), and (3) Conservative Messaging reasons (differential exposure to/trust in partisan conservative messaging). [2] Recent research has found that motivated political, but not experiential or partisan messaging, reasons more robustly explain conservatives' lack of concern about COVID-19 (Conway, Woodward, Zubrod, & Chan, 2021).

Although the present findings align with the view that anxiety and health behavior use during the pandemic may interact with one's political ideology to shape compliance with public health mandates (i.e., Wright, Faul, Graner, Stewart, & LaBar, 2021), it is unclear how anxiety and health behavior use unfolded over time. The present study found that before the election, COVID-19 anxiety increased slightly for more liberal people and decreased slightly for more conservative people over time. Similarly, health behavior use decreased more rapidly for conservative people than for liberal people over time before the election. In a recent longitudinal observational study with four assessment waves from March 27th until June 15th 2020, COVID-19 fear and anxiety was observed to decreased on average over time (Bendau et al., 2021). However, the present study suggests that findings of this sort paint an incomplete picture given that the trajectory of COVID-19 anxiety appears to be partially dependent on one's political orientation. One hypothesis that is consistent with cognitive-behavioral models (e.g., Asmundson & Taylor, 2020) is that compared to conservatives, liberals may have experienced an increasing tendency to misinterpret benign bodily sensations and changes during the pandemic as dangerous, which in turn increased anxiety symptoms.

More liberal participants tend to be exposed to information highlighting COVID-19 transmission risk, and this 'threat exposure' may partially explain the increasing levels of COVID-19 anxiety and health behavior use among liberals prior to the election (Mach et al., 2021). As discussed by Asmundson and Taylor (2020), high COVID-19 anxiety (likely among liberals) may be problematic in that participants may excessively seek out health-related information and reassurance. This may result in unnecessary visits to the doctor's office or even the emergency room in the pursuit of reassurance that ambiguous bodily sensations and changes are not due to infection. Low COVID-19 anxiety (likely among conservatives) may also be problematic. Indeed, research has shown that conservatives are more likely to perceive less personal vulnerability for the spread of the virus and stronger endorsement of the belief that the threat is exaggerated (Calvillo, Ross, Garcia, Smelter, & Rutchick, 2020). Those that view themselves as being at low risk of infection will be less likely to engage in the recommended health behaviors which will negatively impact coordinated efforts to mitigate viral spread.

The present study also examined the extent to which the trajectory of COVID-19 anxiety and health behavior use differed after the election. The findings showed that both COVID-19 anxiety and health behavior use rose sharply and similarly for both liberals and conservative individuals. This suggests that while the differences between liberals and conservatives in the pre-election trajectory of COVID-19 anxiety and health behavior use may have emerge due to differences in how the threat was represented (i.e., Reynolds & Quinn, 2008), the post-election rise in COVID-19 anxiety and health behavior use may reflect a more consistent framing of COVID-19 as an unambiguous public health threat by the new Democratic leadership. This finding suggest that elections do have consequences. Although media coverage could have been an effective way to mitigate the disease spreading during the initial stage of the pandemic (Zhou, Wang, Xia, Xiao, & Tang, 2020), many conservative-leaning media outlets downplayed the risks of COVID-19 (Calvillo et al., 2020). Indeed, research showed that people who trust Fox News more than CNN engaged in fewer health behaviors and riskier behaviors related to COVID-19, compared with those who trust CNN more than Fox news (Zhao, Wu, Crimmins, & Ailshire, 2020). However, the present findings that COVID-19 anxiety and health behavior use rose sharply after the election even among conservatives suggests a fundamental shift in the messaging about the public health threat of COVID-19. This finding is consistent with research that has revealed important differences before and after the election in the adoption of strategies for coping with the pandemic. For example, one study found that announcing approval of a COVID-19 vaccine one week before the presidential election compared to one week after the election considerably reduces both beliefs about its safety and efficacy and intended uptake (Bokemper, Huber, Gerber, James, & Omer, 2021).

Although the present findings suggest that the election likely changed the trajectory of COVID-19 anxiety and health behavior use, an alternative explanation could be that these findings were due to the seasonal effects of the virus. Indeed, there is evidence of more spread of COVID-19 in cold climates compared to warm climates (Mecenas, Bastos, Vallinoto, & Normando, 2020). The predicted pattern of seasonal spread of the virus is a decrease temporarily during summer, rebound by

autumn, and peak during winter (Merow & Urban, 2020). An alternative hypothesis may then be that the increase in COVID-19 anxiety and health behavior use after the election is due to concerns about the increase in the spread of COVID-19 during the winter months. However, our observed trends in the trajectory of COVID-19 anxiety and health behaviors remained unchanged when the number of COVID cases and deaths in the participant's state were included as covariates.

A major aim of the present study was to also examine the association between COVID-19 anxiety and health behavior use. The findings showed that individuals' fluctuations in COVID-19 anxiety were positively associated with their fluctuations in health behaviors over time. Individuals' average COVID-19 anxiety was also associated with their average levels of health behavior use. These findings are consistent with research linking anxiety responses to increased health behavior usage during the pandemic (Knowles & Olatunji, 2021; Mertens, Gerritsen, Duijndam, Salemink, & Engelhard, 2020). However, what is unclear is the extent to which a causal association between COVID-19 anxiety and health behavior use may be observed. Prior research has shown that health anxiety predicted future increases in COVID-19 preventative behaviors and engagement in preventative behaviors also predicted future increases in health anxiety (Church, Bounoua, Rodriguez, Bredemeier, & Spielberg, 2022). This suggests that there is likely a bidirectional causal association between COVID-19 anxiety and health behavior use (Li et al., 2022).

Subsequent analysis revealed that the positive relation between COVID-19 anxiety and health behavior use was slightly stronger for more conservative participants. Prior research has shown that conservative individuals are generally more pathogen-avoidant than their liberal counterparts (Terrizzi, Shook, & McDaniel, 2013; Tybur et al., 2016). The heightened pathogen avoidance amongst conservatives has been attributed to concerns that contact with outgroup members may increase the likelihood of contact with contagious pathogens (Thornhill & Fincher, 2014). When COVID-19 anxiety is evoked among conservatives, due in part to the association of the virus with foreigners, there may be a corresponding increase in the tendency to use health behaviors to manage that anxiety. These findings also highlight that there may be more of a disconnect between COVID-19 anxiety and health behavior use among liberals. This suggests that there may be motivators for health behavior use (e.g., science) among liberals other than anxiety.

The present study suggests that there are important differences between liberal and conservative in the trajectory of COVID-19 anxiety and health behavior use before and after the presidential election. Indeed, an important implication of this study is that a global pandemic that is being managed in a highly partisan environment can have differential effects on anxiety symptoms and health behavior depending on one's political orientation. However, the findings of the present should be considered within context of the study limitations. For example, the single-item measure of political orientation was limited in scope and did not allow for the differentiation of socially conservative attitudes from economically conservative attitudes. Although Republicans represent the more socially conservative party and have been more skeptical than Democrats of the dangers of the COVID-19 pandemic, two subtypes of political conservatism (social vs economic) may not perfectly distinguish Republicans from Democrats with regard to COVID-19 concerns. In fact, a recent study found that socially conservative attitudes correlated with self-reported COVID-19 health behavior use, but only among Democrats (Samore, Fessler, Sparks, & Holbrook, 2021). This finding highlights the importance of a comprehensive assessment of political orientation and ideology in future research along these lines.

The present study is also limited by the use of a sample that was largely female and white, which may limit the generalizability of these findings to men and other racial groups. Although our approach samples participants across the country, another study limitation is that the sample is not fully representative of the population distribution in the U. S. The study also relied exclusively on self-report measures. To maintain consistency with their political values, liberals and conservatives may have overreported and underreported their COVID-19 anxiety and/or health behavior use, respectively. Thus, replicating these findings with behavioral measures will be important. Finally, although the presidential election offered an opportunity for a "natural experiment," the present approach does not permit causal inference. In fact, it is important to note that there may be other processes that were not assessed in the present study that may explain the finding that COVID-19 anxiety and health behavior use rose sharply and similarly for both liberal and conservative individuals after the election.

A more comprehensive assessment would also require measurement of potential mechanism(s) that may explain the differences between those who identify as liberal versus conservative in the trajectory of COVID anxiety and health behaviors. This study limitation makes it difficult to determine *why* liberals and conservatives differ in the trajectory of COVID anxiety and health behaviors before and after the presidential election. The extent to which partisan media coverage prioritizes public health or economic concerns is one such mechanism that has direct implications for effective management of the next pandemic. Another mechanism may be partisan differences in perceptions about the virus itself. For example, a recent study found that greater perceived agency of the coronavirus increased its perceived threat among conservatives but not liberals, and that this interaction is due to differences in the tendency to attribute responsibility to agential entities (Nowland & Zane, 2021). This finding suggests that emphasizing the perceived agency of a virus can be utilized by policy makers, along with other strategies, in communications about the public health significance of using health behaviors in order to avoid another pandemic.

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Declaration of Interest

None.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.janxdis.2022.102643.

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