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Politics and pandemics: an investigation of the potential covariates in the relationship between conservative political ideology and reduced facemask wearing

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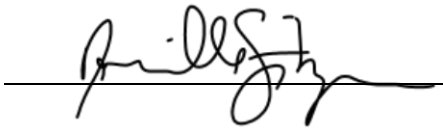

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Abstract

Facemasks have been empirically shown as one of the most effective non-pharmaceutical interventions in preventing the spread of COVID-19. However, research shows that individuals identifying as politically conservative are less likely to comply with mask mandates and engage in less mask wearing. This study investigated five variables that could explain the relationship between political identity and less mask wearing: loyalty to ingroup and obedience to authority moral foundations, trust in science, belief in conspiracy theories, and psychological reactance. Using an online survey system, 138 U.S. adults completed several measures of political identity, mask wearing, and the hypothesized covariates. A simple regression model showed a significant negative relationship between conservative political identity and mask wearing. A multiple regression model including the hypothesized covariates showed that the inclusion of these variables did not account for the relationship between political identity and mask wearing, which was still significant, and only psychological reactance was significant. A supplemental analysis indicated that the covariates seemed to account for about 54% of the relationship between conservative political identity and less mask wearing. Other factors are discussed that could potentially account for the remaining variance in this relationship. This line of research may aid public health officials in their recommendations to society so that populations with low adherence to pandemic health-related behaviors are more receptive to them. Achieving this could help curb the spread of COVID-19 and protect countless individuals.

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Taking the lives of over five million people and infecting hundreds of millions more (WHO, 2021), COVID-19 affected the lives of most people, whether directly or indirectly. The terms “quarantine” and “lockdown” became commonplace, and a face without a mask was an anomaly. More than a year after the first confirmed case in the United States, the number of cases and deaths continued to climb with over 47 million confirmed cases and over 700,000 deaths by November 2021 in the United States alone (CDC, 2021).

The politicization of the COVID-19 pandemic in the United States is undeniable, further deepening the existing chasm between political parties. Research (Kerr et al., 2021; Stroebe et al., 2021) and news reports have shown a trend where liberals seem more likely to comply with mask mandates, while conservatives seem more likely to reject masks and mandates that come with them (Collman, 2020).

With the vast amount of research showing the efficacy of facemasks in reducing the transmission of respiratory illness (Liang et. al., 2020), it is still unclear why there is resistance to mask wearing specifically. This study aims to investigate the factors correlated with conservative political ideology which may be associated with a reduced uptake of health-related behaviors during the COVID-19 pandemic. More specifically, I hypothesize that conservatives use facemasks less often than liberals, and that moral foundations (specifically, loyalty to ingroup and obedience to authority moral foundations), mistrust in science, belief in conspiracy theories, and psychological reactance will account for this relationship.

Moral Foundations

Differences between political parties are commonly known and multifaceted, with research showing that political ideology reflects one's morals (Bruchmann et al., 2018). According to the Moral Foundations Theory (Haidt & Graham, 2007; Haidt & Joseph, 2004), conservatives place stronger value on the *binding foundations*, compared with liberals who tend to value the *individualizing foundations* (Graham et al., 2009). The individualizing foundations of fairness and harm reduction are termed as such due to their emphasis on the rights and welfare of individuals. However, the binding foundations of loyalty to ingroup, obedience to authority, and purity in traditions, suggest a focus on group-binding loyalty, self-control, and duty (Graham et al., 2009). Because ingroup loyalty and obedience to authority seem to present as common themes throughout the pandemic, I sought to establish the unstudied relationship between these two seemingly key factors involved in mask wearing, and propose that they may partially account for reduced mask-wearing by conservatives.

Conservatives' noncompliance with mask wearing may be influenced by their tendency to favor and surround themselves with those they perceive to be similar (Bruchmann et al., 2018) given their value of group-binding loyalty. Because conservatives tend to create this echo chamber-like environment (Jost et al., 2018), the narrowing of perspectives results in a perceived shared reality with like-minded individuals that is especially important to conservatives. While this often affirms their political views, such as masks being ineffective (Kessel & Quinn, 2020; Taylor & Asmundson, 2021), conservatives are also more likely to be influenced by these perceived similar and trusted sources (Jost et al., 2018). Kahan (2017) showed that in

general, people are more likely to accept factually incorrect information related to policies if it originates from a trusted source or affirms their political and social worldview in order to protect their sense of self-identity. Once the misinformation has been accepted, individuals tend to ignore contradictory information and resist changing their viewpoint. Motivated by their value of ingroup loyalty, conservatives may have been more willing to accept mask misinformation from the similar sources they surround themselves with to protect their sense of conservative identity. In doing so, they may have neglected subsequent contradictory evidence, in turn contributing to their mask noncompliance.

Additionally, conservatives' value of ingroup loyalty may have influenced their mask wearing decisions due to their tendency to perceive a within-group consensus when making political judgments (Jost et al., 2018). Because COVID-19 has been noticeably politicized, it could be fair to say facemasks themselves have become politicized, and the act of wearing one has become a source of political judgment. News reports (Aratani, 2020) have shown conservatives protesting masks, referring to them as "muzzles" or "symbols of oppression," while claiming they do not work and are therefore a method of governmental control. Often seen in decision-relevant science is the tendency for an individual to defer to their identity-affirming group's position on policy-related topics (Kahan, 2017). This is often because the stance an individual takes on said topic shows a sense of loyalty and that betraying the group's view could result in the loss of their peers' support. It could stand to reason that the value conservatives place on staying loyal to their ingroup may have influenced their acceptance of this group consensus when they were making their political judgment on mask wearing and potentially resulting in less

mask use. Surrounding themselves with view affirming sources to protect their sense of conservative identity and making political judgments such as masking based on their ingroup's consensus suggest that the value conservatives place on remaining loyal to their ingroup may partially contribute to their reduced mask wearing.

Also potentially influencing the rejection of masks among conservatives is obedience to authority, another component of the binding moral foundations observed more among those with conservative ideology (Graham et al., 2009). As the leading conservative authority figure, a public opinion poll (Mitchell et al., 2021) reported that Donald Trump was relied on the most as a major source of COVID related news by 32% of conservatives. However, Trump and other conservative leaders sometimes mocked masks and accused mask wearers of "political correctness" (Trump, 2020). Interviews have shown Trump's inconsistent stance on masks. He often reminded Americans about the Center of Disease Control's (CDC) original recommendation to not wear masks at the beginning of the pandemic. He also highlighted the freedom to choose, by explicitly stating such things as, "I'm choosing not to do it" (Trump, 2020). While Trump did make mildly supportive statements of masks, these remarks were outweighed by reminders of the importance of autonomy and the CDC changing of mask recommendations. His consistent and misguided references to the CDC's original recommendations to not mask up may have affirmed conservatives' view on facemasks and further influenced their nonadherence. This example Trump set for conservatives early in the pandemic with consideration to the moral value conservatives tend to place on obedience to authority, may be a part of why conservatives tend to reject the use of facemasks.

The minimizing of the pandemic's severity by Trump and other conservative authority figures may have further reduced conservatives' perception of the need for masks, given their inclination to follow authorities. Since the initial stages of the pandemic, Trump has been commonly known to downplay the severity of the virus. In a recorded interview with Bob Woodward (2020), Donald Trump stated, "I wanted to always play it down. I still like playing it down, because I don't want to create a panic." Consumers of conservative-based media tend to believe the severity of COVID-19 has been exaggerated specifically to undermine Trump's presidency (Jamieson & Albarracin, 2020). The repeated exposure to Trump's statements downplaying the risk and severity of the virus from right-leaning media may have distorted their view of the pandemic's severity. Perceived risk of susceptibility to COVID-19 has been shown to predict the uptake of COVID-19 behaviors and is negatively correlated with political conservatism (Stroebe et al., 2021). Attending to their conservative authority figures' risk minimization and accepting the distortion of the pandemic's severity may have resulted in less mask use by conservatives.

Trump and members of his administration often contradicted public health officials and perpetuated misinformation as they continued to downplay the pandemic's severity and the need for masks. An analysis of media statements (Evanega et al., 2020) showed Trump to be one of the largest drivers of misinformation regarding COVID-19, especially regarding "miracle cures." This has been seen through his advocacy for hydroxychloroquine, which had since been deemed ineffective and potentially harmful through clinical trials (Self et al., 2020; WHO Solidarity Consortium et al., 2020), as well as his infamous statement about using bleach and other disinfectants internally (Trump,

2020). Shortly after this latter statement was made, the CDC reported a sharp increase in calls to poison control. A May 2020 study (Gharpure et al., 2020) found 39% of respondents reported having used disinfectants in a way not recommended by the CDC such as spraying the body with bleach or gargling with bleach or soapy water. This provides some evidence that suggests some people's inclination to follow Trump's authority exceeds their inclination to trust public health officials and is expected to be similar with regards to masking.

The influence Trump holds over members of the conservative political party has been evident in how many have seemed to regard him and his rhetoric as above that of scientists and medical professionals. Polls have shown that an overwhelming majority of conservatives support Trump, with 74% of their party backing him (Liesman, 2021). Furthermore, research shows that counties with strong Trump support have reported significantly less mask-wearing (Kahane, 2021). This suggests that conservatives may have looked to their leader for mask guidance and inferred from that that masks were not necessary. Having potentially heeded guidance from their perceived authority figure, it is hypothesized that the moral foundation of obedience to authority partially explains conservatives' reduced mask wearing.

Trust in Science

Another factor that may contribute to the reduced mask usage amongst conservatives is their evident mistrust in science (Gauchat, 2012; Kerr et al., 2021). During the COVID-19 pandemic, scientists have provided government officials with evidence on how to best control the spread of the virus. Research shows that trust in science predicts compliance with COVID-19 preventative behaviors (Plohl & Musil,

2021), with individuals more distrusting of science engaging less in behaviors such as hand washing, masking, and social distancing (Barry et al., 2020). Conservatives tend to show higher levels of skepticism and overall place less trust in the scientific community than their liberal counterparts (Kraft et al., 2015). As such, not only might they have turned to former President Trump for guidance, but they may also have rejected scientists' advice to wear a mask, given their general mistrust of science.

Research has found conservatives to especially disagree with science influencing government policy (Gauchat, 2012). Supported by other studies (Evans & Feng, 2013; Gauchat, 2010McCright et al., 2013), this unfavorable attitude towards regulatory science may have exacerbated their desire for limited government control (Carmines & D'Amico, 2015). Viewing federal mask mandates as government overreach, this may have contributed to conservatives' resistance to masks.

Paralleling conservatives' known distrust in officialdom (van der Linden et al., 2021), a 2020 poll showed conservatives to be less confident in scientists and medical professionals to act in the public's best interest (Funk & Tyson, 2020). It has been shown by research (Earnshaw et al., 2019; Wood et al., 2012) that medical mistrust may result in beliefs of intentional and malicious public deception by healthcare professionals. It is then unsurprising that research has found conservatives to show a particular mistrust towards COVID-19 scientists and public health officials such as the World Health Organization (WHO) and the CDC (Kerr, et al., 2021). Similarly, it is unsurprising that public opinion polls find that conservatives perceive masks to be ineffective against contracting the virus (Kessel & Quinn, 2020). Specifically, Kessel and Quinn examined data from 9,220 raw responses to an open-ended question about how, if at all, things have

been challenging in participants' lives since the beginning of the pandemic. The researchers analyzed the 943 responses that included the word "mask" or a variation of it (e.g., "masking"). Results revealed that 92% of the responses expressing skepticism or opposition to masks were attributed to Republicans, who were twice as likely as Democrats to view facemasks negatively, specifically citing efficacy doubts.

Religiosity acts as a chief influential factor contributing to this greater mistrust in science among conservatives (Gauchat, 2012). They are more likely to believe that science should conform to common sense and religious tradition. Individuals who have religious views, as conservatives often do (Hirsh et al., 2013), are less likely to defer to science when presented with contradictory scientific evidence. Instead, they tend to default to readily available alternatives, such as religion and what they consider common sense (Blank & Shaw, 2015). Religious conservatives have often been seen throughout the pandemic claiming they will be protected and/or healed by their faith (Goodman, 2020; Mercer, 2021). Essentially, they believe that they do not need masks because they have faith God will prevent them from being infected with COVID-19. Conservatives may have relied on these views instead because they did not want to trust the scientific evidence supporting mask efficacy since it directly contradicts those views, therefore potentially resulting in less mask usage.

Since conservatives often lack trust in science and tend to believe it should conform to common sense, they may drastically simplify information surrounding masks and depend on less mask information that is scientifically factual. This drastic simplification is suggested to result from a lack of trust in general and leads individuals to narrow down information to what they know they can rely on (Luhmann, 1979).

Reliable information to conservatives may be considered common sense, a basic level of practical knowledge shared by everyone, such as the common conservative consensus that masks are ineffective (Kessel & Quinn, 2020). By conforming science to common sense and relying on less information, it could consequentially result in relying on misleading information such as mask efficacy and the pandemic in general, which conservatives often do (Motta et al., 2020). In other words, conservatives' mistrust of science may result in them narrowing down information so drastically that they rely on less information that is misleading, therefore reducing their mask usage.

While it contradicts scientific data (Liang et. al., 2020), these efficacy doubts seem to have resulted in reportedly less mask wearing (Taylor & Asmundson, 2021) and are consistent with conservatives' tendency to reject science and engage in motivated science denial (Lewandowsky & Oberauer, 2016). Considering that less trust in science predicts less uptake of health-related behaviors during the COVID-19 pandemic, and increased trust in science is negatively correlated with conservative political ideology (Kerr et al., 2021), I hypothesize that it accounts for a portion of the relationship between conservative ideology and reduced mask use.

Belief in Conspiracy Theories

The mass of misinformation circulating about facemasks and the COVID-19 pandemic itself, commonly saturated with conspiracy theories, may also play a role in the relationship between conservative ideology and lower mask use. A conspiratorial mindset and the endorsement of conspiracy theories are positively correlated with conservative political ideology (van der Linden et al., 2020), and during the first five months of the pandemic, conspiracy theories made up 46.6% of misinformation mentions in the media

(Evanega et al., 2020). Calvillo et al. (2020) examined the differences between conservatives' and liberals' ability to accurately discern misinformation or "fake news" from real news headlines relating to COVID-19. Researchers asked 587 participants to rate the accuracy of eight real headlines and eight false headlines. Conspiracy ideation was measured as well with an adapted item from the Generic Conspiracist Beliefs Scale (Brotherton et al., 2013). Correlational analyses showed political conservatism predicted less news discernment accuracy and stronger agreement with the theory that COVID-19 was the result of a conspiracy as measured by their conspiracy belief item.

This kind of misinformation is believed more strongly and spreads more rapidly amongst conservative networks and social media (Benkler et al., 2017; Guess et al., 2019). Benkler et al. (2017) estimated the network structures of both the left-sided and right-sided partisan media sources. While it is noted that both political parties can be seen to broadcast partisan-based news, it was found that not only is it more amplified in conservative media, but also associated with misinformation and conspiracy theories. This is concerning when considering the findings by Guess et al. (2019). In examining the number of "fake news" articles shared by 1,191 participants throughout the 2016 U.S. election, they found that people identifying as conservative shared false news stories nearly four times more often than those identifying as liberal.

Indeed, consumers of conservative-based news tend to hold more false beliefs about the pandemic (Motta et al., 2020) often pertaining to pandemic-related conspiracy theories (Calvillo et al., 2020). Motta et al. (2020) examined the plethora of COVID-related misinformation using key terms related to COVID-19's theorized origin and the existence of a vaccine against it. Researchers recruited 8,914 participants from

Mechanical Turk and asked them about their belief regarding whether COVID-19 was created in a lab purposefully or accidentally, as well as whether a vaccine was already developed or would be soon. A positive correlation was shown between right-leaning partisan news consumption and the endorsement of COVID-related misinformation, with these consumers being twice as likely to endorse COVID-19 conspiracy-based misinformation.

While it is suggested that more than 50% of the US population endorses at least one conspiracy theory (Oliver & Wood, 2014), conspiratorial thinking has been correlated with conservative ideology (van der Linden et al., 2020) and independently linked to the intuitive cognitive style that is observed more in conservatives (Deppe et al., 2015; Swami et al., 2014). In addition to adopting this intuitive cognitive style, conservatives tend to also score higher on measures of intolerance for uncertainty and ambiguity (Jost, 2017), potentially a detriment during a pandemic saturated with uncertainty and ambiguous guidance. Belief in conspiracy theories often acts as a psychosocial coping mechanism to explain the circumstances of one's existential environment (Douglas et al., 2017), especially when feeling a lack of control and power. These feelings are heightened in times of crisis or large-scale events with potentially serious consequences, and where conservatives may have begun to use conspiracy theories as an attempt to regulate the uncertainty and ambiguity felt surrounding the pandemic and its potential outcomes. Because conservatives tend to believe conspiracy theories and are often inundated with them through conservative-based media, they may be especially susceptible to the endorsement of conspiracies by using them as a psychosocial coping mechanism. In doing this, conservatives might mitigate some

uncertainty and ambiguity surrounding potential consequences of the pandemic resulting in less mask wearing due to the subscription of conspiracy theories.

The tendency to endorse specific conspiracy theories and espouse general conspiratorial worldviews, which is positively correlated with conservative political ideology (van der Linden et al., 2020), often results in the rejection of science and a "distrust in officialdom" (Lewandowsky & Oberauer, 2016; van der Linden et al., 2020). A well-known conservative correlate, this sense of distrust in officialdom could suggest conservatives were inclined to subscribe to COVID-19 conspiracies due to their skepticism towards COVID-19 officials. Similarly, conspiracist beliefs tend to contribute to the resistance of public health recommendations and policy reforms in response to pandemics (Earnshaw et al., 2019), especially when measuring belief in COVID-19 related conspiracy theories (Earnshaw et al., 2020). Considering conservatives' mistrust in government-regulated science (Evans & Feng, 2013; Gauchat, 2010; McCright et al., 2013), government-ordered lockdowns and federal mask mandates guided by scientists may have elicited resistance to wearing facemasks due to their conspiratorial tendencies.

With this general propensity to engage in conspiracy worldviews, it is unsurprising that conservatives tend to especially endorse COVID-19 specific conspiracy theories (Romer & Jamieson, 2020). Recent studies (Earnshaw et al., 2020; Romer & Jamieson, 2020) have expanded on the existing correlation between conspiracy theory belief and resistance to adopting health-related behaviors (Earnshaw et al., 2019; Imhoff & Lamberty, 2020; Oliver & Wood, 2014;). These studies have found that endorsement of COVID-19 conspiracy theories and conservative political ideology, whether measured

together or independently, predict resistance to the adoption of preventative health-related behaviors, including mask wearing.

Romer and Jamieson investigated how belief in COVID-19 conspiracy theories predicted the adoption or rejection of recommended preventive health measures by surveying the same 840 U.S. adults in March 2020 and again in July 2020. Participants were asked to rate their level of belief in three conspiracy theories, which related to the virus's origin, its use as a biological weapon, and the exaggeration of its severity. Respondents were also asked how often in the past few days they had taken preventive measures such as handwashing or distancing. Due to the CDC's recommendation in April 2020 to wear a mask, in the second wave they were also asked how often they had worn a facemask in the past few days. Results showed that greater belief in conspiracy theories in the March 2020 wave predicted subsequent mask wearing in the July 2020 wave. In addition to this, conservative political ideology and reliance on conservative-based media predicted less mask wearing.

These findings are supported by other studies (Resnicow et al., 2021) that show conspiracy theory beliefs are correlated with lower positive attitudes towards COVID-19 preventative health behaviors and lower positive attitudes result in less engagement in mask wearing (Howard, 2020). Because of its relationships with conservative ideology and resistance to mask wearing, belief in conspiracy theories is hypothesized to be influential in explaining conservatives' reportedly lower mask wearing.

Psychological Reactance

Brehm's (1966) theory of psychological reactance may further explain the evidenced noncompliance (Romer & Jamieson, 2020), resistance to change (Jost et al.,

2003; Nilsson et al., 2018), and rigidity of the political right (Jost, 2017) regarding mask wearing. Brehm's theory contends that when a perceived freedom is eliminated or threatened with elimination, people are motivated to restore the freedom. Attempts to restore this freedom can be achieved directly by ignoring the threat and engaging in the threatened behavior, which is known as the "boomerang effect" (Worchel & Brehm, 1970). Thus, when reactance is experienced, the restricted behavior may increase in response to the threat, especially when the threatened freedom is of high importance (Quick et al., 2013; Worchel & Brehm, 1970). Restoration can also occur indirectly through attempts to deny the existence of the threat (Worchel & Andreoli, 1974; Worchel et al., 1976), derogate the source (Burgoon et al., 2002; Wicklund, 1974), or vicariously restore the freedom through the observation of others' engagement in the restricted behavior (Dillard & Shen, 2005).

Conservative ideology has been shown to be positively correlated with psychological reactance in general and to become particularly activated from government intervention (Irmak et al., 2020). Irmak et al. sought to examine the role of trait reactance in political ideology and government regulation. Using a sample of 202 U.S. adults from Mechanical Turk, participants were introduced to a scenario where a new government regulation was going to be implemented that would affect their daily commute, and then asked to indicate the perceived threat of the regulation, and then complete a measure of trait reactance. Researchers found a positive correlation between trait reactance and conservatism. They also found that conservatives were more likely to say they would act against the law and increase the threatened behavior. Irmak et al. also found that reactance was activated in conservatives by the act of government regulation, regardless

of the political affiliation of the body implementing the laws. The U.S. government's implementation of mask mandates during the COVID-19 pandemic can logically be assumed to have activated the existing reactance within the conservative population, especially considering that limited government intervention is highly valued by conservatives (Carmines & D'Amico, 2015; Stenner, 2009; Yen & Zampelli, 2017).

The verbiage used in the public health messages recommending mask wearing may have further provoked conservatives' proneness to reactance. Psychological reactance increases when the messaging is perceived to be more forceful rather than suggestive (Dillard & Shen, 2005), and considered to be more of a threat instead of a choice (Burgoon et al., 2002; Ward et al., 2021). This can be seen with the federal mask mandates using forceful verbiage such as, "must," "need to," and "have to," compared with public health recommendations using language that appears more suggestive like, "You *should* wear a mask to protect others." In other words, psychological reactance acts as a mediator in the relationship between how a public health message is perceived and the resulting actions taken to restore the freedom being threatened in said message (Ward et al., 2021).

Conservatives may have perceived mask mandates as a threat to bodily autonomy and freedom of choice, potentially resulting in expressed psychological reactance. Psychological reactance has been seen to increase negative attitudes towards attempts at persuasion in general (Dillard & Shen, 2005). Negative attitudes towards COVID-19 preventative health behaviors such as masking (Howard, 2020; Resnicow et al., 2021) may have been generated from persuasive attempts to wear them, particularly among those higher in psychological reactance, such as conservatives.

Research has shown psychological reactance to mask-wearing is connected to a variety of negative facemask perceptions (Taylor & Asmundson, 2021). These negative attitudes and perceptions of facemasks were studied through the specific lens of anti-mask attitudes and how they are linked to psychological reactance (Taylor & Asmundson, 2021). Specifically, Taylor and Asmundson measured negative attitudes and perceptions of facemasks, such as mask-related psychological reactance, and how they affected mask wearing among 2,078 adults from the U.S. and Canada. Participants who did not wear masks because of COVID-19 reported stronger negative mask perceptions, with perceptions of efficacy doubts and mask-related psychological reactance being the strongest and most important predictors. These two perceptions were shown to be the most connected with other anti-mask attitude variables, such as comfort issues, inconvenience, undesirable appearance, and negative social attention, and were also shown to be positively correlated with political conservatism. Participants reported that these perceptions contributed to their reduced mask wearing, as well as their increased negative attitudes towards facemasks. Hypothesized to be an influential factor, we aim to see how much psychological reactance contributes to conservatives' reduced use of facemasks.

The Current Investigation

In sum, previous research indicates that conservatism is positively correlated with nonadherence to health-related behaviors including mask wearing, as well as with increased value of loyalty to ingroup and obedience to authority moral foundations, less trust in science, increased belief in conspiracy theories, and higher levels of psychological reactance. Moreover, adoption of health-related behaviors such as mask

wearing has been shown to be negatively correlated with conservatism, less trust in science, stronger belief in conspiracy theories, and increased levels of psychological reactance. This study aims to replicate these relationships, while establishing the unstudied links between moral foundations (loyalty to ingroup and obedience to authority) and reduced mask wearing.

The current study utilized a sample of U.S. adults, who were recruited primarily from a local university in the Pacific Northwest and various social media websites. To establish a relationship between political ideology and mask wearing, participants were asked to rate how much they identified as politically liberal/conservative and estimate their frequency of mask wearing during the pandemic. Additional surveys were administered to measure the participants' value of moral foundations (specifically, loyalty to ingroup and obedience to authority), trust in science, belief in conspiracy theories, and levels of psychological reactance. It is hypothesized that stronger loyalty to ingroup and obedience to authority moral foundations, less trust in science, stronger belief in conspiracy theories, and increased psychological reactance would account for the relationship between conservative political ideology and less mask wearing.

Method

Design

For this study, I used a multiple regression model with political identity as the predictor and face mask use as the criterion, with and without including each potential covariate. My predictor variable, political identity, was measured with two continuous assessments of liberal and conservative identification, which were combined to form a composite measure. The percentage of time participants wore a facemask when required

by government or businesses and when not required at all, were combined to form a composite measure as well, and served as the criterion variable. The potential covariates were psychological reactance, moral foundations, belief in conspiracy theories, trust in science, which were all measured on Likert-type scales. I hypothesized that each covariate would be statistically significant when analyzed independently, and that altogether, their inclusion in the same regression model would make the effect of political identity on mask usage no longer significant.

Participants

Using an online survey system, 152 respondents participated in the survey, however, eight participants' data were removed because of incomplete data. Of these, three were excluded for missing political identity information, one due to missing data for mask wearing, one due to inattention, and one participant was removed due to not living within the U.S. (because of differences in national mask mandates as well as political experiences). Of the remaining 138 participants, 44 undergraduates at a local university in the Pacific Northwest were able to participate anonymously in this study for extra credit in a psychology course. Potential participants through Mechanical Turk were offered the opportunity to participate for compensation of $1.00 resulting in two respondents. There were 77 respondents who volunteered to participate without compensation through social media (Facebook and Instagram). They were presented with a recruitment post from the researcher's profile that included a link to the survey if they chose to participate. A recruitment script with the survey link included was accessed via internet search, text, or email by nine other participants. One participant did not respond

to the question regarding the platform they accessed the study through, so it is therefore unknown.

The final sample was made up of 114 female, 22 male, and two non-binary individuals. They ranged in age from 18-66 years old, with a mean age of 31.05 years old (*SD* = 11.40 years). The average liberal political leaning was 3.55 on a scale from 1, "not at all liberal," to 6, "extremely liberal" (*SD* = 1.53). Average conservative political leaning was 2.67 on a scale from "not conservative at all," to 6, "extremely conservative," (*SD* = 1.40). In addition to this, 23.90% of the participants reported having voted or would have voted for Donald Trump in the 2020 election at the time of the study, and 55.80% reported to have voted for or would have voted for Joe Biden in the 2020 election. When asked about their personal experience with COVID-19, 18.5% of participants reported having been diagnosed with COVID-19 while 93.4% reported having known someone who had been diagnosed with the virus. Vaccination rates amongst the sample showed 83.3% reported being either fully or partially vaccinated against COVID-19 with 81.90% having been fully vaccinated.

Procedure

Participants were presented with an informed consent page online in which they were provided a brief overview of the study and the expected risks. It was stated that their consent was implied by their participation, and they were assured their responses would remain anonymous.

Tasks in the study were administered in the following specific order, separating the predictor and criterion assessments to avoid potentially revealing the true purpose of the study. Participants completed the demographics portion of the survey that included

the predictor variable, followed by seven tasks, which measured psychological reactance, pandemic-related behaviors including the criterion variable, loyalty to ingroup and obedience to authority moral foundations, belief in conspiracy theories, trust in science, perceptions of facemasks, and COVID-19 related experiences. Five attention items were included for the purpose of data checking and stated, “For this item, please select the answer “X” for data checking purposes,” and were instructed to select a specific answer. Participants' data that was missing more than three attention-check items were excluded.

Once completed, participants were debriefed and then awarded their extra credit or compensation if applicable. The Internal Review Board at Eastern Washington University approved the materials and procedures that were used.

Materials

Political Identity

Participants answered a brief demographic survey consisting of common demographic questions such as age, gender, and education, as well as political identity. Because political identity was the predictor variable, it was surrounded by other demographic questions to reduce its salience. In two separate items, participants were asked to rate how politically liberal and politically conservative they were on a scale from 1, *not at all,* to 6, *extremely*. The correlation between the two individual items were significantly correlated, $r(136) = -.57$, p , .001. Liberal political identity scores were then reversed and combined with the conservative political identity item to create a composite score, ($M = 3.06$, $SD = 1.30$).

Psychological Reactance

Hong's Psychological Reactance Scale was administered to participants to measure their levels of trait reactance (Hong & Faedda, 1996). The 11-item version of the scale was used due to research showing that it is more psychometrically sound as a measure of reactance as a unidimensional construct than the 14 or 18-item versions (Hong & Faedda, 1996; Jonason & Knowles, 2006). It is the most widely used instrument to measure trait reactance with statements such as, "I become angry when my freedom of choice is restricted," in addition to, "I resist the attempts of others to influence me." Participants were asked to indicate their level of agreement with each statement on a scale of 1, *strongly disagree,* to 5, *strongly agree*. Although, some controversy surrounds the scale's validity as a multidimensional measure (Thomas et al., 2001), research (Dillard & Shen, 2005; Jonason & Knowles, 2006) shows it is an empirically justified measure of psychological reactance when used as to compute a single overall score. Participants' responses to all of the items were averaged together (M = 2.97, SD = 0.56, α = .80).

Moral Foundations

The Moral Foundations Questionnaire (Graham et al., 2011) is a multi-dimensional measure designed to capture an individual's value of each of the five moral foundations: fairness, harm, loyalty, obedience, and purity. With the scope of this study focused on two of the binding foundations, only the loyalty to ingroup and obedience to authority scales were administered

Administered in two parts, the first part of the measure asked participants to rate how relevant their consideration of each statement regarding the two foundations would be when deciding when something is right or wrong, on a scale from 1, *not very relevant,*

to 6, *extremely relevant.* Sample items from the authority and loyalty subscales respectively, included, “whether or not someone showed a lack of respect for authority,” as well as “whether or not someone did something to betray his or her group.”

The second part asked participants to rate their level of agreement with statements regarding both foundations on a subscale from 1, *strongly disagree,* to 6, *extremely disagree.* Such statements consisted of items such as, “I am proud of my country’s history,” and “people should be loyal to their family members, even when they have done something wrong.” Each subscale’s respective items were averaged for obedience to authority, (M = 3.65, SD = 0.83, α = .67) and ingroup to loyalty (M = 3.20, SD = 0.88, α = .68) across both parts of the measure.

Belief in conspiracy theories

The Generic Conspiracist Beliefs Scale (GCBS; Brotherton et al., 2013) was administered to participants to measure their overall tendency to believe in conspiracy theories. Participants were asked to rate the degree to which they agreed with each statement on a scale from 1, *definitely not true,* to 5, *definitely true.* The 15-item scale measures five distinct but related factors: government malfeasance, extraterrestrial cover-up, malevolent global conspiracies, personal wellbeing, and control of information. The scale includes statements such as, “The spread of certain viruses and/or diseases is the result of deliberate, concealed efforts of some organization,” (personal wellbeing subscale) and “Evidence of alien contact is being concealed from the public” (extraterrestrial cover-up subscale). While past research has yielded high factor loadings for each item on its relevant subscale (Drinkwater et al., 2020), the factors were developed only to guide the structure of the scale and not to measure five discrete themes.

Rather, in practical use and due to the strong intercorrelations of each factor, it is intended to measure a unidimensional construct of general conspiracy belief where all 15 items are averaged together for a single score, as done in the present study (M = 2.82, SD = 0.84, α = .92). The GCBS has been shown to be psychometrically sound with evident criterion-validity indicating that the five factors successfully measure general belief in conspiracy theories (Brotherton et al., 2013; Drinkwater et al., 2020).

Trust in science

Participants were administered the Trust in Science and Scientists Inventory (Nadelson et al., 2014) to measure the level of trust participants placed in the scientific community. This scale is a 21-item assessment that asks the participants to rank their level of agreement with each statement on a scale of 1, *strongly disagree,* to 5, *strongly agree,* where some items are reversed coded. Sample statements included, "We can trust scientists to share their discoveries even if they don't like their findings" as well as, "We cannot trust scientists because they are biased in their perspectives." After reverse scoring the relevant items, all 21 items were averaged together to produce a single score of trust in science (M = 3.76, SD = 0.56, α = .92). Correlational analyses have indicated this measure to have strong validity and good reliability throughout field testing and is considered a psychometrically sound instrument to measure overall trust in science (Nadelson et al., 2014).

COVID-related items

Participants were asked about general pandemic-related behaviors which included the outcome variable items asking the percentage of time wearing a mask when required to and when not required to. Participants were asked, "before the COVID-19

vaccines were widely available, how often did you wear a mask when required to by the government or businesses while indoors with others or within six feet of others outdoors?" and instructed to use a sliding scale from 0% or *never,* to 100% or *always,* to indicate the percentage of time, (M = 90.33, SD = 20.86). The same question was then asked for when they were not required to wear a mask by the government or business, (M = 64.54, SD = 36.43). Because not all participants had data for both mask wearing items, and the two mask-wearing items correlated strongly with each other, $r(127) = .51$, $p < .001$, scores were calculated for each and then averaged together to produce a single mask wearing score (M = -0.04, SD = 0.93). Participants were also asked about other pandemic-related behaviors before and after the mask-wearing items, including frequency of handwashing, video calls, and compliance with stay-at-home orders, which were included solely as filler items.

At the end of the study, participants were asked about their general experiences during the pandemic relating to their COVID status, vaccination status, as well as severity of COVID symptoms experienced themselves or by someone they know, to better describe the sample.

Supplementary Measure

The Face Mask Perceptions Scale (Howard, 2020) was administered for supplementary purposes, and will not be discussed in this paper beyond its description here. Developed to measure negative perceptions of face masks, the FMPS consists of 32 items that make up eight distinct negative perception factors: comfort, efficacy doubts, access, compensation, inconvenience, appearance, attention, and independence. Participants were asked to rate their level of agreement with each statement as if it began

with, “When I do not wear a facemask in public per CDC COVID-19 guidelines, it is because…”. Such statements included items such as, “I do not like feeling forced to do something” or “Face masks just provide a false sense of security.” Participants responded to each item on a scale from 1, *extremely disagree,* to 5, *extremely agree.* Confirmatory and exploratory factor analyses provide psychometric support for the measure’s construct validity (Howard, 2020).

Results

Political Identity and Mask Wearing

To examine the statistical effect of political identity on mask wearing, a regression analysis was conducted. As predicted, the model was significant indicating that there was a significant negative relationship between conservative ideology and mask wearing, $t(137) = -6.40$, $p < .001$ ($\beta = -.48$). Although both mask items (when required or not required by government or business) were combined for this regression, it is of note that conservative political ideology was significantly negatively correlated with mask wearing when required, $r(136) = -.31$, $p < .001$, and when not required, $r(127) = -.58$, $p < .001$, when examining separate Pearson correlations. Because these relationships between conservative political identity and mask wearing were significant, the results successfully replicated prior research supporting this relationship.

Tests of Correlations Involving Hypothesized Covariates

Pearson correlations were computed to examine the predicted relationships between political identity and each of the hypothesized covariates, which consisted of loyalty to ingroup and obedience to authority moral foundations, trust in science, conspiracy theory belief, and psychological reactance (See Table 1 for the complete

correlation table). As expected, conservatism was significantly positively correlated with loyalty to ingroup and obedience to authority moral foundations, as well as with general conspiracy beliefs, and negatively correlated with trust in science. However, contrary to our predictions and previous research, results showed no significant correlation between politically conservative ideology and psychological reactance.

The predicted relationships between mask wearing and the covariates were also assessed using Pearson correlations. Mask wearing yielded significant correlations with each of the covariates in the predicted directions (See Table 1). The significant negative correlations included loyalty to ingroup and obedience to authority moral foundations, belief in conspiracy theories, and psychological reactance. As expected, a significant positive correlation was produced between trust in science and mask wearing.

Table 1

Correlations between Political Identity, Covariates, and Mask Wearing

	1	2	3	4	5	6	7
1. Political Identity	.						
2. Ingroup Loyalty	.48**	.					
3. Obedience to authority	.47**	.55**	.				
4. Trust in Science	-.59**	-.32**	-.24**	.			
5. Conspiracy Belief	.26**	.16	.00	-.60**	.		
6. Psychological Reactance	-.09	.02	-.13	-.22*	.25**	.	

	1	2	3	4	5	6	7
7. Mask Wearing	-.48**	-.25**	-.27**	.39**	-.24**	-.21*	.

*Note. n*s ranged from 136-138 due to incomplete data for some variables.
** Correlation is significant at the .01 level (2-tailed)
* Correlation is significant at the .05 level (2-tailed)

Test of Main Hypothesis

To investigate if the hypothesized covariates collectively accounted for the relationship between political conservatism and less mask wearing, the covariates were added to the initial simple regression model. Contrary to predictions, the effect of political identity on mask wearing remained significant after the covariates were added, $F(6,129) = 9.51$, $p < .001$ ($\beta = -.46$). In fact, the beta weights for political identity from the initial model and the full model with the included covariates were very similar ($\beta = -.48$ vs. $\beta = -.46$, respectively). However, it is important to note that beta weights are less reliable to the extent that there are intercorrelations between predictors within the same regression model. Table 2 presents the full regression model statistics. Unexpectedly, psychological reactance was the only significant predictor variable in the model, $t(135) = -2.41$, $p = .017$ ($\beta = -.19$), despite the four other covariates having significant zero-order correlations with mask wearing.

Table 2

Regression Coefficients for Political Identity, Covariates, and the Criterion Variable

	Standardized Beta Coefficients	*t*	*p*
(Constant)		0.88	.381
Political Identity	-.46	-4.41	.000

	Standardized Beta Coefficients	*t*	*p*
Loyalty to Ingroup	.08	0.86	.393
Obedience to Authority	-.11	-1.17	.244
Trust in Science	.05	0.42	.674
Conspiracy Belief	-.05	-0.56	.574
Psychological Reactance	-.19	-2.41	.017

Note. df = 135, criterion variable: mask wearing frequency.

Although the multicollinearity assumption in regression was not violated, the predictor variables were still intercorrelated to some degree. To reduce the problem of overlapping variance of similar predictors included within the same regression model, each covariate was also investigated individually along with political conservatism. In other words, to ensure the covariates were not cancelling each other out and therefore yielding nonsignificant results, each covariate was examined separately with political identity to see if it would then be significant. The independent significance test results analyzing each covariate separately with political identity are as follows: loyalty to ingroup, $t(135) = -0.20$, $p = .843$ ($\beta = -.02$), obedience to authority, $t(135) = -0.71$, $p = .478$ ($\beta = -.06$), trust in science, $t(135) = 1.63$, $p = .106$ ($\beta = .15$), belief in conspiracy theories, $t(135) = -1.57$, $p = .119$ ($\beta = -.12$), psychological reactance, $t(135) = -3.51$, $p < .001$ ($\beta = -.26$). Because the same results appear when analyzing each covariate independently, the potential for shared variance between the covariates is not responsible for their non-significance within the full model. Instead, the presence of political identity was rendering each of these variables nonsignificant. Moreover, the beta weight for

political identity in each model remained fairly consistent, ranging from -.42 to -.51, $p < .001$. This suggests that political identity's effect on mask wearing stays fairly stable when other variables are included.

Supplemental Analyses

Since my hypothesis that the covariates would fully account for the relationship between political identity and mask wearing was not supported, I wanted to investigate how much they did account for the relationship. Because beta weight comparison can be misleading if predictor variables are correlated, I compared R-squared values between different models to see how much variance in mask-wearing could be accounted for by different predictors.

I first ran a hierarchical regression to determine how much of the full model accounted for the relationship between political identity and mask wearing. Loyalty to ingroup and obedience to authority moral foundations, belief in conspiracy theories, trust in science, and psychological reactance were included in the first block of the hierarchical regression with mask wearing as the outcome variable. In the second block, the same variables were included with the addition of political identity as a predictor variable. This allowed side-by-side comparisons of the how much each set of variables (the five covariates vs. all six variables) contributed to mask wearing and provided necessary information to determine how much political identity independently contributed to the model above and beyond the influence of the five covariates.

The results of the hierarchical regression showed that the change in R^2 was .105, $F(135) = 19.45$, $p < .001$, illustrating that the contribution of political identity to the full model with the five covariates was significant. This can be compared to the R^2 in the

original simple regression examining political identity's effect on mask wearing, which was .232. In terms of percentage, this can be thought of as political identity accounting for 23.2% of the relationship when no other variables are included in the model, and for 10.5% after the influence of the covariates was included in the model, and thus removed from the equation. Had I supported my hypothesis, I would have expected much closer to 0% of the relationship to be accounted for by political identity because the covariates would have explained the full relationship. However, 10.5% / 23.2% (or about 45.3%) of the influence of political orientation remained after accounting for the covariates' effects. Still, the covariates accounted for the remaining portion of the relationship (about 54.7%), suggesting that their inclusion accounts for a little over half of the relationship between political identity and mask wearing.

Discussion

As of November 2021, over a year and a half into the COVID-19 pandemic, the resistance to and rejection of facemasks still strongly exists among certain populations. The purpose of this study was to investigate the reasoning behind this resistance by replicating the pre-existing relationship between political identity and mask wearing while examining potential variables that could be responsible for the relationship. Specifically, I hypothesized that loyalty to ingroup and obedience to authority moral foundations, mistrust in science, belief in conspiracy theories, and psychological reactance would fully account for the relationship between political conservative ideology and less mask wearing. In testing this, I sought to replicate the previously documented correlations between political identity and moral foundations (loyalty to ingroup and obedience to authority), mistrust in science, belief in conspiracy theories,

and psychological reactance. Additionally, I sought to replicate the pre-existing relationships between mask wearing and the three other variables. Furthermore, I aimed to establish a relationship between mask wearing and the moral foundations of loyalty to ingroup and obedience to authority that had not been studied before.

As expected, participants who identified as more politically conservative also reported less mask wearing. This has been seen in previous research examining politically conservative ideology and nonadherence to health-related behaviors (Clinton et al., 2021; Earnshaw et al., 2020; Kerr et al., 2021; Romer & Jamieson, 2021; Stroebe et al., 2021; van Holm et al., 2020). However, minimal empirical research specifically measured mask wearing as an outcome variable (Romer & Jamieson, 2020; Taylor & Asmundson, 2021). Instead, research has often included mask wearing with other health-related behaviors such as hand washing and social distancing (Clinton et al., 2021; Earnshaw et al., 2020; Kerr et al., 2021; Romer & Jamieson, 2021; Stroebe et al., 2021; van Holm et al., 2020). The results of the present study contribute support of a significant relationship specifically between conservative political identity and less mask wearing. Additionally, because of conservatives' moral foundations of loyalty to ingroup and obedience to authority (Graham et al., 2009) were consistent themes throughout the pandemic, it was of interest to measure if they would be related to mask wearing. It was thought that the consistent reinforcement of misinformed mask views by the echo chambers conservatives tend to create would stimulate loyalty to their ingroup and result in less mask wearing (Jost et al., 2018; Taylor & Asmundson, 2021). Obedience to authority was suggested to be correlated due to the evident adherence to Trump and other conservative leaders' statements regarding masks and minimization of the pandemic's

severity (Trump, 2020; Woodward, 2020). Because prior research has correlated less mask wearing and noncompliance with other health-related behaviors with belief in conspiracy theories (e.g., Romer & Jamieson, 2020), mistrust in science (e.g., Plohl & Musil, 2021), and psychological reactance (Taylor & Asmundson, 2021), I sought to replicate those results with a focus on mask wearing. As expected, results showed that mask wearing frequency was significantly correlated with each of the five hypothesized covariates.

Significant correlations were also successfully replicated between conservatism and loyalty to ingroup and obedience to authority moral foundations (Graham et al., 2009), belief in conspiracy theories (van der Linden et al., 2020), and mistrust science (Gauchat, 2012). Unexpectedly, psychological reactance was not significantly correlated with level of politically conservative identity, contrary to prior research (Irmak et al., 2020). This may be explained by recent research indicating that reactance may be amplified by sorrow and cognitive dissonance (Hajek & Hafner, 2021). Since conservatives tend to regularly diminish the pandemic's severity and have the consistent belief that masks are ineffective (Jamieson & Albarracin, 2020; Kessel & Quinn, 2020; Taylor & Asmundson) any cognitive dissonance about masking may have been resolved and therefore not activate psychological reactance in those who identify as politically conservative. Because of this, if no psychological reactance was being experienced due to the lack of cognitive dissonance, it may explain why there was no significant relationship with conservative identity.

Main Hypothesis

My main hypothesis that loyalty to ingroup and obedience to authority moral foundations, mistrust in science, belief in conspiracy theories, and psychological reactance would fully account for the relationship between political conservative ideology and less mask wearing was not supported, despite all of the significant individual correlations I observed. When the covariates were included in the model, political identity remained significant. In other words, there is a clear relationship between political identity and mask wearing after accounting for influence of the remaining variables. Moreover, only one of the hypothesized covariates, psychological reactance, was statistically significant in the regression model. I expected all of them to be significant. The potential for overlapping variance among the predicted covariates was first thought to be responsible for their nonsignificance but was ruled out when the same results were produced when each covariate was analyzed independently with political identity.

Although my main hypothesis was not supported, results from a supplemental descriptive analysis showed that, all combined, the five covariates specifically accounted for approximately 54% of the variance in the relationship between conservative political identity and less mask wearing. The remaining variance in the relationship could be explained by a multitude of variables related to political identity and mask wearing that were not measured in this study. For example, the value placed on limited government intervention may also account for a portion of the relationship. Conservatives tend to have a desire for limited government intervention and regulation (Carmines et al., 2012; Dunlap & McCright, 2011; Irmak et al., 2020; Stenner, 2009; Yen & Zampelli, 2017). Yen and Zampelli (2017) investigated the effect of political conservatism and religiosity

on support for legalized abortion. After controlling for religiosity, they found that when individuals identified more strongly as Republican, this political identity increased the likelihood of supporting legalized abortion. The researchers indicated that this reflected the value placed on limited government and maintaining individual freedoms such as the freedom of choice. Thus, intervention of the government in an individuals' health-related decisions by mandating mask wearing may have been influential in conservatives' decision to not wear a mask. While I did think that measuring trait reactance would capture aversion to government intervention as well as state reactance to mask mandates, specifically measuring value of limited government may afford a more detailed explanation of conservatives' reduced mask wearing.

While the moral foundations of loyalty to ingroup and obedience to authority may have explained some of the relationship between political identity and mask wearing, support for Trump may also partially explain this relationship. The support Trump receives was made evident by conservatives during the January 6, 2021 insurrection. Spurred by false narratives and conspiracy theories claiming that widespread fraud occurred in the 2020 election, hundreds of Pro-Trump supporters tried to stop the certification of the election results and prevent Joe Biden from being confirmed as the 46th president of the United States (Flynn et al., 2021). Trump support was also represented during the pandemic, according to research (Gao & Radford, 2021). Gao and Radford looked at COVID-19 outcomes several weeks after public health policies were implemented and how the level of Trump support within a county affected those outcomes. They found that counties with higher levels of Trump support suffered higher rates of COVID-19 related deaths when compared to counties with lower levels of Trump

support. Individuals in these counties also exhibited less compliance with the implemented public health policies such as mask usage and failure to socially distance. Because support for Trump may not have been captured by the loyalty to ingroup and obedience to authority moral foundations, it may further explain the relationship between political identity and mask usage.

Some of the relationship between political identity and mask wearing not yet explained could be partially resolved by examining conservatives' tendency to distrust government and institutions beyond just the scientific community (van der Linden et al., 2020). Research has found that distrust of the source of information is one of the strongest predictors of an individual's response to health recommendations (Soveri, 2021). Soveri found that individuals who were less trusting of the information source providing the official COVID-19 guidelines were less likely to adopt the interventions and unwilling to take the vaccine. Because conservatives have a particular distrust of government officials and medical professionals, this logically could have influenced their rejection of the masking recommendations provided by government officials and explain part of the relationship. Since the trust in science measure I used only measured trust in the scientific community, it may not have captured all aspects of trust in both government and scientific institutions.

Additionally, it may be important to highlight some situational factors that could explain a portion of the remaining variance in the relationship. There could be differences in perceived experiences regarding COVID-19 infection within one's social group. Research has shown that perception of severity of the pandemic predicts the adoption COVID-19 preventative behaviors, with individuals that perceive less severity engaging

in health-related behaviors less such as mask wearing (Stroebe et al., 2021). A large portion of the population has had some form of direct or indirect experience with COVID-19, though an individual identifying as politically conservative may have felt pressured to minimize their experience, as to not contradict their ingroup's view of the pandemic's severity. Conservatives tend to perceive less vulnerability to the virus and believe that the severity of the virus has been exaggerated (Calvillo et al., 2020; Jamieson & Albarracin, 2020). In other words, individuals who choose to spend time around conservatives might wear masks less because the conservatives they're with would be more likely to minimize symptoms they're experiencing or deny their diagnosis.

Another situational factor that should be noted is the reception of the CDC's frequently changing recommendations. This could have caused confusion about appropriate masking behavior among many people. However, because of the uncertainty surrounding masking recommendations, conservatives may have been less likely to wear masks due to their exposure to biased media. Right-leaning news sources have been shown to be more heavily saturated with misinformation (Benkler et al., 2017) and tend to inundate their audience with guests presented as objective experts but instead project misinformation (Dunlap & McCright, 2011). Consumption of conservative-based news is correlated with the endorsement of COVID-19 misinformation and tends to increase the number of false beliefs the consumer has surrounding the pandemic (Motta et al., 2020). The endorsement of misinformation may have only been compounded by Trump's frequent reminders that the CDC initially did not recommend masking because they're not needed by the general population. This repeated exposure to factually incorrect material by apparent experts may help promote the echo chamber-like environment

conservatives tend to facilitate (Jost et al., 2018). This could suggest that the degree of exposure to conservative-based news may contribute to some of the remaining variance in the relationship between political identity and mask wearing.

Collectivistic and individualistic values may also further explain a portion of the relationship that was unexplained. Research shows political conservative ideology is positively correlated with individualistic values while liberalism is positively correlated with collectivistic values. Collectivistic values have been shown to predict an individual's adherence not only to health-related behaviors (Maavari et al., 2021), but specifically more mask wearing during the pandemic (Lu et al., 2021). While mask wearing is intended to protect the wearer from airborne particles, its primary function in health-related settings is the reduction of those particles produced by the wearer therefore protecting others (Chu et al., 2020). Recent research has shown that when a collectivistic perspective is needed to implement a protective measure that is effective on a societal level, conservatives are less likely to adopt such perspective due to their individualistic tendencies (Kanai et al., 2011; Mermillod & Morisseau, 2021). Measuring this variable may also help to explain the relationship between political identity and mask wearing.

Limitations and Future Research

The current study has several limitations, some that could allow for future avenues of research. One of the primary limitations was not using a longitudinal research design. Because this study was investigating an ongoing pandemic, information known about COVID-19 and how best to reduce the spread, was frequently changing. Due to the participants' perspective of COVID-19 and mask wearing potentially fluctuating, this invariability may have affected the relationship between political identity and mask

wearing and the influence of this study's covariates. While this study captured a snapshot of the relationship, future research should incorporate multiple waves with repeated measures to ensure a more valid and reliable representation of the relationship with the inclusion of additional covariates.

Similarly, another possible limitation was the timing of the data collection resulting in reliance on the participants' ability to accurately recall their mask usage before the COVID-19 vaccines were made widely available to the public. Memories of past behaviors and patterns tend to become less accurate over time due to interference of new information. Shortly after COVID-19 vaccines became widely available to the public, the CDC came out with recommendations that mask wearing was not necessary if the individual was vaccinated (Lovelace, 2021). Even though recommendations have since reverted to the original recommendation to mask up regardless of vaccination status, it did result in some lingering confusion. Although the mask wearing items in the present study asked participants to indicate their mask usage before the COVID-19 vaccines, had this study been done then instead of relying on accurate recall, it may have produced a better representation of actual mask wearing behavior.

Additionally, the lack of demographic variability in this study's sample may have been another possible limitation. The average political identity was more liberal-leaning, which may have limited the observation of mask wearing by conservatives. The lack of male participants in the present study may also have affected mask wearing results. The research on gender differences in mask wearing is mixed, such that some research has found that females engage in mask wearing more than males (Haischer et al., 2020), while other research has reported gender to not have a significant effect on mask use

(Howard, 2020). Because the gender distribution in this study's sample was not proportional to that of the population, and research suggests possible gender effects, reported mask wearing behaviors may have been affected.

Furthermore, while conservative political ideology has been previously correlated with the five covariates in this study, it is important to consider that correlation does not imply causation. Determining whether there is a direct causal link or if there are whether possible third variables involved may be important to consider, for example the level of religiosity of the individual. Research has shown that religiosity is negatively correlated with trust in science, which predicts mask wearing (Kerr et al., 2021), and positively correlated with conservatism (Gauchat, 2012; Hirsch et al., 2013). It may have been the case that religiosity was a third variable influencing the relationship between conservatives and less mask wearing through its correlation with less trust in science.

Further confounding this is the research showing that an individual's cognitive style predicts their belief in God (Shenhav et al., 2012). An intuitive cognitive style has been linked with increased religiosity and is also the cognitive style that is observed more in conservatives. It could be suggested that those with a more intuitive cognitive style tend to be more religious which would ultimately predict both conservativism and reduced mask wearing. In other words, there may be some speculation as to whether conservatism was the influencing variable on mask wearing, or possibly a third variable that is associated with conservatism. With the causal directions of the variables being unknown, causal directions of possible third variables may have affected the accuracy of the representation of which variables were responsible for less mask wearing.

Future research may consider building on the findings of this study and investigating other possible variables that could account for the remaining variance in the relationship between political identity and mask wearing, such as the variables discussed earlier (e.g., Trump support, value of limited government). The information gathered from including additional variables could be useful in formulating improved pandemic responses that could be implemented with more success. Additionally, it could be suggested to expand the scope of this study and investigate how political identity, mask wearing behaviors, and the five covariates measured might predict vaccine hesitancy or acceptance. This would provide opportunities for improved application to not only the COVID-19 vaccines but vaccines in general and is especially critical in light of the anti-vaccination movement. I would expect vaccine acceptance to be reduced in politically conservative populations due to their established resistance to non-pharmaceutical interventions like mask wearing, hand hygiene, social distancing.

These directions in research could provide further understanding of the resistance to and rejection of facemasks in the COVID-19 pandemic. This information could enable public health officials to adjust their method of providing their recommendations, so that people are more receptive to them, resulting in successful adherence to health-related behaviors. Gaining more of this kind of understanding would contribute to the reduction in the spread of COVID-19 and future pandemics, in turn protecting countless individuals.

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