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Perceived vulnerability to infectious disease and perceived harmfulness are as predictive of citizen response to COVID-19 as partisanship

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Abstract

Partisans have biased perceptions of objective conditions. At first glance, the COVID-19 pandemic would appear to be an example of this phenomenon. Noting that most citizens have consistently *agreed* about the pandemic, I argue that we have overlooked pre-political factors that are as influential as partisanship in shaping citizens' responses to the pandemic. I identify one such construct in perceived vulnerability to infectious disease (PVD). In one cross-sectional study and one panel study, I find that the influence of PVD on citizens' perceptions of COVID-19 equals that of partisanship. I also find that PVD can moderate the influence of partisanship on perceptions of harmfulness, nearly erasing the impact of being a Republican on perceiving COVID-19 as a threat. When led by PVD as well as partisanship to accurately perceive harm, citizens, including Republicans, attribute more responsibility to former president Donald Trump for his failed handling of the crisis.

Despite over 200,000 Americans dead from COVID-19 at the time of the 2020 presidential election, partisans differed substantially in their appraisals of former president Donald Trump. It is also noteworthy, however, that twice as many Republicans disapproved of Trump's handling of COVID-19 specifically than his job performance overall (Bycoffe et al., 2020). An even higher percentage of Republicans failed to reflect Trump's rhetoric about the virus, which consistently minimized its health threat (Roberts, 2020). Indeed, throughout the course of the pandemic, a plurality of Americans actually *agreed* about the public health threat posed by COVID-19 (Deane et al., 2021), despite partisan motivations to the contrary.

Why might some citizens not fully succumb to the pull of partisanship? I argue that normatively concerning partisan division surrounding the pandemic (Camobreco & He, 2022; Gadarian et al., 2021; Hegland et al., 2022) has overshadowed the influence of equally important individual difference constructs in shaping the public's response to the crisis. I identify one such construct in *perceived vulnerability to infectious disease* (PVD). PVD relates to beliefs about personal susceptibility to infectious disease and affective aversion to stimuli that convey an *actual* infectious disease threat (Duncan et al., 2009; Wang et al., 2018). Those who are high in the construct should be more likely to perceive the virus as posing a serious threat to public health and respond accordingly than those who are low in the construct.

The influence of PVD should be amplified for Republicans. This is because prior to the emergence of effective vaccines and therapeutics, for Democrats, both scientific evidence and party messaging suggested that COVID-19 posed the threat of serious harm and that the government's response was suboptimal. In contrast, for Republicans, party messaging regarding the virus was ambiguous, and with the in-party controlling the presidency at the height of the crisis, partisan motivations to conclude the virus threat to be exaggerated were salient (Youmans & Bahdour, 2022).

I examine the influence of PVD, as well as partisanship, on citizens' perceptions of virus harmfulness. In turn, I investigate the extent to which perceiving the virus as harmful contributes to attributions of responsibility for the COVID-19 crisis to former president Donald Trump. To do so, I draw on a cross-sectional study of $N = 1,885$ Americans and a two-wave panel study of $N = 652$ Americans. Both studies were conducted at the height of the pandemic in the United States, in June 2020 and in June and November 2020, respectively.

I uncover evidence that PVD exerts at least as large an impact as partisanship on perceptions of virus harmfulness. The perceived infectability (PI) factor of PVD moderates the influence of partisanship on harm perceptions. Republicans who are high in this factor of PVD perceive COVID-19 to be nearly as harmful as Democrats do. Those who perceive more harm attribute more blame for the crisis to former president Trump than those who perceive less harm, an effect that holds for Republicans as well as Democrats and Independents. The panel study uncovers evidence that those who are high in the PI factor of PVD are more likely to adjust their perceptions of COVID-19 harmfulness upward, in line with objective evidence between June and November 2020, as conditions worsened. Finally, those Republicans who are high in the germ aversion (GA) factor of PVD, unlike other Republicans, did not adjust their perceptions of virus harmfulness downward over time in line with partisan cues, but instead continued to perceive harm in the face of an increasing threat.

The role of partisanship in structuring virus perceptions

Partisanship has exerted a sizable and normatively concerning influence on pandemic-related beliefs and behaviors. Evidence of partisanship's influence on myriad pandemic-related outcomes has been omnipresent, emerging early in the course of the pandemic (e.g., Gadarian et al., 2021) and continuing through later waves (e.g., Druckman et al., 2021a, 2021b). Few studies have compared the influence of partisanship to that of other relevant individual difference constructs. However, Miller (2020) compares the influence of partisanship to that of conspiratorial thinking in predicting endorsement of pandemic-related conspiracy theories. Even after controlling for conspiratorial thinking, she finds that identifying as a Republican still predicts the endorsement of a number of pandemic-related conspiracy beliefs.

Although the precise psychological mechanism underlying these results is not directly investigated, at least two mechanisms could be at play. Both motivated reasoning (Kunda, 1990) and Bayesian learning (Bullock, 2009; Gerber & Green, 1999; Tappin et al., 2020) could lead to the patterns depicted here.

Proponents of a motivated reasoning framework suggest that affectively laden goals to reach a *particular* conclusion can shape information processing and, in turn, the conclusions that people reach (Kunda, 1990). Kunda (1990) identifies two main motivations in reasoning. *Directional goals* refer to the desire to reach conclusions that people a priori want to reach, whereas *accuracy goals* venerate reaching the correct conclusion in light of relevant evidence (Kruglanski, 1980; Kunda, 1990). When it comes to political reasoning, partisanship tends to provide the affect that underlies directional motives (Taber & Lodge, 2006). Accuracy and directional goals in reasoning are not mutually exclusive, and those who hold both accuracy and directional goals have been shown to prioritize accuracy (Kunda, 1990; Petty & Cacioppo, 1986; Taber & Lodge, 2006).

From a Bayesian perspective, individuals are argued to hold existing beliefs with varying levels of certainty and to consider new information by assigning more or less weight to the incoming information (Bullock, 2009; Gerber & Green, 1999; Tappin et al., 2020). Though Bayesian perspectives tend to focus on prior beliefs, interpretation and weighting of new information, and belief updating, scholars have

argued that a modified Bayesian framework can account for inaccuracies in reasoning by allowing for existing preferences to influence prior and likelihood functions (Matsumori et al., 2018).

Regardless of whether the mechanism underlying Americans' beliefs surrounding COVID-19 is akin to Bayesian learning, motivated reasoning, or some combination thereof, in line with existing work, I hypothesize that *Republicans will view COVID-19 as less harmful than Democrats (H1)*.

Perceived vulnerability to infectious disease and perceptions of COVID-19

While widespread partisan division surrounding COVID-19, particularly during the pandemic's more severe pre-vaccine waves (Maragakis, 2020) is normatively concerning, it is important to note that despite strong motivations to toe the party line, the majority of citizens consistently *agreed* about the pandemic threat (Deane et al., 2021; Roberts, 2020). What explains this agreement, especially among Republicans, who have been consistently more likely to disagree with the party line positions (Roberts, 2020)?

I suggest that this variation is systematic in nature and is structured in part by citizens' level of perceived vulnerability to infectious disease (PVD). Individuals hold relatively stable perceptions about their susceptibility to infectious disease. Recognizing this variation, Duncan and colleagues (2009) coined the construct of PVD. PVD can be understood as "beliefs about personal susceptibility to infectious disease and emotional discomfort in the presence of potential disease transmission" (Duncan et al., 2009, p. 541). The construct comprises two factors. The first, germ aversion (GA), captures affective discomfort in the presence of potential disease transmission. The second, perceived infectability (PI), encompasses beliefs and cognitions about one's susceptibility to infectious disease (Duncan et al., 2009).

Unlike measures of disgust sensitivity (Haidt et al., 1994; Olatunji et al., 2007), Duncan and colleagues' measure of PVD relates to actual infectious disease threats rather than reactivity to stereotypically disgusting stimuli, which may or may not convey an actual infectious disease threat (e.g., Haidt, 1994; Kam & Sides, 2020). While there is evidence of a small relationship between GA and identifying as a conservative, this relationship is substantively small, and a great deal of variation exists around the general trend (O'Shea et al., 2022).

I theorize that individual-level variation in PVD should be important in predicting perceptions of COVID-19 harmfulness. Such a finding is in line with previous research in personality psychology (Makhanova & Shepherd, 2020). *Those who are high in PVD should be more likely to accurately view COVID-19 as harmful during its pre-vaccine waves (H2a)*. Since, for Republicans, partisan considerations and objective evidence point to opposite conclusions, I theorize that *the influence of PVD should be particularly meaningful for Republicans, who, if they are lower in the construct, should have an easier time following inaccurate party cues (H2b)*.

Dynamic conditions and belief updating

Importantly, the harmfulness of the COVID-19 pandemic is dynamic, changing with increasing and decreasing caseloads and after the emergence of effective vaccines and therapeutics. In the summer of 2020, caseloads declined and medical experts began to learn how best to treat the disease. In contrast, in the fall of 2020, caseloads skyrocketed and hospitals quickly became overwhelmed (Achenbach & Weiner, 2020).

At the same time that caseloads were peaking in the fall of 2020, Republican elites coalesced around the idea that the virus threat was overblown during the lead-up to the 2020 presidential election (Bursztyn et al., 2020, Youmans & Bahador, 2022). This fact, coupled with evidence that individuals tend to strengthen their existing beliefs over time (Taber & Lodge, 2006), suggests that polarization should occur with respect to perceptions of COVID-19 harmfulness between the summer and fall of 2020. This polarization should be driven by Republicans doubling down on their beliefs that the pandemic is harmless as they counterargued information to the contrary (Taber & Lodge, 2006).

However, Republicans who also have motivations to be accurate should have a harder time doing this in light of evidence that the pandemic was worsening in severity.

I argue that the pattern of who increases their perceptions of pandemic harmfulness in light of new information in the fall of 2020 should be systematic and shaped by citizens' levels of PVD as well as their partisanship. *There should be evidence of a relationship between PVD and increasing perceptions of virus harmfulness over time, in light of dynamic conditions (H3a).* As Republicans had partisan motivations to downplay the threat posed by the pandemic and double down on inaccurate perceptions, and Democrats had partisan motivations to do the opposite, I argue that *while PVD should matter for both groups, it should again be more predictive of changes in Republicans' attitudes than Democrats' (H3b).*

Harm perceptions and Trump's responsibility

Although the vast majority of Republicans approved of Trump's performance in the fall of 2020, more than twice as many disapproved of his handling of the COVID-19 pandemic than his presidency overall (Bycoffe et al., 2020). The factors that led some Republicans, even in the face of a contentious presidential election, to hold Trump responsible for his failed handling of the crisis have received little attention.

When considering the factors that lead voters to hold elites responsible for their failures in office, the amount of harm experienced by citizens as a result of those failures should be informative (e.g., Malhotra & Kuo, 2008). Likewise, existing work in social and political psychology has established that when victims are perceived as being harmed, as is the case when COVID-19 is subjectively perceived as harmful, people are disposed toward holding an agent capable of intent responsible for said harm (Achen & Bartels, 2017; Gray et al., 2014; Gray et al., 2012).

Following this logic, given his mishandling of the crisis, *citizens who perceive the COVID-19 pandemic as harmful should be disposed towards attributing some degree of blame for the crisis to former president Trump (H4a).* Republicans who are easily able to follow the party line and conclude COVID-19 is harmless should attribute less blame for the crisis to Trump than those Republicans who are not able to conclude the disease is harmless. *The latter should hold Trump at least somewhat responsible for his poor handling of the pandemic (H4b).*

Study 1

Overview

Study 1 tested *H1, H2a, H2b, H4a,* and *H4b.* These hypotheses predict that although Republicans should perceive COVID-19 as less harmful than Democrats, and that individual-level variation in PVD should also predict perceptions of the pandemic. The effect of PVD should be particularly meaningful for Republicans, who, if they are lower in the construct, should have an easier time following partisan cues and concluding that COVID-19 is harmless. Finally, in testing *H4,* Study 1 investigates whether those who perceive COVID-19 as more harmful attribute more blame for the crisis to Donald Trump than those who perceive less harm, and whether this relationship holds for Republicans as well.

Participants and procedure

The study was conducted in a diverse sample of *N* = 1,885 Americans recruited through Qualtrics panels to meet census benchmarks on race, gender, education, and income. Data were collected in early June 2020. This study was one of several included in a larger collection of studies fielded by researchers at the University of North Carolina at Chapel Hill. The study was granted approval by the University of North Carolina at Chapel Hill's Institutional Review Board.

All respondents completed standard demographic measures prior to the study, as well as a standard measure of partisanship. All individuals included in the present analyses also completed a brief measure of PVD a measure of COVID-19 harm perception, and were given the opportunity to ascribe a degree of blame to former president Trump.

Materials

Partisanship

Participants were presented with the following question to measure partisanship: "Generally speaking, do you usually think of yourself as a Democrat, a Republican, an Independent or what?" Those who did not identify as Democrats or Republicans were then asked whether they leaned toward one party or the other. Those who identified as leaning toward one of the two major parties were coded as partisans in line with the existing literature in political behavior, which demonstrates that these individuals behave as "closet partisans" (Greene 1999; Iyengar & Westwood 2015).

Perceived vulnerability to infectious disease

Participants completed a shortened version of Duncan et al.'s (2009) measure of PVD. Items that have lost their utility since 2009, such as an item pertaining to public phone booths, were removed. Three of the highest-loading original items from each of the two composite factors were selected for use in the study. This resulted in participants being asked the following three questions to capture the perceived infectability (PI) factor:

1. "In general, I am very susceptible to colds, flus, and other infectious diseases."
2. "My immune system protects me from most illnesses that other people get."
3. "If an illness is going around, I will get it."

Respondents rated their agreement with these statements on a 7-point Likert scale ranging from 1 = strongly agree to 7 = strongly disagree. Item 2 was reverse-coded ($\alpha = .65$). The mean level of PI, recoded to range from 0 to 1, was .4 with a standard deviation of .21.

Three items were selected to capture the germ aversion (GA) factor:

1. "When possible I avoid using public restrooms because of the risk I may catch something from the previous user."
2. "I dislike wearing used clothes because you never know what the last person who wore it was like."
3. "I do not like to use a pencil someone else has obviously chewed on."

Respondents rated agreement with the statements on the same 1–7 scale ($\alpha = .65$).[1] The mean level of GA in the sample (recoded 0–1) was .62 with a standard deviation of .24.

In line with the previous literature, the two factors were slightly correlated ($r = .19$) and scored separately. Neither factor showed much of a relationship with partisanship in this sample (r PI/Republican = −.06, r GA/Republican = −.006). Factor analysis suggested that a two-factor structure fit the data better than a one-factor structure. Factor analytic results are presented in Appendix A.

Harm perception

Once they completed the PVD measure, respondents rated how harmful they perceived COVID-19 to be on a scale ranging from 1 = not at all harmful to 10 = serious illness with risk of death. Recall that this study was completed well before the rollout of safe and effective vaccines and therapeutics.

Trump responsibility

Respondents were given the opportunity to attribute blame for the crisis to a number of actors commonly held responsible by partisan and nonpartisan media outlets, including former president Trump. Respondents were first asked whether they perceived Trump as responsible for the state of the

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[1]Though alphas were lower than standard, given the shortened nature of the scale (Schmitt, 1996), I proceeded as usual with the analyses.

COVID-19 crisis in the United States. If they indicated that they did perceive Trump as responsible, they were then given the opportunity to ascribe a percentage of responsibility to him. Those who did not perceive Trump as responsible were coded as attributing 0% of responsibility to him.

Control variables

In all analyses, demographic variables associated with PVD and actual susceptibility to infectious disease threats were controlled for, including age, gender, race, education, and income.

Analysis

Models discussed in text are all survey-weighted generalized linear models fitted using the *svyglm* function in the R package survey (Lumley, 2004). All tests of statistical significance in both studies are based on two-tailed tests unless otherwise noted. Although the sample used for this study is a quota sample recruited to match census benchmarks on race, gender, education, and income, because of the nature of the research question, it is necessary to ensure that the sample also approximates the U.S. population with regard to age and partisanship. Thus, U.S. census data for demographic benchmarks were obtained from the IPUMS database (Ruggles et al., 2023) and partisanship data were obtained from the 2020 American National Election Study. Raked survey weights were then constructed to meet these benchmarks using the *anesrake* package in R (Pasek, 2018).

Results and discussion

Results of Model 1, which tests *H1* and *H2*, are presented in Figure 1. Full model results showing the coefficients for categorical and ordinal demographic control variables are presented in Appendix B. As expected, partisanship exerts a substantively and statistically significant influence on perceptions of harmfulness (AME Republican = −.09, $p < .001$; AME Independent = −.07, $p < .01$). Both factors of PVD exert an influence on perceptions of harmfulness that is substantively larger than that of partisanship (AME PI = .18, $p < .001$; AME GA = .16, $p < .001$). These results provide evidence in support of *H1* and *H2a*.

More interestingly, examining regression coefficients for the model, in which Democrats are coded as the baseline group, reveals that GA remains a significant predictor of harm perceptions across partisan groups (β GA Democrat = .12, $p = .019$; β GA * Republican = .05, $p = .52$), while PI exerts little influence on the perceptions of Democrats (β PI Democrat = .07, $p = .15$), while exerting a significantly greater influence on the perceptions of Republicans (β PI * Republican = .20, p = .01). Thus, the results provide evidence in support of *H2a* and partial support for *H2b*.
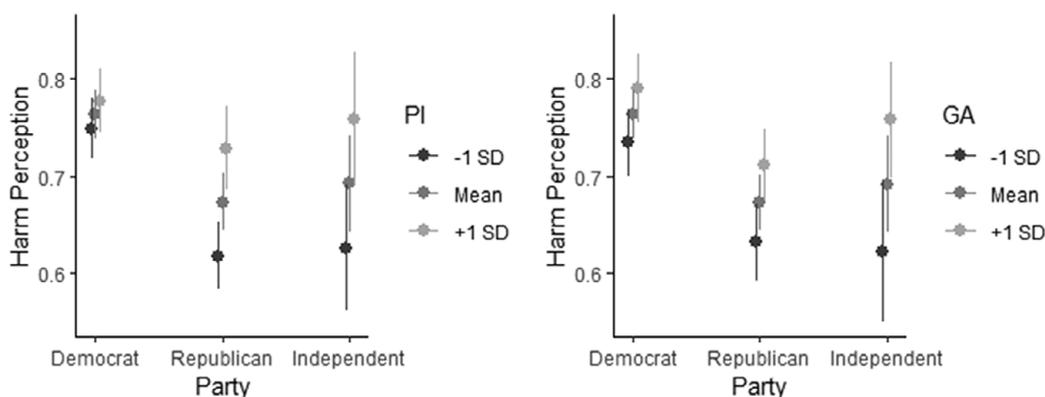

Figure 1. PVD and predicted values of COVID-19 harmfulness across partisan groups.

These interaction terms are depicted in Figure 1. Figure 1 displays the predicted perception of COVID-19 harmfulness across partisan groups for individuals scoring at the mean value, and one standard deviation above and below the mean value, of PVD. Note that, in line with the hypotheses, PI exerts a stronger influence on the harm perceptions of Republicans than of Democrats, whereas GA's influence is similar across groups.

Figure 1 displays predicted harm perceptions by party at the scale mean, and one standard deviation above and below the mean of PI and GA. Predicted harm perceptions were obtained with Model 1. Whiskers represent 95% confidence intervals for the estimates. Full results of Model 1 are provided in Appendix B.

A second generalized linear model was fitted using the *svyglm* function in R (Lumley, 2004) to test *H4a* and *H4b*. The dependent variable was the amount of responsibility for the COVID-19 crisis in the United States attributed to Trump. The independent variables of interest were partisanship, harm perception, and partisanship by harm perception interaction terms. Results of the model controlling for the relevant covariates detailed above are presented in Table 1. Harm perception exerts a significant marginal effect on attributions of responsibility to former president Trump (AME Harm = .38, $p < .001$). Unsurprisingly, and in line with the previous literature, partisanship also exerts a substantively and statistically significant influence on holding Trump responsible for the crisis (AME Republican = −.35, $p < .001$; AME Independent = −.15, $p = .02$).

Examining interaction terms between partisanship and harm perception (with Democrats as the reference group) reveals that the effects of perceiving harm on attributing blame to Trump do not differ significantly across partisan groups (β Harm * Republican = −.11, $p = .3$, β Harm * Independent = .09, $p = .64$). While the influence of harm on attributions of blame is slightly smaller for Republicans, this effect is far from statistical significance. Thus, in line with *H4b*, Republicans who perceive more harm attribute more blame for the crisis to Trump than those Republicans who perceive less harm (β Harm * Republican = .30, $p < .001$).

In sum, Study 1 provides evidence in support of *H1*, *H2*, and *H4*. These findings demonstrate that although partisan biases are vital in shaping subjective perceptions of the world, other psychological characteristics can be just as influential. In fact, there are important instances in which other psychological characteristics moderate the effects of partisanship on perceptions of the pandemic. Harm perceptions, in turn, predict attributions of responsibility to former president Trump for his fumbling of the crisis. Although harm perceptions exert a significant influence on attributions of responsibility across party lines, in line with *H4b*, Republicans who perceive the pandemic as more harmful attribute

Table 1. Results of Model 2: Effect of harm perception on Trump responsibility across parties

Effect	Coefficient	SE	95% CI	*p*-value
Intercept	.13	.07	[−.009, .28]	.09
Republican	−.27	.08	[−.42, −.12]	< .001
Independent	−.22	.13	[−.48, .04]	.09
Harm	.42	.09	[.23, .60]	< .001
Harm * Republican	−.11	.11	[−.33, .10]	.30
Harm * Independent	.09	.21	[−.32, .52]	.64
R^2 = .24				
Adjusted R^2 = .24				

Note: Table 1 displays the results of Model 2 with respect to the variables of interest. Full model results including control variables are presented in Appendix C.

more blame for the crisis to Trump than those Republicans who perceive less harm, revealing that there are times when partisanship's influence in blame attribution can be limited by other factors.

Interestingly, in the present study, Independents behaved more like Republicans than like Democrats. While no hypotheses were made about Independents, in hindsight, such a finding is not necessarily surprising. While Republicans were likely driven by partisan bias to toe the party line on COVID-19, Independents had other, nonpolitical reasons for wanting to perceive COVID-19 as less harmful, such as wanting to return to their normal pre-pandemic lives and concerns about the financial repercussions of the pandemic.

In the following section, I build on these findings by examining panel data relating to harm perceptions over time. As elite cues as to the party line view of the pandemic crystalize, and as a salient presidential election increases partisan motivations at the same time that the pandemic becomes objectively more threatening, citizens' views of the pandemic should vary. While partisanship will likely lead Democrats to adjust their perceptions of harmfulness upward, while Republicans will, if anything, come to view the pandemic as less harmful, following party line stances should be easier for some citizens than others. In particular, citizens who are high in PVD should have a harder time concluding COVID-19 to be harmless as the objective threat of the virus increases. Thus, PVD should be related to increasing perceptions of harm, in line with objective evidence (*H3a*). Similarly, the effects of PVD should be greater for Republicans in that party cues and PVD push the perceptions of Republicans in opposite directions (*H3b*).

Study 2

Overview

While the cross-sectional investigation presented in Study 1 provides evidence pertaining to *H1*, *H2*, and *H4*, the design does not allow an investigation of how PVD shapes perceptions of COVID-19 over time as the conditions of the pandemic change. Such an investigation is important in understanding the role of PVD in shaping citizens' reasoning in response to an inherently dynamic threat.

A panel investigation overcomes this limitation of cross-sectional studies by allowing for empirical analysis of how PVD predicts changes in perceptions over time. *H3a* proposes that PVD measured at Time 1 in June 2020 should predict harm perceptions at Time 2 in November 2020, controlling for harm perceptions in June. *H3b* predicts that PVD should again have a particularly strong influence on the harm perceptions of Republicans.

Some evidence suggests that the relationship between PVD and harm perception should be particularly meaningful for Republicans, as the literature on motivated reasoning suggests that Republicans who are lower in PVD may come to see the virus as less harmful over time (e.g., Taber & Lodge, 2006). On the contrary, Democrats, regardless of their standing on PVD, may come to see the pandemic as more harmful not only because of objectively worsening conditions and PVD, but because of the presidential election that took place in November 2020. This suggests that the influence of PVD on changes in harm perception over time should be greater for Republicans than for Democrats.

Participants and procedure

In this study, *N* = 652 participants who also took part in Study 1 completed a study through Qualtrics in early November 2020. Wave 1, synonymous with Study 1, took place in June 2020. Wave 2 took place in early November 2020 during the pandemic's second and more severe fall wave of infections right around the 2020 presidential election. The panel was again conducted through Qualtrics panels. As a self-selected sample of respondents agreed to complete a second wave of the study after being contacted by Qualtrics, the sample no longer approximates census benchmarks on any demographic characteristics. However, as earlier, survey weights were constructed using census data obtained from IPUMS (Ruggles et al., 2023) and partisanship data obtained from the 2020 American National Election Study. Data were

again weighted to approximate U.S. national population benchmarks on age, sex, income, race, education, and partisanship. Raked survey weights were constructed using the *anesrake* package in R (Pasek, 2018).

Materials

All respondents included in the study completed the measure of PVD detailed in Study 1, along with the same set of partisanship and demographic questions. Harm perception was measured again in this wave, as described previously in Study 1. PVD was not measured in Wave 2.

Analysis

A regression model was fitted with the *svyglm* function in the survey package (Lumley, 2004). This model contained a lagged dependent variable for Time 1 harm perception and the outcome was respondent's harm perception at Time 2. Independent variables of interest were partisanship at Time 1, PVD measured at Time 1, and partisanship by PVD interaction terms. The same set of demographic control variables detailed above, namely race, education, income, age, and sex were included in the model.

Results and discussion

Results of the lagged dependent variable model indicate that, in line with the previous literature, partisanship is a potent predictor of harm perceptions over time (AME Republican = −.09, p = .001; AME Independent = −.05, p =.14). However, the PI factor of PVD also emerges as a powerful predictor of increased harm perception (AME PI = .09, p =.03; AME GA = .04, p =.32). Indeed, the impact of the PI factor matches that of being a Republican.

Examination of interaction terms reveals that, in line with the theory presented here, the GA factor of PVD exerts a significantly greater influence on the harm perceptions of Republicans than of Democrats (β GA * Republican = .22, p =.004). The PI factor does not exert a significantly different influence on the harm perceptions of Republicans (β PI * Republican = −.13, p = .16), and actually had a smaller influence on the harm perceptions of Republicans over time compared to Democrats (β PI Democrat = .13, p = .01).

Interestingly, Independents appear to be more like Republicans in this analysis with respect to the GA factor and more like Democrats with respect to the PI factor (β Independent * PI = .18, p = .17; β Independent * GA = .19, p = .23). This could be for one of two reasons, both of which deserve attention in future research. For one, there is no denying that the pandemic has been a global catastrophe that completely uprooted most Americans' lives. As such, Independents likely had nonpartisan motivations for wanting the pandemic threat to be overblown. Similarly, some voters who used to be part of the Republican base left the Republican Party after Trump's emergence as its candidate in 2016 (Kamarck et al., 2018). While, admittedly, this group represents a modest number of citizens, they may have been uniquely positioned to follow cues from other Republican elites, such as former Senate majority leader Mitch McConnell. Independents who were led by PVD to feel more at risk from COVID-19 may have become more amenable to arguments posed by health officials and Democrats as conditions worsened between June and November 2020. Though it should be emphasized that the interaction terms for Independents in this study are not statistically significant, and I do not conduct the coefficient comparison necessary to compare the influence of PVD on harm perceptions between Independents and Republicans.

Results of the model conducted to test *H3a* and *H3b* are presented in Table 2 below. Only the variables of interest for testing the hypotheses outlined here are included in the table, but full model results are presented in Appendix D. In sum, the results of Study 2 largely support *H3a* and *H3b*. The PI factor of PVD exerts a significant effect on perceptions of virus harmfulness over time. Partially supporting *H3b*,

Table 2. Results of Model 3: Effect of PVD and partisanship on harm perceptions over time controlling for age, race, education, gender, and income.

Variable	Coefficient (Standard Error)	SE	95% CI	*p*-value
Intercept	.26	.06	[.13,.39]	<.001
Harm Wave 1	.59	.06	[.48, .71]	<.001
Independent	-.23	.10	[−.44, -.03]	<.05
Republican	-.17	.06	[−.27, -.06]	<.01
GA	-.08	.06	[−.20, .03]	.16
PI	.13	.05	[.03, .24]	<.05
GA * Republican	.22	.08	[.07, .37]	<.01
GA * Independent	.19	.16	[−.12, .50]	.23
PI * Republican	-.13	.09	[−.32, .05]	.16
PI * Independent	.18	.16	[−.09, .45]	.17
Multiple R^2 = .47	Adjusted R^2 = .46			

Note: Table 2 displays results of Model 3 controlling for relevant demographic control variables. Only coefficients of interest for *H3b* are displayed here.

the GA factor of PVD exerts a significantly stronger impact on the harm perceptions of Republicans compared to Democrats.

Interestingly, while in the first study, the PI factor significantly interacted with partisanship to limit the influence of being a Republican on perceiving harm, it is the affectively laden GA factor that limits the influence of partisanship on changes in harm perception over time. While I offer no ex ante hypotheses about differential effects of the two factors of PVD cross-sectionally and longitudinally, such a pattern makes sense when considering one of the psychological mechanisms likely to underlie partisan variation in attitudes surrounding COVID. To the extent that partisan motivated reasoning has a hand in shaping citizens' beliefs about the virus, we should expect the cognitively laden PI factor of PVD to exert an initial constraint on Republicans' beliefs about the virus, while the affectively laden GA factor should contribute to Republicans reaching an "affective tipping point" at which they must modify their perceptions of harm upward, in line with the increasing objective threat of the virus between June and November 2020 (e.g., Redlawsk et al., 2010). I note, however, that this is conjecture, as I do not directly test which psychological mechanisms are at play in shaping citizens' beliefs in this study.

Future research should investigate the extent to which a similar pattern to that uncovered here emerges across different polarized issue contexts. While individual-level variation in citizens' attitudes exists to varying degrees around many politically contentious issues, this variation has remained largely unexplored by political psychologists, with research focusing instead on the factors that lead citizens to align with the party's preferred position (e.g., Nyhan & Reifler, 2010; Taber & Lodge, 2006). I suggest that the individual difference-based mechanism proposed here likely generalizes across different contentious political issue contexts. For instance, while in the context of COVID-19, PVD is an important individual-difference-level construct for understanding variation, when it comes to other issues, other constructs that are relevant to the issue domain may serve a similar function.

Consider the issue of gun violence and support for policies that evidence suggests should lead to a decline in mass shootings. Many Republicans actually disagree with the party line and support the adoption of some of these policies (Yokley, 2023). It is possible that these individuals are led to question the party line stance because of their standing on the dispositional trait of neuroticism, which relates to increased threat sensitivity (e.g., Costa & McCrae, 1992).

Relatedly, the results of Study 2 and previous research (e.g., Redlawsk et al., 2010) suggest that when considering the factors that lead individuals toward more accurate beliefs over time, core affect should be an important consideration. Future research should investigate the extent to which affectively laden constructs, and subjective affective experiences more broadly, predict belief updating in favor of accuracy. This research should also take care to compare the influence of affective processes to related cognitive processes. Such a comparison could determine the extent to which the pattern uncovered here regarding the influence of cognitive and affective considerations generalizes across different issue and sociopolitical contexts.

Discussion and conclusion

A key finding in political behavior is that partisans are largely unable or unwilling to accurately perceive the objective conditions of the world and hold elites responsible for their policy failures that contributed to those conditions (e.g., Achen & Bartels, 2017; Bartels, 2002; Converse, 1964; Delli Carpini & Keeter, 1993; Gaines et al., 2007; Jerit et al., 2006; Nyhan & Reifler, 2010; Taber & Lodge, 2006). Instead, they engage in biased processing of objective conditions selecting and integrating new information in line with their partisan predilections (e.g., Kunda, 1990; Lenz, 2013; Taber & Lodge, 2006; Zaller, 1992). This process has been only exacerbated by record levels of political polarization (Druckman et al., 2013; Hetherington & Rudolph, 2015).

Existing work on partisan division in attitudes surrounding COVID-19 (e.g., Allcott et al., 2020; Gadarian et al., 2021) suggests that the pandemic is a textbook example of one or more of these processes in action. However, normatively concerning partisan division has obscured the fact that most citizens actually *agreed* about the pandemic despite strong partisan motivations to the contrary.

What underlies this agreement and what leads some citizens to be more or less likely to adopt the party's stance on COVID? In this paper I argue that one important factor is citizens' level of perceived vulnerability to infectious disease, a personality construct relating individuals' beliefs about their susceptibility to infectious diseases and their affective discomfort in the presence of potential disease transmission (Duncan et al., 2009).

Across one cross-sectional study and one longitudinal study, I uncover evidence that although partisanship does exert a large and normatively concerning influence on citizens' perceptions of the harm caused by the pandemic (*H1*), PVD exerts a similarly large influence (*H2a*). This influence is substantively larger than that of partisanship. Moreover, the perceived infectability factor moderates the influence of partisanship on perceptions of pandemic harmfulness cross sectionally (*H2b*), while the germ aversion factor moderates the influence of partisanship longitudinally (*H3b*). In line with previous research on societal harm and the need to hold an agent accountable for said harm (e.g., Gray et al., 2012; Malhotra & Kuo, 2008), I find that perceptions of harm predict the likelihood that citizens hold former president Trump accountable for his failed handling of the pandemic (*H4a*). This effect holds even for Republicans who have partisan motivations not to attribute blame to Trump (*H4b*). Indeed, the predictive power of harm for Republicans is not significantly weaker than it is for Democrats.

Although this article has examined the influence of PVD on COVID-19 related attitudes, future research should investigate the influence of PVD on political attitudes and behaviors more broadly. Existing work in political science working within the behavioral immune system paradigm has shown that disgust sensitivity, a construct closely related to PVD, predicts a wide range of political attitudes independent of partisanship (Aaroe et al., 2017; Clifford et al., 2023; Kam, 2019; Kam & Estes, 2016). Many of these attitudes are not explicitly related to infectious diseases (Aaroe et al., 2017; Clifford et al., 2023; Kam & Estes, 2016). For instance, Aaroe et al. (2017) and Clifford et al. (2023) highlight the role of disgust sensitivity in predicting anti-immigration attitudes (but see van Leeuwen & Petersen, 2018).

Examining the influence of PVD as well as related behavioral immune system constructs (such as disgust sensitivity) on political attitudes and behaviors broadly speaking has the potential to shed light on ongoing debates in both social psychology and political science. For instance, existing work has

considered primarily the affect-laden disgust sensitivity construct and the germ aversion factor of PVD in predicting attitudes (e.g., Aaroe et al., 2017; Kam & Estes, 2016). Here, I find that the cognitive perceived infectability factor of PVD is also strongly predictive of attitudes surrounding COVID-19. If, for instance, once PI is controlled for, the relationship between affectively laden behavioral immune system constructs and some political attitudes dissipates, then the factors leading citizens to the adoption of those attitudes are likely cognitive in nature. While unlikely, if this pattern does emerge, hot cognition accounts of the behavioral immune system driving the adoption of political attitudes may need to be amended in places, or at least limited in their scope.

Similarly, I find that scoring higher in PVD predicts Republicans failing to toe the party line regarding COVID-19. Much existing work examining the relationship between behavioral immune system related constructs and political attitudes has examined the explanatory power of these constructs once ideology is controlled for (Kam & Estes, 2016). The present study suggests that these constructs may be particularly useful when considering within party variation in political attitudes. Some individuals may be led to oppose the stance endorsed by their party because they feel vulnerable to the threats certain policies and attitudes are designed to protect against (see, e.g., Kam, 2019, for a similar argument). Future research should fit models that look at whether the predictive power of constructs emanating from the behavioral immune system paradigm such as PVD are particularly meaningful in countering ideological pressures in shaping relevant political attitudes.

In sum, this article identifies in PVD another factor that is at least as important as partisanship in shaping citizens' perceptions of the COVID-19 pandemic. More limited evidence is also uncovered that at times one of the two composite factors of PVD can interrupt the influence of partisanship on attitudes. In finding that PVD constrains citizen ability to engage in party line reasoning about COVID-19, the results of this study suggest that although macro level trends throughout the course of the pandemic may show normatively concerning partisan disagreement, individual-level variation does exist and is systematic rather than random in nature, shaped in part by citizens' levels of perceived vulnerability to infectious disease.

Supplementary materials. The supplementary material for this article can be found at http://doi.org/10.1017/pls.2023.14.

Data availability statement. The data that support the findings of this study are openly available at https://osf.io/r6dz2/?view_only=5b3c13f6c39143698261555bad45d9c2.

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