Internal, External, Genetic, or Cultural? Lay Theories about Racial Health Disparities Predict Perceived Threat, Adherence, and Policy Support

**Abstract**

During the COVID-19 pandemic, the Centers for Disease Control (CDC) reported that Black and Latinx communities experienced a disproportionate burden of illness. The goal of this study is to investigate laypeople’s attribution of these disparities. We hypothesized the following four potential attributions: external causes (e.g. systemic racism), internal causes (e.g. personal choices), cultural causes (e.g., being close knit), or genetic causes (e.g., being more vulnerable for genetic reasons ). Data from 447 participants revealed that lay theories involving external factors were the most endorsed, whereas theories relating to genetic causes were the least endorsed. Our analyses further revealed that external attributions predicted broader COVID-19 relevant outcomes (i.e., perceived threat of COVID-19, adherence to CDC guidelines, and support for government policies in response to COVID-19), even after controlling for political orientation, participant race, and other attributions. This research provides insight into how lay people’s explanations for disparities can predict their reactions to the pandemic.

Keywords: COVID-19, Lay-Theories, Race, Political orientation, Pandemic, Disparities, Beliefs

Relatively early in the COVID-19 pandemic, scientists uncovered disparities that suggested Black and Latinx Americans experienced higher rates of infection, hospitalization, and death than White Americans (Hawkins, 2020; Hooper et al., 2020). Notably, among White Americans, awareness of these disparities reduced compliance with COVID-19 safety precautions (Skinner-Dorkenoo et al., 2022). This may be due to people attributing COVID-19 causes to the problems of other groups (e.g., healthcare inequalities). Here, we investigate the extent to which people's lay theories about the causes of racial disparities might account for how individuals react to the pandemic.

Lay theories are the everyday explanations non-experts construct to organize and make sense of the world (Levy et al.,2006). People have a multitude of lay theories, including what makes people happy (Furnham & Cheng, 2000), how willpower works (Francis & Job, 2018), and the nature of intelligence (Dweck et al., 1995). Lay theories do not need to map onto reality to have downstream consequences (Rivera et al., 2019; Yzerbyt et al., 2001). For example, people who hold essentializing lay theories about race tend to view and treat racial minorities differently (Haslam et al., 2006).

Here, we examine what lay theories people endorsed in the context of COVID-19 racial disparities. We drew from previous studies on lay theories in other domains (Feagin, 1972; Jones, 1991; McCoy & Major, 2007; Nelson & Joselus, 2022) and developed a measure of lay theories that included four subscales: 1) *external attributions* such as historical factors, racism, and unequal distribution of opportunity, 2) *internal attributions* such as lack of motivation, and irresponsible choices, 3) c*ultural attributions* including factors perceived to be unique to racial communities such as failing to teach personal responsibility, and 4) *genetic attributions* given their perceived relevance to health; Burnette et al., 2017.

This allowed us to examine three research questions in the context of racial health disparities: (1) what types of lay theories people are most likely to endorse, (2) whether lay theory endorsement varies as a function of participant race and/or political orientation, and (3) does lay theory endorsement predict disparate responses to the pandemic such as adherence to safety precautions. For example, if people believe racial disparities are explained by the personal choices made by members of communities of color, people may feel less compelled to engage in behaviors to mitigate the spread of COVID.

To address these research questions, we asked participants to indicate how likely they thought various potential explanations were for why some communities were experiencing worse outcomes from COVID-19. We included two conditions (Black and Latinx) to explore potential differences and similarities in the lay theories concerning these two communities of color. However, our study approach was primarily exploratory, and we did not have specific hypotheses about whether and how endorsement may differ across conditions. All materials, data, and supplementary analyses can be found here https://osf.io/bre2d/?view\_only=e7b1957191244d17b0968a6556515fc6

**Methodology**

**Participants and Design**

Data was collected in October 2020 from 447 [REDACTED] students who completed the study for course credit. The sample size was determined by the available lab resources, with a goal of collecting a total sample that exceeded 250 participants (Schönbrodt, & Perugin, 2013). Sensitivity analyses (Faul et al., 2007, Perugini et al., 2018) confirmed that, with power = .80 and α = .05, our sample had power to detect effects smaller (Cohen’s *f* = .07; *f 2* = .03) than observed for our mixed-ANOVA (*f* = .11) and multiple linear regression analyses (*f* 2’s > .16; see OSF for details).

Our sample ranged from 18 – 34 (*M* = 18.69, *SD* = 1.24) in years, and included 138 males, 299 females, 1 transgender male, and others (*n* = 3). Of the total sample, 57% of participants identified as White, 16% Hispanic or Latino/a, 14% as Multi-racial, 10% as Asian American, and 1% of participants identified as African American/Black,

Participants were randomly assigned to one of two conditions: Black (*n =* 221) or Latinx (*n =* 226). Participants then read a prompt describing the presence of COVID-19 racial health disparities and were asked to endorse likely explanations. After, they answered questionnaires about COVID-relevant outcomes (perceived threat, then adherence, followed by support items) they answered demographic information.

**Measures**

***Lay Theory Endorsement***

Participants indicated how likely they thought each of 26 possible explanations for health disparities was on a 5-point Likert scale ranging from 1 (*very unlikely explanation*) – 5 (*very likely explanation*). These items composed four subscales (see OSF for a complete list of items and exploratory factor analyses[1]): **internal attributions**(9 items, *M* = 3.27 , *SD* = .81, α = .87; e.g., Personal hygiene habits, such as failure to properly clean (wash hands, sanitize home)), **external attributions** (10 items, *M =* 3.74 *, SD = .*71*,* α = .64; e.g., Working conditions, such as a lack of paid sick leave), **cultural attributions** (4-items *M =* 3.15 *, SD = .*89*,* α = .74; e.g.,: Cultural backgrounds, such as living in a multi-generational household*)*,and**genetic attribution** (1 item: *M =* 2.90 *, SD =* 1*.*27; Biological factors, such as one’s genes makes them more vulnerable).

***Perceived Threat of Covid-19***

A 5-item scale from Kachanoff et al., 2020 was used to measure perceived threat of Covid-19 (*M =* 2.96*, SD = .*61*,* α = .69; e.g., “how much of a threat, if any, is the coronavirus outbreak for your personal health”) on a 1 (*Not a threat*) – 4 (*Major threat*) scale.

***Adherence***

Participants indicated how often they were engaging in each of 19 behaviors recommended by the CDC (e.g., wearing a mask in public settings) on a 1 (*not at all*) - 5 (*always)* scale (*M =* 3.87*, SD = .*78*,* α = .94).

***Support for Government Policies***

A 7-item scale measured participants’ support for government policies relevant to Covid-19[2] (e.g., “Government mandates of mask wearing in public during the COVID pandemic.”) on 1 (*not support at all*) - 7 (*strongly support*) scale (*M =* 5.30 *, SD =* 1*.*18*,* α = .84).

***Political Orientation***

Political orientation was measured on a 1 (*very liberal*) - 7 (*very conservative*) scale (*M =* 4.23*, SD =* 1*.*71).

**Results**

**1) What Lay theories do people endorse?**

On an absolute level, three of the four lay theories had an average endorsement above the midpoint of the scale (genetic attributions were just below the midpoint; Table 1). This suggests that participants found three of the four types of attributions to be relatively plausible, including those potentially culturally pathologizing and explicitly blaming group members for their choices.

To examine relative endorsement, a mixed ANOVA, with target racial community as a between-participants factor and lay theory type as within-participants factor, was conducted. A significant main effect of lay theory type, *F*(2.17, 958.77)[3] = 84.91, *p* <.001, ηp2 = .16 revealed that participants found some attributions more likely than others. Post hoc comparisons with a Bonferroni correction revealed participants were most likely to endorse external attributions, followed by internal, cultural, and genetic attributions. A significant main effect of condition *F*(1, 442) = 13.44, *p* <.001, ηp2 = .03 revealed that participants tended to think all explanations were more likely in the Latinx condition relative to the Black condition (means can be found here https://osf.io/bre2d/?view\_only=e7b1957191244d17b0968a6556515fc6). The results also revealed a significant interaction *F*(2.17, 958.77) = 5.51, *p* <.001, ηp2 = .01 between condition and lay theory suggesting the tendency to endorse explanations as more likely in the Latinx condition was not observed for genetic attributions (which were endorsed at equal rates across the two conditions). The results suggest that participants applied a more varied range of beliefs to the Latinx community’s burden than the Black community’s. Perhaps participants perceived the Latinx community to be more heterogeneous than the Black community. For example, previous research has shown that Latinx people are perceived as more foreign than Black people (Zou & Cheryan 2017). Perhaps perceptions of Latinx communities as both foreign and domestic increased the plausibility of all the lay theories. Alternatively, participants might have had more familiarity with the Latinx community and found it easier to generate examples that made the lay theories seem more plausible.  This would be consistent with the demographics of the sample (e.g., 1% of participants identified as African American/Black vs. 16% as Hispanic or Latino/a), which are reflective of the larger institution at which this work was conducted. Further research is needed to understand why lay theory responses overall, were higher in the context of Latinx versus Black disparities.

Table 1. Means for Lay Theory Endorsement

|  |  |
| --- | --- |
|  | M (SD) |
| External (systemic & societal factors) | 3.74 (.71)a |
| Internal (personal beliefs & decisions) | 3.27 (.81)b |
| Culture (community beliefs & practices) | 3.15 (.89)c |
| Genes | 2.90 (1.27)d |

*Note.* Means were compared using post hoc tests with a Bonferroni correction. Different subscripts denote means significantly differ with *p*’s <.01.

**2) Does lay theory endorsement vary as a function of participant race and/or political orientation?**

Previous research suggests that beliefs about the causes of income inequality differ across racial groups (Hunt, 2007). As such, we wanted to examine whether there are differences between racial groups in lay theories about health disparities. Given small sample sizes within some racial identities, we created two groups: White participants (*n* = 255) and Participants of Color (PoC; *n* = 189; PoC included all people who self-identified with at least one non-white identity). For the comparison of White and PoC across the four attributions, a Bonferonni correction was used to set the alpha at .0125. The only significant difference we found was that PoC (*M* =3.84, *SD* = .70) endorsed external attributions more than White participants (*M* =3.67, *SD* = .70; *t*(442) = 2.56, *p* = .011, *d* = .24; See Supplemental Tables 1 and 2 for other subscales). However, this difference should be interpreted with caution as sensitivity analyses indicated that the smallest effect we had 80% power to detect was *d* = .27.

Political orientation also predicts preferred explanations for inequality in other domains (e.g, Cozzarelli et al., 2001; Zucker & Weiner, 1993). As such, we examined bivariate correlations between political orientation and lay theory endorsement (Table 3). To account for testing seven key correlations a Bonferonni correction would result in an an alpha of.007. Using this alpha, conservativism was positively correlated with internal and genetic attributions, but negatively correlated with external attributions. Political orientation was uncorrelated with cultural attributions (See supplemental tables 4 & 5 for correlations separated by condition).

Table 3. Lay Theory Correlations

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 1. Internal |  |  |  |  |  |  |  |  |
| 2. External | .219\*\* |  |  |  |  |  |  |  |
| 3. Cultural | .581\*\* | .360\*\* |  |  |  |  |  |  |
| 4. Genes | .353\*\* | .013 | .219\*\* |  |  |  |  |  |
| 5. Perceived Threat | .048 | .303\*\* | .136\*\* | .029 |  |  |  |  |
| 6. Adherence | -.026 | .391\*\* | .086 | -.058 | .404\*\* |  |  |  |
| 7. Policy Support | -.055 | .414\*\* | .077\*\* | -.020 | .404\*\* | .576\*\* |  |  |
| 8. Political Orientation | .230\*\* | -.309\*\* | .076 | .143\*\* | -.280\*\* | -.459\*\* | -.551\*\* |  |

\*\* Correlation is significant at the 0.001 level (2-tailed).

**3) Does Lay Theory Endorsement predict other COVID-relevant outcomes?**

We conducted hierarchical regressions including condition, race, and political orientation in Step 1 and lay theories in Step 2. To account for the fact that we used three different models for the different dependent variables, we applied a Bonferroni correction and set our alpha at .016.

Political orientation negatively predicted all three COVID-relevant outcomes. External attributions predicted all three of the outcome variables. This suggests participants who attributed racial disparities to external causes were more likely to perceive COVID as a threat, more likely to adhere to safety protocols, and more likely to support governmental policies. Notably, this relationship was significant after accounting for other lay theories as well as participant race and political orientation.

Table 4. Hierarchical regressions

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Predictors | Perceived threat | | Adherence | | Policy Support | |
| **STEP ONE** | B | SE | B | SE | B | SE |
| Condition | .009 | .056 | -.037 | .066 | .100 | .092 |
| Race | -.020 | .061 | -.099 | .071 | -.334\*\* | .100 |
| Political Orientation | -.099\*\* | .018 | -.198\*\* | .021 | -.343\*\* | .029 |
| RSQUARE | .079\*\* | | .215\*\* | | .322\*\* | |
| **STEP TWO** |  |  |  |  |  |  |
| Condition | -.047 | .057 | -.100 | .065 | .019 | .092 |
| Race | -.015 | .060 | -.101 | .069 | -.348\*\* | .097 |
| Political Orientation | -.080\*\* | .019 | -.158\*\* | .022 | -.281\*\* | .031 |
| Internal | -.004 | .045 | -.025 | .052 | -.106 | .073 |
| External | .180\*\* | .045 | .298\*\* | .051 | .447\*\* | .072 |
| Cultural | .057 | .041 | .047 | .047 | .059 | .066 |
| Genes | .020 | .023 | -.009 | .026 | .047 | .037 |
| RSQUARE | .139\*\* | | .289\*\* | | .391\*\* | |

For condition; 0 = Black, 1 = Latinx

For race; 0 = PoC 1 = White

Higher political orientation scores indicate greater conservatism

\*\* Beta is significant at the 0.01 level (2-tailed).

**General Discussion**

The current study examined the lay theories people endorse as potential explanations for racial health disparities in COVID-19 outcomes in Black and Latinx communities and whether those lay theories are associated with disparate attitudes in response to COVID-19.

The first research question was descriptive and asked what types of lay theories were endorsed the most. We found participants were most likely to endorse external attributions, followed by internal, cultural, and genetic attributions. We also found that the plausibility of different lay theories depended, moderately, on the participant’s race and political orientation. Participants of color were more likely to endorse external attributions; however, there was no difference between white participants and participants of color in terms of their likelihood to endorse internal, cultural, or genetic explanations. Regarding political orientation, conservatism was negatively associated with external attributions and positively associated with internal and genetic explanations. These patterns are consistent with past research, including work suggesting conservatives are more likely to endorse genetic explanations in a variety of domains, particularly those that involve racial differences (e.g., Suhay & Jayartne, 2013). It was surprising that political orientation did not predict cultural attributions given that they are a form of internal attribution. This may suggest that liberals are more receptive to internal attributions framed at a cultural level as opposed to an individual level (e.g., a culture that fails to teach responsibility vs. individuals lacking responsibility; Nelson & Joselus, 2022).

Finally, the current research suggests that lay theories may help explain disparate reactions to COVID-19. While the data is correlational and cannot speak to causation, correlational data can help identify patterns that may be causal and worth examining in future research. Taken together, the results suggest that attributing COVID disparities to external causes may be an important contributing factor to perceiving COVID as a perceived realistic threat, adhering to CDC guidelines, and supporting government policies related to COVID-19. This pattern was consistent across all three dependent measures and was significant over racial identity and political orientation. This pattern is consistent with previous research that suggests people are more likely to support societal action to address inequality when they attribute it to external causes (e.g., Applebaum, 2001; Price et al., 2014). While most of this work has focused specifically on policy support, it makes sense that people who support policies to address problems would also be more likely to see those problems as threats and willing to take personal action as well to solve them. A virus does not equate poverty, so it is interesting that these patterns replicate in this new domain.

It is worth noting some limitations of the current work. First, several scales were self-created (lay theory endorsement, adherence, and policy support). While some attempts were made to examine the validity of the lay theory measure (e.g., exploratory factor analyses, correlations with political orientation), it is also important to note that the measures were not subjected to full scale validation procedures and some of the factor analysis results differed from our hypothesized scale structure. As such, these results should be interpreted with caution. Another limitation was that we elected to combine all participants of color together due to small sample sizes within different racial identities, which erroneously implies there is homogeneity in all non-white experiences (Buchanan et al., 2021).

These data add to a larger literature on the role of lay theories in varying domains and points to potential explanations for the discrepant reactions seen, at least in the United States, to COVID-19. We suspect this work may be applicable to other health threats that emerge in the future, but future research would be needed on this issue.

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[1] Two items did not map well onto our a priori categories and were not included in the subscales. See OSF for details.

[2] Two items concerning limiting public protests were dropped from this scale based on the results of an exploratory factor analysis. Results are unchanged if these two items are included in the scale.

[3] These are the corrected degrees of freedom the Greenhouse-Geisser analysis given a significant p-value on Mauchly’s Test of Sphericity