

Racial Bias in Perceptions of Disease and Policy

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ABSTRACT

Narratives about Africa as dark, depraved, and diseased justified the exploitation of African land and people. Today, these narratives may still have a hold on people's fears about disease. In three experiments (N = 1803), participants report greater worry about a pandemic originating in Africa (vs. elsewhere). In turn, they report greater support for travel bans and loosening abortion restrictions (for a pandemic that can affect pregnant mothers and their fetuses). Moreover, in an archival study of newspaper articles of the 2015-2016 Zika pandemic (N = 1475), articles were more negative—for example, they included more death-related words—if they mentioned Africa. These data suggest that reactions to pandemics are biased, something the researchers also observe in the context of COVID-19; indeed, in a representative sample (N = 1200), participants report greater worry about COVID-19 if they read about its impact on an African (vs. European) country.

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Abstract

Narratives about Africa as dark, deprived, and diseased justified the exploitation of African land and people. Today, these narratives may still have a hold on people's fears about disease. In 3 experiments (N = 1803), participants report greater worry about a pandemic originating in Africa (vs. elsewhere). In turn, they report greater support for travel bans and loosening abortion restrictions (for a pandemic that can affect pregnant mothers and their fetuses). Moreover, in an archival study of newspaper articles of the 2015-2016 Zika pandemic (N = 1475), articles were more negative—for example, they included more death-related words—if they mentioned Africa. These data suggest that reactions to pandemics are biased, something we also observe in the context of COVID-19; indeed, in a representative sample (N = 1200), participants report greater worry about COVID-19 if they read about its impact on an African (vs. European) country.

Statement of Relevance

Worries about pandemics are legitimate—pandemics can be devastating—but policies should not be guided by racist narratives. In the present work, we draw on historical research, take a social psychological approach, and ask about policy. We consider whether narratives about Africa as a diseased place—narratives used to justify colonization and slavery—might still have a hold on people's fears about diseases. We find that people report greater worry about a disease from Africa (vs. elsewhere). In turn, they report greater support for travel bans and loosening abortion restrictions (if the disease can affect pregnant mothers and their fetuses). We replicate these findings in the context of COVID-19. Moreover, in an archival study of newspaper articles of the 2015-2016 Zika pandemic (N = 1475), we find that articles were more negative if they mentioned Africa. Together, these data suggest that reactions to pandemics are not reasoned but racially biased.

Racial Bias in Perceptions of Disease and Policy

“...Africa, it seems, has been created as a unique space, as a repository of death, disease, and degeneration, inscribed through a set of recurring and simple dualisms—black and white, good and evil, light and dark.” --Mary Vaughan (1991), *Curing Their Ills: Colonial Power and African Illness*

European powers made and used claims about Africa, as a “repository of death, disease, and degeneration,” to justify the colonization of Africa (quote from Vaughan, 1991; see also Bonsu, 2009; Flint & Hewitt, 2015; Jarosz, 1992; Monson, 2017; Oguh, 2015; Savage, 2007; Seay & Dionne, 2014). Today, these narratives are still with us. This was clear in the news coverage of the AIDS and Ebola crises (e.g., Harrison-Chirimuuta & Chirimuuta, 1997; Monson, 2017; Murdocca, 2003). For example, news reporting widely described Ebola as an African disease, highlighting African practices such as eating “bush meat” even though such practices were irrelevant to the spread of Ebola. As Laura Seay and Kim Yi Dionne (2014) remarked, such reporting fits “a long and ugly tradition of treating Africans as savage animals and the African continent as a dirty, diseased place to be feared.”

Claims about Africans and, later, Black people were likewise used to justify the exploitation of Africans. Indeed, the classification of people into distinct racial groups was not formalized until slavery transitioned from a transitory state to a permanent and hereditary one. Scholars then used nascent theories of evolution to claim that the Negro was a separate and ancestral race, closer to apes, and that natural selection had eventually produced the more advanced European. Such claims were used to legitimize slavery, and the harsh treatment of enslaved men, women, and children (Fredrickson, 1989; Hudson, 1996; Kendi, 2017; Smedley & Smedley, 2005). Today, Black people continue to be dehumanized in subtle and not-so-subtle ways (Goff et al., 2008, 2014; Jardina & Piston, 2016).

The notion that racist narratives were used to exploit African land and people should not be surprising or controversial. It is consistent with research across disciplines including contemporary work in Psychology. That work shows that people often rely on racial stereotypes and prejudices to justify inequitable systems and maintain the status quo (see Jost & Banaji, 1994; Kay et al., 2005; Jost & Kay, 2005; Sidanius & Pratto, 1999; Sidanius et al., 2004; Pratto et al., 1994; Sidanius et al., 2001; Jost, Glaser, et al., 2003; Jost, Pelham, et al., 2003; Jost & Thompson, 2000; Jost & Hunyady, 2003; Hoffman and Hurst, 1990; Jost et al., 2005; Jost et al., 2004 cf., De Oliveira & Dambrun, 2007). In other words, work in history, psychology, and other disciplines suggest that accounts of Africa and Africans may not reflect a truth but rather a deep prejudice driven by group and self-interests and a desire to maintain inequities.

In the present work, we consider whether perceptions of disease—and specifically diseases that have the potential to become pandemics—reflect this kind of deep prejudice. To start, we ask two questions: (1) are people more worried about diseases from Africa than elsewhere? and (2) what are the consequences for policy preferences? We focus on two policy domains: travel bans and loosening restrictions on abortions (for diseases that affect pregnant women and their fetuses). We selected these domains based on qualitative research showing that pandemics can be politicized to justify immigration reform (MurdoCCA, 2003) and work that theorizes outgroups can be biological threats, leading to the devaluation of lives including unborn lives (Schaller & Park, 2011; Savage, 2007). We predict that people will be more worried about diseases originating in Africa; in turn, they will be more likely to support travel bans and loosening restrictions on abortions. We also explore the role of dehumanizing attitudes. We predict that people will be more worried about diseases originating in Africa and, in turn, support travel bans and loosening restrictions on abortions, especially to the extent that they dehumanize Black

people. All data, materials, and analysis scripts can be found at

https://osf.io/b35fs/?view_only=b279430d7a4441ebbebecea12ec0cc0e¹

Experiment 1

In Experiment 1, we examine people's reactions to a pandemic originating, allegedly, in Africa, Asia, Europe, or North America. Of note, we used the same description of a pandemic, holding disease symptoms, severity, and trajectory constant. This study, then, provides an initial test of how country of origin—independent of a pandemic's stated symptoms, severity, and trajectory—shapes people's worries about disease and their policy preferences.

Method

Participants. Not knowing what effect size to expect, we aimed to collect a large sample; i.e., 200 participants per condition. In February 2019, we recruited 803 participants via Amazon's Mechanical Turk (MTurk). Participants received \$0.50 for their participation. The sample was 59% male and 79% white. Participants' ages ranged from 18 to 81 with an average of 37 ($SD = 11.5$). A post-hoc sensitivity analysis using GPower with α set to .05 and power ($1 - \beta$) set to .80 suggests that we can detect an effect as small as $f = .12$ equivalent to $\eta^2 = .01$. In other words, we can detect a small effect.

Procedure. After consenting, participants were randomly assigned to a condition. Specifically, they read an article about a fictionalized disease originating in Nigeria, Vietnam, France, or Mexico. The fictionalized disease was described as having a host of negative health consequences, like the Zika virus. The most notable health consequence was the impact on pregnant women and their fetuses. We adapted the article design from an online newspaper format by updating the content of their webpages to manipulate condition-specific details using HTML code. This was done to make the article look real. Next, participants answered survey questions about the disease. They were asked: (1) How worried

¹ This is an anonymized view-only link for reviewers. If our manuscript were accepted, we would make this link public. In addition, we would add our study materials; study materials have identifying information such as names of research institutions and researcher names on consent and debriefing documents.

about contracting this disease would you be if someone from [COUNTRY] moved to your community?, (2) How worried about contracting this disease would you be if someone in your community had recently traveled to [COUNTRY]?, (3) How worried about contracting this disease would you be if a coworker had recently traveled to [COUNTRY]?, (4) How worried about contracting this disease would you be if a neighbor had recently traveled to [COUNTRY]?, (5) How worried about contracting this disease would you be if a friend had recently traveled to [COUNTRY]?, and (6) How worried about contracting this disease would you be if your significant other had recently traveled to [COUNTRY]? Participants answered these questions on a four-point scale (3=very worried, 2=somewhat worried, 1=not too worried, and 0=not at all worried). Answers were averaged to create a composite ($\alpha = .96$).

Participants were also asked two policy-related questions: (1) Given the potential transmission of this disease, do you think the U.S. should place a travel ban on [COUNTRY]?, and (2) Given the potential transmission from pregnant mother to fetus, do you think [COUNTRY] should loosen restrictions on abortion? Participants answered Yes or No to these questions. Finally, participants answered demographic questions including race/ethnicity and political ideology. We control for these variables in our analyses but results hold when not controlling for them.

Results

Worry. To test whether condition affected self-reported worry, we conducted a one-way ANCOVA on worry, controlling for political ideology and participant race. As hypothesized, results revealed a main effect of condition, $F(3, 796) = 6.77, p < 0.0001, \eta^2 = .023$. A Ryan's Q post hoc test—like a Tukey's post hoc test—showed that participants reported more worry in the Nigeria condition ($M_{\text{Nigeria}} = 1.62$) than all other conditions ($M_{\text{France}} = 1.41, M_{\text{Vietnam}} = 1.32, M_{\text{Mexico}} = 1.26$).

Travel ban. To test whether condition affected support for a travel ban, we conducted another ANCOVA on support for a travel ban, controlling for political ideology and participant race.² Again, results revealed a main effect of condition, $F(3, 795) = 6.78, p = 0.0002, \eta^2 = .023$. A Ryan's Q post hoc test showed that participants were more willing to impose a travel ban in the Nigeria condition ($M_{\text{Nigeria}} = 0.34$) than the France and Mexico conditions ($M_{\text{France}} = 0.20, M_{\text{Mexico}} = 0.20$); participants in the Vietnam condition ($M_{\text{Vietnam}} = 0.28$) fell in-between and did not significantly differ from those in the Nigeria, France, and Mexico conditions.

Abortion. We conducted a similar ANCOVA on abortion support, controlling for political ideology and participant race. Again, analyses revealed a main effect of condition, $F(3, 796) = 3.15, p = 0.025, \eta^2 = .010$. A Ryan's Q post hoc test showed that participants were more willing to loosen restrictions on abortion in the Nigeria condition ($M_{\text{Nigeria}} = 0.70$) than the France and Mexico conditions ($M_{\text{France}} = 0.58, M_{\text{Mexico}} = 0.57$); participants in the Vietnam condition ($M_{\text{Vietnam}} = 0.67$) again fell in-between and did not significantly differ from those in the Nigeria, France, and Mexico conditions.

Mediation Analyses. To examine whether participants' worry mediated the effects of condition (Africa vs. elsewhere) on support for loosening restrictions on abortion and imposing a travel ban, we used the PROCESS macro to conduct the bootstrapping analysis and test (Model 4; Hayes, 2013). We drew 10,000 random samples with replacement to estimate the size of the indirect effect of condition on support for loosening restrictions on abortion and a travel ban. The bootstrap analysis yielded 95% confidence intervals that did not include 0 for either abortion or ban support (Abortion: 95% CI = [0.04, 0.19]; Ban: 95% CI = [0.25, 0.79]). Taken together, these data suggest that an African (vs. European,

² For binary outcomes, such as support for a travel ban and for loosening abortion laws, logistic regression or OLS models like ANOVAs, ANCOVAs, and linear regressions are appropriate and produce similar results. ANCOVA is our preferred method here because interpretation requires weaker assumptions (Angrist & Pischke, 2009) and provides reliable estimates of a variable's average effect (Allison, 1999; Mood, 2010). See Hoffman et al. (2016) for a similar approach.

Asian, North American) disease led participants to worry about the disease more and, in turn, worry increased support for loosening abortion restrictions and a travel ban.

Experiment 2

In Experiment 2, we replicated Experiment 1 with two extensions. First, we recruited a sample from a different source. Second, we included individual differences measures related to race and racism; namely, beliefs about race as a biological vs. social construct (Hoffman et al., 2016; Williams & Eberhardt, 2008), and explicit dehumanization (Kteily et al., 2015). This allows us to explore individual differences to see whether the biases documented in Experiment 1 manifest only for those who hold biological and dehumanizing beliefs, or are so culturally ingrained that there is no individual heterogeneity.

For biological beliefs, we asked participants whether 15 statements about biological differences between Black people and White people were *definitely false* to *definitely true* (Hoffman et al., 2016; e.g., “Black people’s nerve-endings are less sensitive than White people’s nerve-endings.” “Blacks have a more sensitive sense of smell than Whites; they can differentiate odors and detect faint smells better than Whites.” “Black couples are significantly more fertile than White couples.” “Whites are less likely to have a stroke than Blacks. Whites have more efficient respiratory systems than Blacks”). We also asked participants questions about the extent to which race is a biological vs. social function (Williams & Eberhardt, 2008; e.g., “Racial groups are primarily determined by biology.” “It’s easy to tell what race people are by looking at them.” “How a person is defined racially depends on the social context.” “People who are of different races may look quite similar to each other.”). For dehumanization, we used the explicit infra-humanization scale developed by Kteily and colleagues (2015), where participants are asked to indicate the extent to which different groups including Whites and Blacks are fully evolved, using a slider from 0% to 100%. These measures were included as exploratory variables.

Method

Participants. In February 2019, we recruited 196 participants from a Department of Psychology's participant pool. Participants received course credit for their participation. The sample was 25% male and 59% white. Participants' ages ranged from 18 to 23 with an average of 19 ($SD = 1.0$). A post-hoc sensitivity analysis using GPower with α set to .05 and power ($1 - \beta$) set to .80 suggests that we can detect an effect as small as $f = .24$ equivalent to $\eta^2 = .06$. In other words, we can detect a small-to-medium effect.

Procedure. The procedure was identical to Experiment 1 with the addition of race-related measures: race as a biological vs. social construct (William & Eberhardt, 2008), beliefs in biological differences between Blacks and Whites (Hoffman, Trawalter, Axt, Oliver, 2014), and an explicit dehumanization scale (Kteily et al., 2015).

Results

We conducted the same analyses on worry ($\alpha = .95$), support for a travel ban, and support for loosening restrictions on abortion as in Study 1.

Worry. Results revealed a main effect of condition, $F(3, 183) = 4.26, p = 0.006, \eta^2 = .063$, such that participants reported more worry in the Nigeria condition ($M_{\text{Nigeria}} = 1.55$) than the Mexico and Vietnam conditions ($M_{\text{Vietnam}} = 1.02, M_{\text{Mexico}} = 1.16$); participants in the France condition ($M_{\text{France}} = 1.26$) fell in-between and did not significantly differ from those in the Nigeria, Mexico, and Vietnam conditions.

Travel ban. Contrary to hypothesis, results did not reveal a significant effect of condition, $F(3, 183) = 0.52, p = 0.670, \eta^2 = .008$.

Abortion. Contrary to hypothesis, results did not reveal a significant effect of condition, $F(3, 183) = 0.64, p = 0.59, \eta^2 = .009$.

Mediation Analyses. Although we found no direct effects of condition (African vs. elsewhere) on support a travel ban or for loosening abortion restrictions, it is possible that a condition increased

worries that, in turn, increased support for these policies. In other words, it is possible that worry had an indirect effect on policy preferences in the absence of a direct effect of condition on policy support. To examine this possibility, we again used the PROCESS macro to conduct the bootstrapping analysis and test (Model 4; Hayes, 2013). We drew 10,000 random samples with replacement to estimate the size of the indirect effect of condition on support for a travel ban. The bootstrap analysis for the mediation analysis on support for the travel ban yielded 95% confidence intervals that did not include 0 (95% CI = [0.28, 1.87], $p = .024$), consistent with mediation. In other words, although results did not reveal a main effect of condition on support for a travel ban, the mediation analysis suggest that, like Study 1 participants, Study 2 participants were more worried about a disease originating in Africa (vs. elsewhere) and these worries, in turn, were related to greater support for a travel ban. Thus, the Nigerian condition indirectly shaped travel ban opinions via worry.

The bootstrap analysis for the mediation analysis on support for loosening abortion restrictions yielded a 95% confidence interval that included 0 (95% CI = [-0.26, .15], $p = 0.68$), suggesting that worry did not have a mediating effect on support for abortion. It could be that Study 1 and Study 2 produced different results on this particular variable due to differences in sample characteristics; namely, relative to our Study 1 sample, our Study 2 sample is younger, more liberal, and had more women. It could be that younger liberal women have better-rehearsed, less-malleable attitudes toward abortion, and, hence, the lack of an effect on this variable.

Exploratory analyses. To examine the role of relevant individual differences, we re-ran the analyses above but with individual differences as moderators. Here, we report only statistically significant effects but see Supplemental Materials for a complete list of results.

Beliefs in biological differences between Blacks and Whites (Hoffman et al., 2016) were a significant predictor of worry, irrespective of condition, $F(1, 179) = 4.91$, $p = .028$, $\eta^2 = .024$. Those who endorsed more biological beliefs were more worried about the disease. In addition, dehumanization (a

difference score of dehumanization of Black vs. White targets; Kteily et al., 2015) moderated the effect of condition on support for a travel ban, $F(1, 175) = 4.03, p = .008, \eta^2 = .062$. Follow-up analyses revealed that dehumanization predicted support for a travel ban only in the Nigeria condition, $F(1, 47) = 11.02, p = .002$; participants who dehumanized Black people more were more likely to support a travel ban for Nigeria. In all other conditions, dehumanization did not predict support for a travel ban, all $F_s < 1, \eta^2 = .18$. In short, biological beliefs about race predicted worry across conditions and dehumanization of Black people predicted support for a travel ban in the Nigeria but not in the other conditions. None of our individual difference variables predicted support for loosening restrictions on abortion in the Nigeria condition or any other condition. Although spotty, these results are generally consistent with the notion that racist ideas—specifically, biological beliefs about race and the belief that Black people are less human—shape perceptions of and reactions to disease.

Experiment 3

Experiments 1 and 2 suggest that diseases originating in Africa elicit greater worry, consistent with racist narratives about Africans and Africa. Another possibility is that these worries arise not out of racist narratives but reasonable doubt about a country's ability to contain a pandemic: concerns about health and healthcare infrastructure, population density, travel, migration, and trade, and the like. In this study, then, we control for factors known to promote the spread of a disease to pandemic scale (Jamison et al., 2017). That is, we control for spread-related third variables that could be driving the results (see Dafoe et al. 2018).

Methods

Participants. Like in Experiment 1, we aimed to recruit 800 participants on MTurk. In October 2019, we successfully recruited 804 participants. The sample was 59% male and 67% white. Participants' ages ranged from 19 to 75 with an average of 38 ($SD = 11.4$). A post-hoc sensitivity analysis using

GPower with α set to .05 and power $(1 - \beta)$ set to .80 suggests that we can detect an effect as small as $f = .12$ equivalent to $\eta^2 = .01$. In other words, we can detect a small effect.

Procedure. Experiment 3 procedure was identical to Experiment 1 with two exceptions. First, we replaced the articles with new articles and a new set of countries; specifically, Germany, Ghana, Brazil, and China. Second, participants answered questions related to a country's ability to contain the spread of a pandemic. Specifically, they were asked (1) Overall, how densely populated is [COUNTRY]?, (2) Overall, how urban is [COUNTRY]?, (3) Overall, how much travel, trade, and migration are there to and from [COUNTRY]?, (4) How good is [COUNTRY's] public health infrastructure (capacity for identifying, tracing, managing, and treating cases)?, (5) How good is [COUNTRY's] healthcare infrastructure (including water quality and sanitation)?, (6) How good is [COUNTRY's] communications infrastructure (capacity for channeling information and resources)?, (7) How economically developed is [COUNTRY]?, (8) How corrupt (or not) is [COUNTRY's] government?, and (9) How effective (or not) is [COUNTRY's] government? Participants answered these on four-point scales with anchors *Not at all* to *Very or Poor* to *Excellent* depending on the question. Finally, participants answered demographic questions including race/ethnicity and political ideology.

Results

We conducted the same analyses on worry ($\alpha = .94$), support for a travel ban, and support for loosening restrictions on abortion as in Experiments 1 and 2.

Worry. Results revealed a main effect of condition, $F(3, 798) = 13.66, p < 0.0001, \eta^2 = .047$, such that participants reported more worry in the Ghana condition ($M_{\text{Ghana}} = 2.85$) than in the other three conditions ($M_{\text{Brazil}} = 2.50, M_{\text{China}} = 2.46, M_{\text{Germany}} = 2.37$).

Travel ban. Results revealed a main effect of condition, $F(3, 798) = 8.99, p < 0.0001, \eta^2 = .029$, such that participants were more willing to support a travel ban in the Ghana condition ($M_{\text{Ghana}} = 0.568$) than in the other three conditions ($M_{\text{Brazil}} = 0.395, M_{\text{China}} = 0.385, M_{\text{Germany}} = 0.378$).

Abortion. Contrary to hypothesis, results did not reveal a significant effect of condition, $F(3, 798) = 1.21, p = 0.307, \eta^2 = .004$.

Mediation. We again used the PROCESS macro to conduct the bootstrapping analysis and test (Model 4; Hayes, 2013). We drew 10,000 random samples with replacement to estimate the size of the indirect effect of condition (African vs. elsewhere) on support for loosening restrictions on abortion and a travel ban. The bootstrap analysis yielded 95% confidence intervals that did not include 0 for either abortion or ban support (Abortion: 95% CI = [0.08, 0.29]; Ban: 95% CI = [0.42, 0.87]). Taken together, these data suggest that an African (vs. European, Asian, North American) disease led participants to worry about the disease more and, in turn, worry increased support for loosening abortion restrictions and a travel ban.

Controlling for spread-related third variables. To test whether these condition effects hold above and beyond spread-related third variables, we re-ran the analyses above but controlling also for the nine spread-related factors. Results again revealed a main effect of condition on worry, $F(3, 785) = 9.49, p < 0.0001, \eta^2 = .033$, such that participants reported more worry in the Ghana condition than in the other three conditions. Likewise, results again revealed a main effect of condition on support for a travel ban, $F(3, 785) = 6.49, p = 0.0002, \eta^2 = 0.021$, such that participants reported more support for a travel ban in the Ghana condition than in the other three conditions. And, interestingly, results revealed a marginally significant effect of condition on support loosening abortion laws, $F(3, 785) = 2.48, p = 0.060, \eta^2 = 0.009$, with means in the predicted direction; more participants in the Ghana condition supported loosening restrictions on abortion. Notably, adding spread-related control variables, in this case, strengthened the effect of condition on support for loosening restrictions on abortion. Mediation analyses also held (Abortion: 95% CI = [0.09, 0.30]; Ban: 95% CI = [0.38, 0.91]).

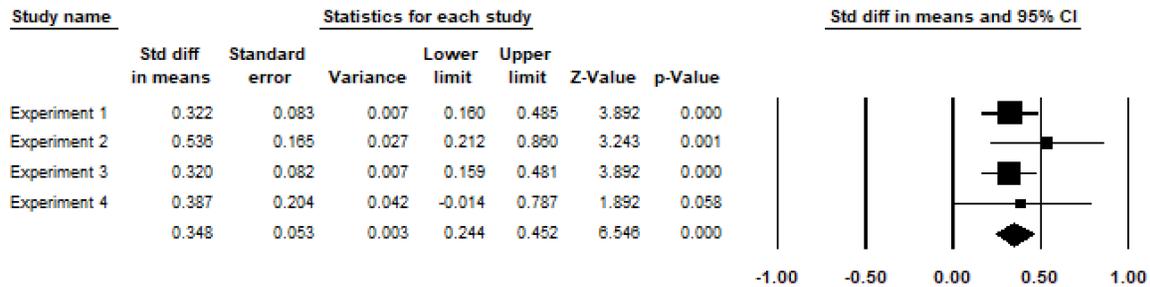
Meta-Analysis

Next, we performed meta-analyses on Experiments 1, 2, and 3, as well as a replication of Experiment 3 that is not reported here collected in November 2019; the latter had a smaller sample size ($N = 129$) due to constraints on data collection (we launched the study at the end of the semester to provide participant pool participants more study options). We performed separate meta-analyses for each of the three dependent variables; namely, worry about the disease, support for a travel ban, and for loosening restrictions on abortion. We conducted the meta-analysis using the Comprehensive Meta-Analysis software (Borenstein et al., 2009). Because the study designs were identical, we performed a fixed-effects meta-analysis. This allowed us to estimate an overall effect size of condition (specifically, Africa vs. other conditions) on reported worries, support for a travel ban and loosening restrictions on abortions. Results revealed a reliable effect of condition on all three dependent measures. That is, results revealed a robust effect of condition on worry, $b = 0.35$, $SE = 0.05$, $95\% CI = [0.24, 0.45]$, $Z(4) = 6.55$, $p < .001$, a robust effect of condition on policy support, $b = 0.34$, $SE = 0.05$, $95\% CI = [0.24, 0.44]$, $Z(4) = 6.38$, $p < .001$, and $b = 0.16$, $SE = 0.05$, $95\% CI = [0.05, 0.26]$, $Z(4) = 2.95$, $p = .003$, for support of a travel ban and loosening abortion restrictions, respectively. These results support our predictions that people are more worried about diseases originating from Africa, and these worries shape policy support; in this case, support for a travel ban and support for loosening restrictions on abortion. See Table 1, Panels A, B, and C, respectively.

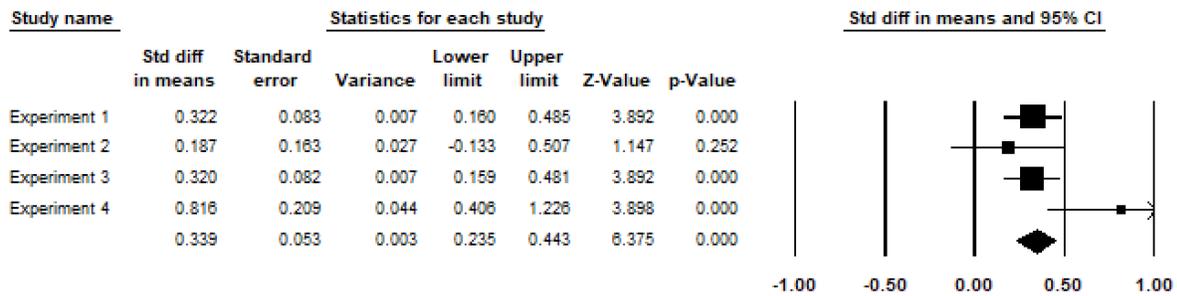
Table 1

Meta-analysis of condition effects on worry, support for a travel ban and loosening abortion restrictions.

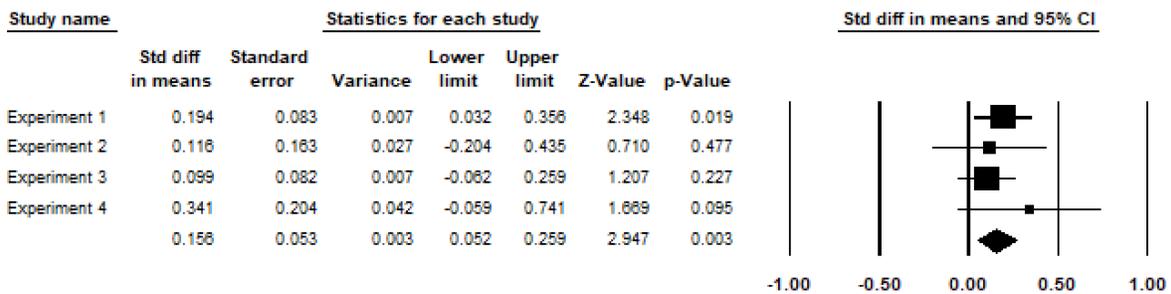
(A)



(B)



(C)



Notes: These are forest plot for the three meta-analyses. The lines and boxes reflect effect sizes and 95% confidence intervals (CIs), respectively, for each study; the diamond represents the overall estimate of the effect size. The mass of the effect-size boxes reflects the relative weights of the studies in the meta-analysis (study weight was determined by the standard error of the observed mean difference). Positive effect sizes reflect increased worry (Panel A), support for a travel ban (Panel B) and loosening abortion restrictions (Panel C).

Archival Study

Experiments 1-3 provide experimental evidence that a disease emerging from Africa elicits greater worry (Experiments 1-3), above and beyond realistic concerns about spread risk (Experiment 3). Indeed, they are associated with problematic conceptions of race (Experiment 2) and have potentially negative policy consequences (Experiments 1-3). Still, we recognize that these studies are limited in scope. They rely on people's self-reports, which are subject to self-presentational concerns and introspective inaccuracy. They also rely on fictionalized diseases, although participants were led to believe the diseases were real. Moreover, one might worry—as we did—that Experiments 1-3 show only that people can be biased toward a disease originating in Africa due to the small amount of information received, not that they are biased toward diseases originating in or associated with Africa more generally.

Here, then, we take a different approach. We examine language around the Zika virus pandemic in 2015-2016. The Zika virus was first identified in Uganda in 1947. The first large outbreak of disease was reported in Micronesia in 2007. More recently, in 2015-2016, there was an outbreak in Brazil, which then spread to other South American countries and North America. Importantly, it never reached the African continent. In other words, news coverage of the Zika virus during that time could have reasonably referenced Africa, because the virus had been discovered in Uganda, an African country. But, African countries were not responsible for responding (and not expected to respond) to the pandemic since it was not involved in this particular outbreak. We then examine how this pandemic was described and, importantly, whether it was described differently if Africa or an African nation was mentioned. If our experimental data reflect something real about the world and people's narratives about Africa, then we reasoned that news articles about the Zika virus that mentioned Africa or an African country or countries would contain more death-related and worry-related language, and use a more negative tone.

Method

Research assistants searched for all articles about the Zika virus from nine newspaper outlets: *The Boston Herald*, *The Chicago Sun Times*, *The New York Daily*, *The New York Post*, *The New York Times*, *The Philadelphia Inquirer*, *San Francisco Examiner*, *The Wall Street Journal*, and *The Washington Post*. We chose outlets with large readerships, from geographically diverse regions, and with ideologically diverse leanings. All articles were saved as text files. In addition, research assistants checked all articles to confirm each was indeed about the Zika virus. In total, this yielded 1,475 unique articles about the Zika virus. Research assistants also searched the articles for the words Africa, African, and the names of all African countries. For each search term, they entered a 1 if the search term was present and 0 if the search term was absent. We then created two scores for each article: whether the article mentioned Africa, African, and/or an African country or countries (0 = No, 1 = Yes) and the sum of mentions (*Range* = 0 – 8). See descriptive statistics in Table 2.

The text of each article was analyzed using the LIWC text analysis software (Pennebaker et al., 2001). Given our predictions, we focused on these LIWC codes: emotional tone, death-related words, and risk-related words. As an exploratory analysis, we also looked at use of personal pronouns, reasoning that articles that mentioned Africa or an African country or countries might use fewer personal pronouns, reflecting a less personalized—a more dehumanized—account. Again, see Table 2 for descriptive statistics.

Table 2

Descriptive Statistics for the Archival Study

Variable	Mean	Std. Dev.	Min	Max
Africa mentioned (0 vs. 1)	.19	.39	0	1
Africa mentioned (sum)	.28	.73	0	8
Word count	726.01	543.58	30	9,076
Personal pronoun use	2.29	1.74	0	10.86
Risk words	1.09	.68	0	5.00
Death words	.25	.40	0	3.60
Emotional tone	20.71	15.28	1	88.65

Results & Discussion

We ran two regressions, one using the dichotomous variable (Africa* mentioned, yes or no) and one using the continuous sum variable (number of times Africa* was mentioned). We regressed death-related words, risk-related words, tone, and, as an exploratory analysis, personal pronouns onto mentions of Africa, controlling for word count. Regression results can be found in Table 3. We also ran these regressions with outlet as a fixed effect and a mixed model with outlet as a random effect. Results are consistent across analyses. In other words, analyses suggest the results are not driven by a particular outlet. Here, then, we present simple regressions, which are most familiar and easiest to interpret.

As can be seen, newspaper articles that mentioned Africa in their Zika coverage, as expected, were more negative in tone, used more death-related words, and fewer personal pronouns; they did not use more risk-related words, however. The latter was surprising given our experimental findings; recall that people reported greater worry about a disease originating in Africa vs. elsewhere. Still, these data are consistent with our claim that diseases associated with Africa are treated differently, as more worrisome and deadly, and associated with depersonalization and dehumanization.

Table 3

Test Statistics for the Archival Study Regression Analyses

Model (outcome and predictor)	<i>B</i>	<i>t</i>	<i>P</i>	η^2
<i>Tone</i>				
Africa mentioned (0 vs. 1)	-1.88	-1.80	.072	.002
Africa mentioned (sum of mentions)	-1.81	-3.26	.001	.007
<i>Death-related words</i>				
Africa mentioned (0 vs. 1)	.11	4.19	<.0001	.012
Africa mentioned (sum of mentions)	.06	4.06	<.0001	.011
<i>Risk-related words</i>				
Africa mentioned (0 vs. 1)	.004	.09	.931	.0001
Africa mentioned (sum of mentions)	.03	1.27	.205	.0011
<i>Personal pronouns</i>				
Africa mentioned (0 vs. 1)	-.32	-2.74	.006	.005
Africa mentioned (sum of mentions)	-.18	-2.88	.004	.005

Relevance to COVID-19

The above experiments and archival study were conducted prior to the COVID-19 pandemic. But clearly, these findings have implications for COVID-19. The findings suggest that responses to the pandemic—how worried people feel and what policies they support—might be partly determined by geography and, specifically, racist narratives tied to geography. To examine this possibility, we conducted another experiment. In October 2020, we recruited a nationally representative sample of people residing in the US and randomly assigned participants to read about COVID-19 rates in some European or African country. Then, we asked them how worried they are about COVID-19, whether they would support a travel ban to curb the spread of COVID-19, and the extent of travel restrictions they would support. We predicted that participants would be especially concerned about COVID-19 when hearing of its impacts in an African (vs. European) country and, as such, more supportive of a travel ban against Africans than Europeans and more supportive of travel restrictions for Africans than Europeans. We pre-registered the study at <https://aspredicted.org/blind.php?x=sm5m92>

Method

Participants. In October 2020, we recruited 2,410 participants from a non-probability but nationally representative internet panel overseen by Bovitz Inc. (<http://bovitzinc.com/index.php>). The sample was 48% male and 72% white. Participants' ages ranged from 1 (i.e., Under 18) to 6 (i.e., 65 and older) with an average of 4 (i.e., 35-50). The sample overall largely matched U.S census benchmarks on key demographics (see the Supplemental Material for details).

Procedure. Participants were randomly assigned to one of two experiments, one, as mentioned, examining COVID-19 responses in the context of country (a European country vs. an African country, N = 1,200), the other examining COVID-19 responses in the context of the U.S. (a state with a lower vs. higher percentage of Black citizens, N = 1,210). Here, we focus on the former, given it directly follows on the other studies in this paper, but we include the latter in Supplemental Materials (and we will briefly

touch on the results in the conclusion). In the “country” experiment, participants were randomly assigned to read information about low or high COVID-19 rates in a European or African country. Specifically, participants read, “We are first going to describe a hypothetical democratic [European / African] country. This includes information about its infrastructure, demographics, and COVID-19 situation.” They were then given information about the country including, critically, information about COVID-19 positivity rates and death rates per 100,000. In the low COVID-19 rate condition, participants saw a table that suggested a 5% COVID-19 positivity rate and 60 deaths per 100,000; in the high COVID-19 rate condition, they saw a table that suggested a 15% COVID-19 positivity rate and 170 deaths per 100,000. Note that 5% was the positivity rate in the U.S. at the time of the study and 15% falls at the very high end of the distribution for COVID-19 positivity rates (information to which respondents were exposed). The study then was a 2 (European or African) X 2 (low or high COVID-19 rate) design.

Next, participants answered manipulation checks before answering our key dependent variables; namely, how worried they are about COVID-19 and how supportive they would be of a travel ban in addition to our spread-related variables.³ Specifically, like Experiments 1-3, participants answered how worried they would be about contracting COVID-19 if a coworker, neighbor, or friend traveled to this country. They answered these questions on a 4-point scale with anchors ranging from *Not at all worried* to *Very worried*. They also answered two questions about travel bans: Do you think the U.S. should place a travel ban on this country? And, if the U.S. placed travel restrictions on this country, how do you think it should work? They answered the former on a 4-point scale with anchors ranging from *Definitely no travel ban* to *Definitely a travel ban*. They answered the latter on a 5-point scale with the following options: *No travel ban, those from other country have to self-quarantine for 1 week, for 2*

³ As per our pre-registration report, we did not exclude participants who failed manipulation checks. Instead, we used our manipulation to ascertain that our participants were paying attention. Across conditions, 80%+ of our participants answered the checks correctly, suggesting that participants were attentive.

weeks, for 4 weeks, Do not allow entry to those from the other country for the foreseeable future. Lastly, participants completed individual differences items; specifically, they completed 5 items from the biological beliefs scale used in Experiment 2 (Hoffman et al., 2016; i.e., *“Black people’s nerve-endings are less sensitive than White people’s nerve-endings.” “Blacks have a more sensitive sense of smell than Whites; they can differentiate odors and detect faint smells better than Whites.” “Black couples are significantly more fertile than White couples.” “Whites are less likely to have a stroke than Blacks. Whites have more efficient respiratory systems than Blacks”*), the dehumanization scale used in Experiment 2 (Kteily et al., 2015), and 4 items from the Symbolic Racism scale (Henry & Sears, 2002; i.e., *“Irish, Italians, Jewish and many other minorities overcame prejudice and worked their way up. Blacks should do the same without any special favors.” “It’s really a matter of some people not trying hard enough. If blacks would only try harder, they could be just as well off as whites.” “Generations of slavery and discrimination have created conditions that make it difficult for blacks to work their way out of the lower class.” “Over the past few years, blacks have gotten less than they deserve.”*). They answered the latter on 5-point scales with anchors ranging from *Strongly Disagree* to *Strongly Agree*. Participants also answered basic demographic questions.

Results & Discussion

Here, we take a similar analytic approach as in Experiments 2 and 3. We regressed worry ($\alpha = .91$) and support for a travel ban on condition (Africa vs. Europe), COVID-19 rate (low vs. high), and their interaction, controlling for ideology, participant race. We re-run these analyses also controlling for spread-related third variables.

Worry. Results revealed a main effect of COVID-19 rate, $F(1, 1192) = 22.54, p < 0.0001, \eta^2 = .02$, such that participants reported more worry in the high COVID-19 rate condition ($M_{\text{high}} = 3.00$) than the low COVID-19 rate ($M_{\text{low}} = 2.78$). Results also revealed a main effect of country, $F(1, 1192) = 22.43, p < 0.0001, \eta^2 = .02$, such that participants reported more worry in the Africa condition ($M_{\text{Africa}} = 3.00$) than

the Europe condition ($M_{\text{Europe}} = 2.78$). The interaction was not significant, $F(1, 1192) = 3.04, p = .081, \eta^2 = .002$. These results are striking in that they show that participants were as worried about COVID-19 in Africa as they were about high COVID-19 rates; they seemed to treat Africa as a high-rate country even when it was not, consistent with our claim that people see Africa as a diseased place. This finding is notable given that COVID-19 has not impacted the African continent the way it has impacted other continents, in part because of African nations' strong COVID-19 response (see, for example, Pilling, 2020; Soy, 2020).

Travel ban. Results for support of a travel ban largely mirrored results for worry. Results revealed a main effect of COVID-19 rate, $F(1, 1192) = 30.17, p < 0.0001, \eta^2 = .01$, such that participants reported greater support for a travel ban in the high COVID-19 rate condition ($M_{\text{high}} = 2.94$) than the low COVID-19 rate ($M_{\text{low}} = 2.66$). Results also revealed a main effect of country, $F(1, 1192) = 18.98, p < 0.0001, \eta^2 = .01$, such that participants reported greater support for a travel ban in the Africa condition ($M_{\text{Africa}} = 2.91$) than the Europe condition ($M_{\text{Europe}} = 2.69$). The interaction was not significant, $F(1, 1192) = 1.88, p = .171, \eta^2 = .0004$. Again, these results are striking in that they show participants' willingness to impose a travel ban on African countries as if African countries were high-risk, independent of the COVID-19 rate. Analyses for the travel restriction question revealed a similar pattern. Results for this variable are in Supplemental Materials.

Controlling for spread-related third variables. To test whether these condition effects hold above and beyond spread-related third variables, we re-ran the analyses above but controlling for the spread-related factors (as in experiment 3 above). Results again revealed main effects of COVID-19 rates and condition on worry, $F(1, 1183) = 9.32, p = .002, \eta^2 = .006, F(1, 1183) = 11.19, p < 0.001, \eta^2 = .008$, such that participants reported more worry in high-rate condition and in the Africa condition. Likewise, results again revealed main effects of COVID-19 rates and condition on support for a travel ban, $F(1,$

1183) = 15.45, $p < 0.001$, $\eta^2 = .01$ and $F(1, 1183) = 8.24$, $p = .004$, $\eta^2 = .006$, such that participants reported more support for a travel ban in the high-rate condition and in the Africa condition.

Mediation Analyses. We again used the PROCESS macro to conduct the bootstrapping analysis and test (Model 4; Hayes, 2013). We drew 10,000 random samples with replacement to estimate the size of the indirect effect of condition on support for a travel ban. The bootstrap analysis for the mediation analysis on support for the travel ban yielded 95% confidence intervals that did not include 0 (95% CI = [0.08, .19], $p < .001$), consistent with mediation. In other words, the mediation analysis suggests that participants were more worried about COVID-19 in Africa (vs. Europe) and these worries, in turn, were related to greater support for a travel ban.

Exploratory analyses. To examine the role of individual differences, we re-ran the analyses above but with individual differences as moderators. Here, we report only statistically significant effects but see Supplemental Materials for a complete list of results.

Beliefs in biological differences between Blacks and Whites (Hoffman et al., 2016) were again a significant predictor of worry, irrespective of condition, $F(1, 1188) = 3.89$, $p = .049$, $\eta^2 = .007$, such that participants who endorsed more biological beliefs reported more worry. This effect was qualified by COVID-19 rate condition and country condition, $F(1, 1188) = 3.89$, $p = .051$, $\eta^2 = .003$, and $F(1, 1188) = 3.76$, $p = .053$, $\eta^2 = .003$, respectively. Follow-up regressions by rate condition revealed that biological beliefs were predictive in the low-rate condition, $F(1, 600) = 7.97$, $p = .005$, but not in the high-rate condition, $F(1, 590) = .01$, $p = .939$. Notably, follow-up regressions by country condition revealed that biological beliefs were predictive in the Africa condition, $F(1, 592) = 7.20$, $p = .008$, but not the Europe condition, $F(1, 598) = .03$, $p = .854$. This is consistent, then, with our prediction that dated notions of race as biological are related to modern day beliefs about disease.

Dehumanization was also a predictor; specifically, results revealed a significant three-way interaction between country, COVID-19 rate, and dehumanization, operationalized as a difference score

between participants' humanization ratings of "Whites" and "Blacks," $F(1, 1167) = 4.26, p = .039, \eta^2 = .003$. Follow-up regression by condition revealed that dehumanization was, unexpectedly, only a significant predictor in the high-rate and Europe condition, $F(1, 287) = 3.82, p = .052$, such that more dehumanization was associated with greater worry. Moreover, humanization of Black people (i.e., participants' humanization ratings of "Blacks," irrespective of their ratings of "Whites") also predicted worry. More humanization of Black people was associated with less worry, $F(1, 1174) = 6.61, p = .010, \eta^2 = .005$. Interestingly, symbolic racism was not a significant predictor of worry (see Supplemental Materials).

With regards to support for a travel ban, biological beliefs also predicted this variable. Specifically, greater endorsement of biological beliefs was associated with greater support for a travel ban, $F(1, 1188) = 4.12, p = .043, \eta^2 = .003$. Dehumanization also predicted support for a travel ban; specifically, results revealed a three-way interaction between country, COVID-19 rate, and dehumanization, $F(1, 1167) = 6.60, p = .010, \eta^2 = .055$. Follow-up analyses, regressing support for a travel ban onto dehumanization within each condition, however, did not reveal any significant relationships between dehumanization and support for a travel ban. Humanization ratings of "Blacks" (irrespective of humanization ratings of "Whites") also predicted support for a travel ban, $F(1, 1174) = 5.75, p = .017, \eta^2 = .005$, such that more humanization of Black people was associated with less support for a travel ban; or said differently, more dehumanization was associated with greater support for a travel ban. Again, symbolic racism did not predict. Taken together, then, the individual differences measures paint a somewhat complicated picture although, consistent with our premise, biological beliefs about race were associated with greater worry about COVID-19 in the African vs. European conditions, and also support for a travel ban. We note, however, that these were statistically small effects.

General Discussion

In the present work, we find that people report greater worry for a pandemic originating in Africa (vs. elsewhere). In turn, they report greater support for a travel ban and loosening abortion restrictions (for a pandemic that can affect pregnant mothers and their fetuses). These results hold when controlling for third variables including perceptions of a country's healthcare infrastructure, government effectiveness, population density, and travel, trade, and migration. In addition, in an archival study of the 2015-2016 Zika pandemic, we find that newspaper articles about the Zika virus were more negative—they included more death-related words, used a more negative tone, and fewer personal pronouns—when they mentioned Africa or an African country. These findings are consistent with narratives about Africa as a dark and diseased continent—racist narratives used to justify the colonization of African land and people. They are also consistent with qualitative and descriptive research, documenting the ways in which various pandemics have been racialized and weaponized for political and ideological gains (Murdocca, 2003).

Moreover, we find that these findings generalize to the context of COVID-19. Among a representative sample of people in the United States, we find that respondents were more worried about COVID-19 and more supportive of a travel ban after reading about COVID-19's impact on an African (vs. European) country. These findings are important because they extend our experimental findings to a real-world context. They suggest that geography—and racist narratives about geography—shape the public's response to disease, even when people have a relatively large amount of information about a disease and are experiencing a relatively high level of worry about a disease. From an applied perspective, these findings have clear implications for public discourse, as we respond to a global pandemic and think ahead to the next one. Worries about pandemics are legitimate—pandemics can be devastating—but policies should not be guided by racist narratives.

Our results also raise several questions for future research. First, our results regarding moderators paint a mixed picture and thus it remains unclear the extent to which racist narratives and

their impact are confined to a subset of the population or ingrained in the culture more generally.

Second, our results are focused on the international context (i.e., Africa vs. elsewhere). It is unclear how the present results might translate to the domestic context. In another experiment—briefly mentioned above and presented in supplementary materials—we do not find that individuals express greater worry about a pandemic and support for travel restrictions for U.S. states with larger Black populations. Our manipulation in that study was subtle, however, and ultimately, the states in question were majority White. It could be that majority Black neighborhoods, cities, and/or counties might elicit greater worry and support for travel restrictions. Third, our study is limited in its inability to identify the origins of the racist narratives; for example, it is not clear whether our archival evidence suggests that media play a role itself or simply are echoing norms and narratives that are circulating in the culture. Future work answering those questions will be vital. For now, the present work suggests that confronting our historical legacy and how it continues to shape, not only minds but, policies is necessary and urgent as we confront new pandemics.

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