

Original Scholarship

Information From Same-Race/Ethnicity Experts Online Does Not Increase Vaccine Interest or Intention to Vaccinate

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Policy Points:

- Mass vaccination is essential for bringing the COVID-19 pandemic to a close, yet substantial disparities remain between whites and racial and ethnic minorities within the United States.
- Online messaging campaigns featuring expert endorsements are a low-cost way to increase vaccine awareness among minoritized populations, yet the efficacy of same-race/ethnicity expert messaging in increasing uptake remains unknown.
- Our preregistered analysis of an online vaccine endorsement campaign, which randomly varied the racial/ethnic identity of the expert, revealed no evidence that information from same race/ethnicity experts affected vaccine interest or the intention to vaccinate.
- Our results do not rule out the possibility that other low-cost endorsement campaigns may be more effective in increasing vaccine uptake, but do suggest that public health campaigns might profitably focus on issues of access and convenience when targeting minoritized populations in the United States.

Context: The COVID-19 pandemic in the United States has been unequally experienced across racial and ethnic groups. Mass vaccination is the most effective way to bring the pandemic to an end and to manage its public health consequences. But the racialization of public health delivery in the United States has

produced a sizable racial/ethnic gap in vaccination rates. Closing this gap in vaccine uptake is therefore essential to ending the pandemic.

Methods: We conducted a preregistered, well-powered ($N = 2,117$) between-subjects survey experiment, fielded March 24 to April 5, 2021, in which participants from YouGov's online panel—including oversamples of Black ($n = 471$), Hispanic/Latino/a ($n = 430$), and Asian American ($n = 319$) participants—were randomly assigned to see COVID-19 vaccine information endorsed by same- or different-race/ethnicity experts or to a control condition. We then measured respondents' vaccination intentions, intention to encourage others to get vaccinated, and interest in learning more information and sharing information with others.

Findings: Same-race/ethnicity expert endorsements had no measurable effect on nonwhite or white respondents' willingness to get the COVID-19 vaccine, to encourage others to get the vaccine, or to learn more or share information with others.

Conclusions: Our study provides empirical evidence suggesting online endorsements from same-race/ethnicity experts do not increase vaccine interest, advocacy, or uptake, though same-race/ethnicity endorsements may be effective in other venues or mediums.

Keywords: coronavirus, COVID-19, vaccination, race, ethnicity, vaccine hesitancy, expert messaging.

MASS VACCINATION IS A VITAL STEP TOWARD ENDING THE COVID-19 pandemic. However, some communities have been slower to vaccinate than others. As of October 2021, for instance, the percentage of Black and Hispanic/Latino/a people who were fully vaccinated was lower than the percentage of whites across most states.¹ Reducing differences in uptake rates between these groups will be important to help mitigate the disproportionate effects of the pandemic on racial and ethnic minority groups.

One approach to addressing vaccine hesitancy in minority communities is to highlight the voices of in-group experts. For instance, the Kaiser Family Foundation and the Black Coalition Against COVID recently released an online video series for Black audiences called “The Conversation: Between Us, About Us,” featuring Black doctors, nurses, and researchers (<http://www.betweenusaboutus.org/>).

To test the effectiveness of a low-cost communication strategy that focuses on same-race/ethnicity expert messaging, we conducted a

preregistered online survey experiment in which we randomized exposure to COVID-19 vaccine information from same-race/ethnicity experts. Despite testing this message among large oversamples of Black, Hispanic/Latino/a, and Asian American participants, we found no measurable effect of same-race/ethnicity messaging on interest in receiving the vaccine or encouraging others to receive it on nonwhite respondents (as well as white respondents). Of course, such a result does not preclude the possibility that other same-race/ethnicity endorsements (e.g., in person, or endorsements from clinicians rather than experts) might be more effective or that the effect of endorsements is cumulative over time. However, our findings are consistent with the argument that problems of access rather than intent are partially responsible for lower uptake rates among racial and ethnic minority groups. A more comprehensive vaccine uptake campaign that combines same-race/ethnicity expert messaging with other forms of engagement and increased access may be more effective in reaching minority communities.

Theoretical Expectations

Lower vaccination rates among particular ethnic and racial groups are a product of several factors.² One key factor is access. Differences in vaccination rates across racial groups reflect structural barriers to vaccine access (e.g., local availability and supply, transportation to vaccine sites, Internet access for scheduling appointments, work flexibility, and language accessibility) as well as differences in vaccine hesitancy across racial/ethnic groups. We focus on the latter in this paper.

Vaccine hesitancy is a significant concern for many Americans, including members of racial and ethnic minority groups. For BIPOC (Black, Indigenous, and people of color) communities, hesitancy is rooted in historical and contemporary experiences, including systemic racism, marginalization, neglect, and abusive research practices.³ For instance, implicit bias among health care professionals is associated with poorer care of and communication with people of color in the United States.⁴

This mistrust extends to the COVID-19 pandemic. Deeply rooted distrust among Black Americans in the medical profession has resulted

in lower participation in COVID-19 vaccine trials.^{5,6} Early in the pandemic, Black and Hispanic respondents were also significantly less likely to report intending to be vaccinated than were white respondents, as were respondents who were women, those who were younger, and those who were more politically conservative.⁷

To reach herd immunity, public health officials must find messages and interventions that can move hesitance toward acceptance. Public health departments utilize multiple types of interventions to increase vaccination, including default appointments, text messages prior to primary care visits, and information campaigns.⁸

However, effective public health messages require credible messengers. Elite messaging plays a vital role in both fostering vaccine hesitancy and overcoming it. Shared social identities like partisanship and race/ethnicity are of particular importance, as they provide a way for individuals to understand and interact with health messaging, especially given that trust in one's in-group tends to be higher than trust in out-groups.⁹ For instance, having health care providers who match patients' race/ethnicity and gender drives down mortality in hospitals¹⁰ and can increase patients' seeking of preventive care.¹¹ In this context, same-race/ethnicity and same-gender doctors can increase desire for vaccination through role modeling,¹² through better communication,¹¹ or through increasing trust in the medical system. Endorsements by public figures of the same political identity have also been found to increase uptake.¹³

Based on these considerations, we hypothesized that providing respondents with vaccine information from an expert source who shares their racial or ethnic background would decrease vaccine hesitancy. We tested these hypotheses in an online survey experiment conducted among a representative sample of Americans in spring 2021 during a period of mass vaccination in the United States.

We specifically tested two preregistered hypotheses:

H1: Vignettes increase vaccine intention, information seeking, and intention to encourage others to get vaccinated. Exposure to a vignette encouraging vaccination will increase intent to vaccinate (H1a), interest in learning more about vaccines (H1b), and interest in sharing information about vaccines (H1c).

H2: Vignettes from experts who share the same racial and ethnic background as the respondents increase vaccine intention, information seeking, and intention to encourage others to get vaccinated among nonwhite respondents. Exposure to a vignette featuring same-race/ethnicity experts will increase intent to vaccinate (H2a), interest in learning more about vaccines (H2b), interest in encouraging others to get vaccinated (H2c), and interest in sharing information about vaccines (H2d) among nonwhite respondents both versus a control and versus different-race/ethnicity experts.

As part of this analysis, we also tested the preregistered research question of whether exposure to same-race/ethnicity experts versus different-race/ethnicity experts affects intent to vaccinate, interest in learning more about vaccines, and interest in sharing information about vaccines and encouraging others to get vaccinated among white respondents.

Methods

Our research design was approved by Cornell University (IRB Protocol 2003009479), Dartmouth College (IRB Protocol 00032274), Syracuse University (IRB Protocol 20–099), and UC Irvine (granted self-exemption). Our analysis plan was preregistered with the Open Science Foundation (https://osf.io/bszmg/?view_only=3fca23cf4a354d018ffe84d32a195141). We report only one deviation from our preanalysis plan: as specified in this paper, our randomization procedure would not allow us to test our preregistered hypothesis H1d, that exposure to any vignette would increase respondents' willingness to encourage others to get vaccinated. Participants were recruited through YouGov, a polling firm that specializes in public opinion research in the United States. The survey was fielded from March 24 to April 5, 2021. Respondents were US adults drawn from YouGov's online panel of respondents and matched to approximate a national probability sample by age, gender, race/ethnicity, and region using YouGov's sample-matching methodology.

This study is a continuation of an ongoing panel survey. YouGov re-contacted 1,650 respondents from that panel study and recruited a fresh cross-section of 1,350 new respondents. New respondents were selected in order to oversample respondents from three racial or ethnic groups:

Black, Hispanic/Latino/a, and Asian American. Following our preregistered research design, respondents who did not identify as belonging to any of these groups (or as white) were excluded from the analysis, as were respondents who reported that they had already received the COVID-19 vaccine. There were no other conditions for exclusion from the study. The final sample consisted of 2,117 respondents: 897 white, 471 Black, 430 Hispanic/Latino/a, and 319 Asian American.

We conducted a between-subjects experiment in which survey respondents were assigned to one of four experimental conditions or a control condition by YouGov:

- A message that encourages vaccination featuring two white medical or public health professionals
- A message that encourages vaccination featuring two Latino/a medical or public health professionals
- A message that encourages vaccination featuring two Asian American medical or public health professionals
- A message that encourages vaccination featuring two Black medical or public health professionals
- No message about vaccination (control condition)

Within each treatment condition, respondents saw a standardized message encouraging vaccination that was customized by the racial or ethnic background of the relevant set of experts depending on condition. Each one featured the images, names, and titles of two experts (one female and one male) immediately under the headline. The article headline and text were varied to correspond to the experts featured, who were described as “Black experts,” “Latino/a experts,” or “Asian American experts” if those experts were shown, and as “Experts” otherwise. All images depicted real medical and public health professionals. (See Online Appendix A for exact text and images from the survey and experimental stimuli.)

For all respondents, the probability of receiving the control condition was one in three and the probability of receiving any treatment was one in two. Among those assigned a treatment condition, the randomization procedure was as follows:

- White respondents were assigned with equal probability to see a message featuring white experts or a message featuring a randomly selected pair of nonwhite experts.
- Black, Asian American, and Hispanic/Latino/a respondents were assigned with equal probability to see a message featuring white experts or a message featuring same-race/ethnicity experts.

After the randomization, respondents were asked about their intention to get a vaccine themselves (*Vaccine Intent*) as well as their desire to encourage a friend or loved one to get a vaccine (*Encourage Others*). (See Online Appendix B for information about the timing of the treatment relative to pretreatment and outcome measures.) They were then also provided with an opportunity to learn more about vaccines by checking their eligibility on the Centers for Disease Control and Prevention website (*Learn More*) as well as an opportunity to download information about vaccines that could be shared (*Share with Others*). Because the information that we provided for sharing was based on the experimental vignettes that we had presented to them, those respondents who were assigned to the control condition were not asked the last of these items, even though we preregistered the hypothesis that exposure to any vignette would increase respondents' willingness to encourage others to get vaccinated.

Results

We computed treatment effects via ordinary least squares with robust standard errors. Our target estimand was the sample average treatment effect, due to concerns about extrapolation in estimating population average treatment effects. To improve efficiency, all models followed our preregistered specification, which controlled for party affiliation, age group, marital status, college education, census region, and a pretreatment measure of vaccination intention. Each of these covariates except for *Prior Intent* entered the regression as an indicator variable.

We begin with results for H1, which appear in Table 1. The variable *Any Vignette* is coded as 1 for all respondents who were assigned to any treatment condition and 0 for all respondents assigned to the control condition.

Table 1. Effects of Expert Information on COVID-19 Vaccination Intention, Advocacy, and Learning/Sharing

	(1) Vaccine Intent	(2) Encourage Others	(3) Learn More
Any vignette	0.026 (0.029)	0.081 (0.043)	0.038 (0.020)
R^2	0.820	0.449	0.133
N	2,117	2,117	2,117

Ordinary least squares (OLS) regression; robust standard errors in parentheses. Control variables are included but are omitted for presentation: these include indicators for Democrat, Republican, age 18-34, age 35-49, age 50-69, age 70+, married, college graduate, census region, and prior vaccination intention.

We found no evidence that exposure to any online vignette increased respondents' intent to vaccinate (H1a), interest in learning more about vaccines (H1b), or interest in sharing information about vaccines (H1c).

Our results for H2 appear in Table 2. We found no measurable evidence that online endorsements from same-race/ethnicity experts increase nonwhite respondents' willingness to get the vaccine (H2a), to encourage others to get the vaccine (H2b), to learn more (H2c), or to share information with others (H2d). These findings hold among both nonwhite and white respondents.

To verify the precision of these estimates and demonstrate that they provide affirmative evidence that same-race/ethnicity vignettes do not decrease vaccine hesitancy (contra H2), we conducted exploratory equivalence tests following a two one-sided testing approach.¹⁴ We reject the null hypothesis that the effect of the treatment on *Vaccine Intent* is larger than 0.12 for whites and 0.09 for nonwhites, which are equivalent to 0.08 and 0.06 standard deviations of *Vaccine Intent*, respectively. Among whites and nonwhites, we likewise reject the null hypothesis that the treatment effect is larger than 0.14 or 0.11 standard deviations for *Encourage Others*, 0.06 or 0.13 standard deviations for *Learn More*, and 0.08 or 0.17 standard deviations for *Share with Others*. In sum, we can rule out even small positive effects on vaccine interest, advocacy, or uptake.

Table 2. Effects of Expert Race/Ethnicity on COVID-19 Vaccination Intention, Advocacy, and Learning/Sharing

Independent Variables	(1) Vaccine Intent	(2) Encourage Others	(3) Learn More	(4) Share With Others
Same-race/ethnicity expert	-0.009 (0.045)	0.028 (0.069)	0.034 (0.033)	0.024 (0.033)
Nonwhite respondent	-0.081 (0.043)	-0.240* (0.070)	0.105* (0.034)	0.185* (0.035)
Same-race/ethnicity expert × nonwhite	0.071 (0.067)	0.098 (0.100)	0.017 (0.046)	-0.002 (0.047)
Different-race/ethnicity expert	-0.034 (0.041)	0.036 (0.064)	0.008 (0.033)	—
Different-race/ethnicity expert × nonwhite	0.100 (0.066)	0.074 (0.095)	0.047 (0.046)	—
Marginal Effects				
Nonwhites: same-race/ ethnicity – control	0.063 (0.050)	0.126 (0.072)	0.050 (0.033)	—
Nonwhites: same-race/ ethnicity – different-race	-0.003 (0.054)	0.016 (0.072)	-0.005 (0.033)	0.022 (0.033)
Whites: same-race/ ethnicity – different-race	0.025 (0.050)	-0.008 (0.070)	0.025 (0.033)	0.024 (0.033)
R^2	0.820	0.444	0.132	0.112
N	2,117	2,117	2,117	1,406

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.005$.

Control variables are included but are omitted for presentation: these include indicators for Democrat, Republican, age 18-34, age 35-49, age 50-69, age 70+, married, college graduate, census region, and prior vaccination intention. Robust standard errors appear in parentheses.

Conclusion

We tested the hypothesis that messages from same-race/ethnicity experts decrease vaccine hesitancy among racial and ethnic minority groups in the United States. In a preregistered online survey experiment using a sample of US adults with large oversamples of Black, Hispanic/Latino/a, and Asian American respondents, we found no evidence of any such effect. We also found no evidence that exposure to any vignette decreased vaccine hesitancy among our analysis sample.

It is important to acknowledge several limitations of our study. First, online messages may struggle to overcome vaccine hesitancy regardless of their source. Second, other types of messages should be tested. The messages we tested may not have been salient to participants or may have lacked relevance to the participants' specific concerns, and they may have been too brief to be effective. Third, such messages may be more effective when they come from experts who are known in a community and when the voice of the expert is presented directly rather than in a mediated form, as through an anonymous online platform such as in our experiment. Messages from same-race/ethnicity clinicians may also be more effective than messages from same-race/ethnicity heads of organizations. Lastly, messages may need to be repeated to reduce hesitancy.

Our findings offer important lessons for designing public health messages to encourage COVID-19 vaccination among Americans. Our data suggest that online public health messaging designed to encourage vaccination among unvaccinated ethnic and racial minorities in the United States need not focus on matching the identities of message endorsers and receivers. Moreover, low-cost online messaging does not appear to be effective in dislodging vaccine hesitancy in general in isolation. However, this finding can point the public health community toward more productive approaches. For instance, our results do not preclude the possibility that in-group endorsements are more successful in other settings, such as in-person referrals or medical settings. Further research should also seek to determine if other types of online appeals would be more effective, or if more comprehensive public health campaigns that couple same-race/ethnicity endorsements with other outreach and engagement efforts are more effective.

Our findings help give context to the well-established imperative to address fundamental inequities in access and distribution processes.¹⁵ Community clinics and local outreach require more decentralized planning and purposeful allocation of resources in order to be more successful at getting vulnerable minority communities protected. Low-cost approaches such as the messaging campaign that we evaluated in this paper are insufficient for increasing vaccine uptake. Public health advocates might devote resources to increasing access and making vaccinations more convenient for those not yet vaccinated, coupling these with more comprehensive (if more costly) outreach strategies to minority communities.

References

1. Latest data on COVID-19 vaccinations by race/ethnicity. Kaiser Family Foundation website. <https://www.kff.org/coronavirus-covid-19/issue-brief/latest-data-on-covid-19-vaccinations-by-race-ethnicity/>. Last updated January 12, 2022. Accessed October 21, 2021.
2. Hooper MW, Nápoles AM, Pérez-Stable EJ. No populations left behind: vaccine hesitancy and equitable diffusion of effective COVID-19 vaccines. *J Gen Intern Med*. 2021;36(7):2130-2133. <https://doi.org/10.1007/s11606-021-06698-5>.
3. Quinn SC, Andrasik MP. Addressing vaccine hesitancy in BIPOC communities—toward trustworthiness, partnership, and reciprocity. *N Engl J Med*. 2021;385(2):97. <https://doi.org/10.1056/NEJMp2103104>.
4. Hall WJ, Chapman MV, Lee KM, et al. Implicit racial/ethnic bias among health care professionals and its influence on health care outcomes: a systematic review. *Am J Public Health*. 2015;105(12):e60-e76. <https://doi.org/10.2105/AJPH.2015.302903>.
5. Reuben R, Aitken D, Freedman JL, Einstein G. Mistrust of the medical profession and higher disgust sensitivity predict parental vaccine hesitancy. *PLoS One*. 2020;15(9):e0237755. <https://doi.org/10.1371/journal.pone.0237755>.
6. Warren RC, Forrow L, Hodge DA Sr, Truog RD. Trustworthiness before trust—Covid-19 vaccine trials and the Black community. *N Engl J Med*. 2020;383(22):e121. <https://doi.org/10.1056/NEJMp2030033>.
7. Latkin CA, Dayton L, Yi G, Colon B, Kong X. Mask usage, social distancing, racial, and gender correlates of COVID-19 vaccine intentions among adults in the US. *PLoS One*. 2021;16(2):e0246970. <https://doi.org/10.1371/journal.pone.0246970>.
8. Logan J, Nederhoff D, Koch B, et al. ‘What have you HEARD about the HERD?’ Does education about local influenza vaccination coverage and herd immunity affect willingness to vaccinate? *Vaccine*. 2018;36(28):4118-4125. <https://doi.org/10.1016/j.vaccine.2018.05.037>.
9. Tajfel H, Turner JC. The social identity theory of intergroup behaviour. In: Worchel S, Austin WG, eds. *Psychology of Intergroup Relations*. Chicago, IL: Nelson-Hall; 1986:7-24.
10. Greenwood BN, Carnahan S, Huang L. Patient–physician gender concordance and increased mortality among female heart attack patients. *Proc Natl Acad Sci U S A*. 2018;115(34):8569-8574. <https://doi.org/10.1073/pnas.1800097115>.

11. Alsan M, Garrick O, Graziani G. Does diversity matter for health? Experimental evidence from Oakland. *Am Econ Rev*. 2019;109(12):4071-4111. <https://doi.org/10.1257/aer.20181446>.
12. Ehrenberg RG, Goldhaber DD, Brewer DJ. Do teachers' race, gender, and ethnicity matter? Evidence from the National Educational Longitudinal Study of 1988. *ILR Rev*. 1995;48(3):547-561. <https://doi.org/10.1177/2F001979399504800312>.
13. Bokemper SE, Huber GA, Gerber AS, James EK, Omer SB. Timing of COVID-19 vaccine approval and endorsement by public figures. *Vaccine*. 2021;39(5):825-829. <https://doi.org/10.1016/j.vaccine.2020.12.048>.
14. Tryon WW, Lewis C. An inferential confidence interval method of establishing statistical equivalence that corrects Tryon's (2001) reduction factor. *Psychol Methods*. 2008;13(3):272. <https://doi.org/10.1037/a0013158>.
15. Corbie-Smith G. Vaccine hesitancy is a scapegoat for structural racism. *JAMA Health Forum*. 2021;2(3):e210434. <https://doi.org/10.1001/jamahealthforum.2021.0434>.

Funding/Support: We would like to thank the Russell Sage Foundation (grant number 2005-24358) for funding and Cornell University, Dartmouth College, Syracuse University, and UC Irvine for support. All conclusions and any errors are our own.

Conflict of Interest Disclosures: All authors have completed the ICMJE Form for Disclosure of Potential Conflicts of Interest. TBP, SKG, SWG, and JM report grants from the National Science Foundation and the Russell Sage Foundation during the conduct of the study.

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Supplementary Material

Additional supporting information may be found in the online version of this article at [http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1468-0009](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1468-0009):

Online Appendix A: Survey Instrument

Online Appendix B: Timing of Treatment, Pretreatment, and Outcome Variables