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Leveraging impression management motives to increase the use of face masks

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ABSTRACT

Three pilot studies ($N_{total} = 832$) revealed that people held more positive attitudes toward targets wearing protective face masks. Therefore, we examined whether knowledge of this self-presentational benefit would increase people's intentions to wear face masks. Participants ($N = 997$) were randomly assigned to read a passage about the COVID-19 pandemic, the safety benefit of mask-wearing, the self-presentational benefit of mask-wearing, or a combination of the latter two. Although this manipulation failed, findings revealed that preexisting beliefs about masked targets being more likable were positively associated with mask-wearing intentions, particularly among participants less concerned with disease or more politically conservative.

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COVID-19; face masks; impression management; public health behaviors

Face masks can play an important role in preventing the spread of various diseases (see Li et al., 2021). Yet, their use has been inconsistent in numerous countries, as witnessed during the COVID-19 pandemic. Federal campaigns attempting to increase face mask usage by focusing on their safety benefit to the self and others were somewhat ineffective —— approximately half the adults living in the U.S. neglected to wear masks when in close contact with others during the height of the COVID-19 pandemic (Key, 2021). Accordingly, understanding the psychological predictors of face mask usage is of practical importance.

Focusing on personal safety benefits of mask-wearing might fail to increase the use of masks among individuals low in the motivation to avoid diseases (Makhanova et al., 2020). Indeed, people who are less concerned about contracting infections are more negligent about engaging in public health behaviors in general (Solak et al., 2022), and specifically with respect to wearing masks when necessary (Makhanova & Shepherd, 2020). Likewise, focusing on the social safety benefits of mask-wearing might fail to increase the use of masks among individuals less concerned about others, such as those with low empathy (Stocks et al., 2009) and agreeableness (Martin-Raugh et al., 2016) or high narcissism (Zhou & Zhang, 2010) and Machiavellianism (Bereczkei et al., 2010). Indeed, individuals with low prosocial motivations are less likely to engage in public health behaviors (Campos-Mercade et al., 2021), including mask-wearing (West et al., 2021).

Given these individual differences, an alternative strategy to increase the use of face masks may be to directly challenge the reasons that individuals refuse to wear them. One such reason may be the concern that face masks create a negative impression. For example, there is anecdotal evidence that numerous restaurants refused to serve masked customers at the beginning of the recent pandemic (Rodriguez, 2022). Empirical research has also linked the refusal to wear masks to concerns of creating a negative impression on others (Rieger, 2020). Indeed, theoretical perspectives on impression management suggest that the desire to make

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positive impressions is a strong driving force of human behaviors (Schlenker, 1982). Such concerns may be particularly strong among political conservatives, who were less willing to wear masks during the COVID-19 pandemic (Mallinas et al., 2021). For instance, Former President Donald Trump repeatedly refused to adhere to mask-wearing guidelines, purportedly due to concerns that "doing so would make it seem like he is preoccupied with health" (Associated Press, 2020).

The goal of the current research was two-fold. First, we examined in three pilots studies how participants evaluated targets wearing (versus not wearing) face masks, with particular interest in whether such effects were moderated by target race. Given the novel coronavirus was reported to have originated in China, mask-wearers appearing Asian may have activated thoughts of disease/contamination (see Baker, 2020). In contrast, given the role of threat in prejudice toward African Americans (March et al., 2021), mask-wearers appearing African American may have activated thoughts of violence (see Jan, 2020).

Second, because findings from Studies 1–3 suggesting people evaluated masked targets more positively contradicted pre-pandemic findings (see Miyazaki & Kawahara, 2016), we conducted the main study to test whether individuals would be more likely to wear masks if they believed others would perceive them more positively.

Study 1

Methods

Participants

Participants were undergraduate students ($N = 218$) recruited online from a U.S. university from April to June 2020. The sample was young ($M_{age} = 20.21$, $SD = 2.25$, range = 18–40). Most participants were female (77.52%; male 22.48%) and Caucasian (72.94%). Additional participants were Mixed Race (7.80%), Black/African American (6.88%), Other (6.42%), Asian (5.05%), and Pacific Islander/Native American (0.91%); 65.60% reported being non-Hispanic/Latinx. After eliminating responses that failed the attention check question ($n = 5$) or did not meet our a priori cutoff of 80% correct answers on the automatic association measure ($n = 15$, see supplemental materials), the final sample size was 198.

Materials

Automatically activated thoughts and attitudes. We measured the extent to which masked targets automatically activated thoughts of violence, contamination, and positive (versus negative) attitudes using two separate evaluative priming tasks (EPTs; Fazio et al., 1995). EPTs use primes to activate thoughts/attitudes and then assess the time it takes participants to categorize target words as evidence to the valence of the activated cognition. We programmed the EPTs used in the current study with Inquisit version 6.3.4. Primes were eight masked and eight unmasked photos with different Asian, Black, and Caucasian targets retrieved online through relevant keyword searches (see Figure 1 in supplemental materials). Each EPT contained two blocks of 48 test trials. Prior to these test trials, participants completed a practice orientation block of 32 trials in which the words appeared after a neutral stimulus (i.e., a row of asterisks). For each test trial, one of the photo primes was displayed on a computer screen for 300 ms and immediately followed by a target word in the same position on the screen.

For the violence versus contamination EPT, we formed two facilitation scores that captured the extent to which the masked and unmasked primes led to faster or slower reaction times (RTs) than neutral primes —— one for which higher scores indicated masks activated thoughts of violence, the other for thoughts of contamination. For the positivity EPT, we created a facilitation score such that

higher scores indicated more positive than negative attitudes toward the target. See supplemental materials for additional details.

Procedure

The study was granted approval from the local IRB prior to data collection. After passing an eligibility check for age requirement and consenting to participation, participants completed on their own computer the contamination-violence EPT, a demographic questionnaire, other self-report measures outside the scope of this study, and the positive-negative EPT, in this order. We programmed all measures using Inquisit Web and imposed no requirements on participants' computer as long as they were able to download and run Inquisit.

Results

We used the mixed modeling procedure in SPSS Version 24 to test the predictions that masked targets would activate thoughts of contamination for Asian targets and thoughts of violence for African American targets, leading both to be evaluated more negatively. We controlled for overall RTs to the relevant words after neutral primes, and for contamination associations when examining the effects on violence associations and vice versa. To facilitate interpretation of results, we transformed continuous variables into z-scores prior to analyses.

Results appear in Table 1. The race by mask interaction did not significantly predict thoughts of contamination, violence, or positive attitudes. After removing these nonsignificant interactions, neither thoughts of contamination, b = −.05, SE = .04, $t(855) = -1.29$, p = .197, nor thoughts of violence, b = .00, SE = .04, $t(885) = .10$, p = .920, directly predicted positive attitudes. Nevertheless, exploratory pairwise-comparison analyses revealed that masked targets activated stronger thoughts of contamination, weaker thoughts of violence, but not more or less positive attitudes. See supplemental materials for further description.

Discussion

Contrary to our hypotheses, mask-wearing did not interact with race to significantly predict any attitudes. Nevertheless, Study 1 had several methodological limitations. First, the masked primes featured different individuals from the unmasked primes. Study 2 therefore used standardized photos from the Chicago Face Database (CFD). Second, Study 1 assessed thoughts of contamination and violence with the same EPT, which may have unnecessarily reduced their shared variance. Study 2 therefore used separate EPTs to assess thoughts of contamination and violence. Third, Study 1 also used an EPT to assess positivity, which may have introduced common method variance. Study 2 thus used a different implicit measure to assess positivity attitudes. Study 2 also included explicit measures of all attitudes for each photo prime for comparison purposes.

Study 2

Methods

Participants

Participants were undergraduate students (N = 212) of the same university as Study 1 recruited online from October to December 2020. The sample was young (M_{age} = 19.47, SD = 1.25, range = 18–23). Most participants were female (69.34%; male 29.72%) and Caucasian (72.64%). Additional participants were Black/African American (12.26%), Asian (7.55%), Mixed (3.30%), Other (3.30%), and Pacific Islander/Native American (.95%); 76.89% reported being non-Hispanic/Latinx. Data cleaning procedures and exclusion criteria were identical to Study 1. After eliminating responses that did not meet our a priori cutoff of 80% correct answers on the automatic association measure (n = 31), the final sample size was 181.

Table 1. Study 1 Results.

	Violence			Contamination			Positivity		
	F	*df*	*p*	*F*	*df*	*p*	*F*	*df*	*p*
Model 1									
Race	13.58	2,836	<.001	3.86	2,843	0.022	1.79	2,980	0.168
Mask	14.96	1,836	<.001	5.8	1,843	0.016	0.04	1,980	0.843
Race × Mask	0.65	2,836	0.523	2.94	2,838	0.053	1.18	2,980	0.307
Model 2									
Race	13.59	2,838	<.001	3.83	2,845	0.022	1.79	2,982	0.168
Mask	14.94	1,839	<.001	5.75	1,845	0.017	0.04	1,982	0.843
Pairwise Comparison	*M*	*SE*		*M*	*SE*		*M*	*SE*	
Masked	$-.06_a$	0.05		$.03_a$	0.05		$.00_a$	.04	
Unmasked	$.06_b$	0.05		$-.04_b$	0.05		$.00_a$	.04	

Model 1 contains both main effects of mask and race, in addition to the interaction term. Model 2 contains only main effects. Different subscripts within a column denote means that are different at $p < .05$. We transformed dependent variables into z-scores prior to analyses.

Materials

Automatically activated attitudes. We assessed automatic positive attitudes with the affective misattribution procedure (AMP; Payne et al., 2005). We used 24 photo primes for masked and unmasked Asian, Black, and Caucasian targets, where 12 were taken from CFD, and 12 were created in Adobe Photoshop 2021 by superimposing a face mask on the original 12 photos. Two test blocks of 56 trials each followed the orientation block of 10 trials. At the beginning of a neutral prime trial, a gray rectangle appeared in the middle of the screen for 75 ms and disappeared. After 125 ms of an inactive black screen, a Tibetan character appeared for 100 ms and was then covered by a rectangle image of black and white static. A photo prime trial was identical to a neutral prime trial, with the only difference being a photo prime drawn at random replacing the rectangle. Participants judged the visual pleasantness of the Tibetan characters. We created a mean score such that a higher score represented a more positive attitude toward the target. See supplemental materials for more information on setup and calculations.

Automatically activated thoughts of contamination and violence. We measured automatic thoughts of contamination and violence with two separate EPTs (one for violence and one for contamination) modified from that used in Study 1. Photo primes remained unchanged from the AMP. Computational procedures remained unchanged from Study 1, where higher facilitation scores indicated a stronger association to thoughts of violence or contamination, respectively. See supplemental materials for additional details.

Self-report judgments of contamination, violence, and positivity. We used three seven-point Likert scale items to collect participants' explicit self-report ratings of contamination (1) versus health/cleanness (7), violence/danger (1) versus safety (7), and negativity (1) versus positivity (7) of the 24 photo primes. The photo primes appeared individually and randomized. We calculated separate averages for ratings of contamination, violence, and positivity for masked and unmasked targets, where higher scores indicated a stronger corresponding judgment.

Procedure

Upon passing the same eligibility check as Study 1 and consenting to participation, participants completed a demographics questionnaire, one orientation block and two test blocks of each EPT, explicit ratings of photo primes, one orientation and two test blocks of the AMP, and other self-report measures outside the scope of this study, in this order. We randomized the two EPTs. Participants completed all measures on their own computer. Device and software requirement remained unchanged from Study 1.

Table 2. Study 2 Results.

	Violence			Contamination			Positivity		
	F	*df*	*p*	*F*	*df*	*p*	*F*	*df*	*p*
Automatic									
Model 1									
Race	3.04	2,888	.048	1.73	2,888	0.179	3.67	21,055	0.026
Mask	3.91	1,887	.048	0.01	1,888	0.928	62.08	11,055	<.001
Race × Mask	1.25	2,887	.288	0.12	2,888	0.885	0.23	21,055	0.797
Model 2									
Race	3.04	2,890	.048	1.73	2,890	0.178	3.67	21,057	0.026
Mask	3.91	1,889	.048	0.01	1,890	0.929	62.17	11,057	<.001
Self-Report									
Race (Model 2)	11.86	21,047	<.001	1.05	21,063	0.349	17.75	21,057	<.001
Mask (Model 2)	9.81	11,155	0.002	148.22	11,207	<.001	457.61	11,057	<.001
Race × Mask (Model 1)	0.91	21,044	0.403	0.03	21,054	0.974	2.55	21,055	0.078
Pairwise Comparison	*M*	*SE*		*M*	*SE*		*M*	*SE*	
Automatic									
Masked	$-.03_a$	0.03		$.02_a$	0.03		$.11_a$	.04	
Unmasked	$.05_b$	0.03		$.01_a$	0.03		$-.12_b$	.04	
Self-Report									
Masked	$-.05_a$	0.03		$-.19_a$	0.03		$.41_a$	.05	
Unmasked	$.05_b$	0.03		$.19_b$	0.03		$-.41_b$	.05	

Model 1 contains both main effects of mask and race and the interaction term. Model 2 contains only main effects. Different subscripts within a column denote means different at $p < .05$. We transformed dependent variables into z-scores prior to analyses.

Results

We transformed continuous variables into z-scores prior to analyses, and tested each outcome in a separate model. We controlled for violence attitudes when examining contamination attitudes and vice versa, in addition to controlling for corresponding RTs to neutral primes. Results appear in Table 2. For automatic cognitions, mask and race did not interact to significantly predict any attitudes. After removing these nonsignificant interactions, neither contamination, b = −.04, *SE* = .03, *t*(981) = −1.39, *p* = .166, nor violence associations, b = −.02, *SE* = .02, *t*(979) = −.69, *p* = .491, significantly predicted positive attitudes. Additionally, masked targets activated more positive evaluations and fewer thoughts of violence than did unmasked targets, but not more or fewer thoughts of contamination.

For deliberative judgments, mask and race did not interact to significantly predict any outcomes. After removing those nonsignificant interactions, however, both contamination, b = −.31, *SE* = .03, *t*(1250) = −11.88, *p* < .001, and violence judgments, b = −.90, *SE* = .03, *t*(1249) = −34.76, *p* < .001, were significantly negatively associated with positive judgments. Additionally, masked targets were evaluated more positively and rated as less contaminated and less violent. See supplemental materials for more details. We used RMediation (Tofighi & MacKinnon, 2011) to directly test the indirect effects of mask on positive judgments through contamination, b = .12, *SE* = .01, $CI_{95\%}$[.09, .14], and violence judgments, b = .09, *SE* = .03, $CI_{95\%}$[.03, .15], revealing both to be significant. The significant negative associations between contamination and positive judgments, b = −.31, *SE* = .03, *t*(1252) = −11.87, *p* < .001, and between violence and positive judgments, b = −.91, *SE* = .03, *t*(1251) = −34.83, *p* < .001, remained.

Discussion

Once again, we failed to support our prediction that masked and unmasked targets would be evaluated differently based on race, leading us to halt further examinations of target race. Yet, Studies 1–2 offered some converging evidence that masked targets were evaluated more positively. In Studies 1 and 2, masked targets were less likely to activate thoughts of violence; in Study 2, masked targets activated more positive attitudes and were judged to be more positive, less contaminated, and less violent. We considered two explanations for why masked targets were evaluated more positively than unmasked targets, both of which were based on the finding that masked targets were viewed as less violent – (a) masked targets may be perceived as less violent and more positive because they were perceived as weak or (b) masked targets may be perceived as less violent and more positive because they were perceived as kind and altruistic. We test both possibilities in Study 3.

Study 3

Methods

Participants

Participants were undergraduate students (*N* = 402) recruited from the same university online participant pool as Studies 1 and 2. Data collection lasted from January to April 2021.The sample was very young (M_{age} = 19.63, *SD* = 1.37, range = 18–27). Most participants were female (79.10%; male 20.15%, non-binary .75%) and Caucasian (72.14%). Additional participants were Black/African American (11.69%), Asian (8.46%), Mixed (4.23%), Other (2.99%), and Pacific Islander/Native American (.49%); 77.86% reported being non-Hispanic/Latinx. Data cleaning procedure and exclusion criteria for the EPTs remained unchanged from Studies 1 and 2. After eliminating responses with a correction rate lower than 80% on the corresponding automatic attitude measure (*n* = 48), the final sample size was 354.

Materials

Automatically activated attitudes. We measured automatic positive attitudes using the same version of the AMP as Study 2.

Automatically activated thoughts. We measured automatically activated thoughts of altruism and weakness with two separate EPTs modified from those used in Study 2. We created altruism and weakness facilitation scores as we did violence and contamination facilitation scores in Study 2, with a higher score representing a stronger association to the corresponding thought. See supplemental materials for details.

Self-repot judgments of altruism, weakness, and positivity. We modified the Likert scale items used in Study 2 for contamination, violence, and positivity to measure deliberative judgments of altruism, weakness, and positivity for each photo prime.

Procedure

Upon passing the same eligibility check as the previous studies, and consenting to participation, participants completed a demographics questionnaire, the EPTs, and an AMP. As in Study 2, we randomized the order of altruism and weakness EPTs. Participants completed all measures on their own computer. Device and software requirement remained identical to Studies 1 and 2.

Results

As in Studies 1 and 2, we transformed all continuous variables into z-scores prior to analyses, and we tested each outcome in a separate model. We controlled for thoughts of altruism when examining thoughts of weakness and vice versa. We first tested whether masked targets activated positive attitudes, controlling for the orientation block RTs. Results appear in the first set of columns at the top of Table 3; masked targets once again activated more positive attitudes.

Next, we examined whether thoughts of altruism and/or weakness accounted for that association. Results appear in the second sets of columns at the top of Table 3; masked targets were more likely than unmasked targets to activate thoughts of altruism, but not thoughts of weakness. Nevertheless, controlling for mask and neutral stimuli, thoughts of altruism were not significantly associated with positivity, b = .06, $SE = .04$, $t(619) = 1.40$, $p = .162$. Indeed, a direct test for the indirect effects of mask on positive attitudes through thoughts of altruism using RMediation (Tofighi & MacKinnon, 2011) indicated the indirect effect was nonsignificant, b

Table 3. Study 3 Results.

Automatic	Altruism			Weakness			Positivity(Path c)			Positivity(Path c')		
	F	*df*	*p*	*F*	*df*	*p*	*F*	*df*	*p*	*F*	*df*	*p*
	17.08	1,664	<.001	0.11	1,342	0.744	35.02	1,390	<.001	26.13	1,341	<.001
	M	*SE*		*M*	*SE*		*M*	*SE*		*M*	*SE*	
Masked	$.09_a$	0.04		$.01_a$	0.04		$.16_a$	0.04		$.20_a$	0.05	
Unmasked	$-.14_b$	0.04		$-.01_a$	0.04		$-.16_b$	0.04		$-.09_b$	0.05	
	F	*df*	*p*	*F*	*df*	*p*	*F*	*df*	*p*	*F*	*df*	*p*
Self-Report	198.71	1,779	<.001	7.52	1,779	0.006	337.05	1,780	<.001	14.78	1,778	<.001
	M	*SE*		*M*	*SE*		*M*	*SE*		*M*	*SE*	
Masked	$.29_a$	0.03		$.07_a$	0.03		$.55_a$	0.04		$.07_a$	0.02	
Unmasked	$-.29_b$	0.03		$-.07_b$	0.03		$-.55_b$	0.04		$-.07_b$	0.02	

Different subscripts within a column denote means that are different at $p < .05$. Dependent variables have been transformed into z-scores prior to analyses.

= .01, SE = .01, $CI_{95\%}$[−.01, .04]. On the other hand, automatically activated thoughts of weakness showed a trending negative association with positive attitudes, b = −.08, SE = .04, $t(656) = -1.95$, $p = .051$. Nevertheless, a direct test for the indirect effects of mask on positive attitudes through thoughts of weakness showed a nonsignificant indirect effect, b = .00, SE = .01, $CI_{95\%}$[−.01, .01]. Hence, the association between mask and positive evaluations was not significantly mediated by either thoughts of altruism or weakness.

We tested the same associations using self-report scores. Results appear at the bottom of Table 3; masked targets were rated as significantly more positive and altruistic but weaker than unmasked targets. Controlling for mask condition, more altruistic targets were rated more positively, b = .58, SE = .03, $t(778) = 20.78$, $p < .001$, whereas weaker targets were rated less positively, b = −.34, SE = .02, $t(778) = -13.60$, $p < .001$. Despite the opposing direction of these two associations, masked targets were still rated more positively after controlling for both altruism and weakness. Direct tests of both mediational paths showed that both were significant (for altruism, b = .34, SE = .03, $CI_{95\%}$[.28, .40]; for weakness, b = −.05, SE = .02, $CI_{95\%}$[−.08, −.01]). Nevertheless, a direct test comparing the absolute value of these indirect effects using a common formula[1] revealed that the positive effect of mask-wearing through perceived altruism was significantly stronger than the negative effect of mask-wearing through perceived weakness on positivity, $z = 7.60$, $p < .001$.

Discussion

Study 3 explored whether weakness or altruism attitudes and thoughts explained participants' positive views of masked targets. Regarding automatic attitudes, masked targets were evaluated to be more positive and more altruistic, yet the degree to which they were evaluated as altruistic did not appear to explain why they were evaluated positively. Intriguingly, masked targets did not automatically activate thoughts of weakness, but the variance in the degree to which targets were evaluated as weak was negatively associated with them being evaluated positively. Regarding deliberative judgments, although masked targets were perceived somewhat more negatively because they were perceived as weaker, they were perceived more positively overall because being perceived as altruistic was still more important to overall evaluations.

Meta-analysis of studies 1 to 3

We conducted an internal meta-analysis of all three studies to clarify some inconsistency in our findings. First, we calculated a Cohen's d effect size with the sample size, means from the masked and unmasked groups, Pearson's correlation, and the standard deviation of the differences between repeated scores (SDiff) in each study, using the formula $d = (\bar{X}_{Masked} - \bar{X}_{Unmasked})/[\text{SDiff}/\sqrt{2(1-r)}]$. Then, we multiplied the effect sizes with a correction factor J, calculated from $J = 1–3/(4df\text{-}1)$, to convert effect sizes to Hedge's g. A positive g would indicate more positive evaluations of masked than unmasked targets. Next, we weighted the effect sizes by multiplying the inverse of their variances and computed a final effect size by diving the summed weighted effect sizes with the summed inverse of variances. We used a fixed-effect model because there were only three studies to meta-analyze.

Across all three studies, masked targets automatically activated more positive attitudes than unmasked targets, $g = .20$, SE = .03, $CI_{95\%}$ [.13, .27], $I^2 = 85.35\%$. Across Studies 2–3, masked targets were explicitly rated as more positive than unmasked targets, $g = 1.10$, SE = .07, $CI_{95\%}$ [.96, 1.25], $I^2 = 77.72\%$.

Study 4

The findings from Studies 1–3 addressed our first goal to examine evaluations of masked targets. Study 4 aimed to address our second goal to evaluate these findings' potential for helping enhance mask-wearing motivations in the future. These findings, combined with the possibility that people refused to wear masks in part because they feared masks might create a negative impression (Rieger, 2020), drove us to hypothesize that participants randomly assigned to learning about the self-presentational benefit of mask-wearing would report stronger mask-wearing intentions compared to control participants. Since such effects may be particularly impactful among those who were otherwise motivated against wearing face masks, we explored whether any such effects were particularly pronounced among participants less concerned with their susceptibility to diseases, higher in political conservatism, or lower in prosocial motivation (i.e., lower agreeableness and higher narcissism).

Materials and methods

Participants

We obtained IRB approval from the same university and collected informed consent from all individual participants included in the study. We recruited 1053 participants from Prolific.co in September 2021. Prolific is an online survey crowdsourcing platform that appears to provide higher quality data than Amazon's Mechanical TURK (Peer et al., 2017). We recruited participants from ten states with the highest daily confirmed cases of coronavirus in the U.S. at that point in time (The New York Times, 2021): Texas, Florida, Tennessee, California, North Carolina, Georgia, Ohio, Kentucky, Indiana, and Illinois. Eliminating responses from those who failed one or more attention checks ($n = 55$) yielded a final sample of 998 participants. The overall sample was young ($M_{age} = 32.61$, $SD = 13.80$, range = 18–83). Most participants self-identified as women (66.63%; men 30.09%, non-binary 2.51%, transgender .60%) and Caucasian (74.62%). Additional participants were Asian (8.63%), Black/African American (6.42%), Mixed (5.02%), Other (4.01%), and Pacific Islander/Native American (1.30%); 86.37% reported being non-Hispanic/Latinx (see Table 1 in supplemental materials for additional demographics and descriptives).

Procedure

Participants read a single manipulation and responded to items assessing their beliefs about face masks, face mask usage and intentions, perceived disease vulnerability, political orientation, agreeableness, narcissism, and additional demographics.

Materials

Manipulation. We randomly assigned participants to one of four conditions, each of which involved reading a different short paragraph. The first control condition paragraph contained information about the COVID-19 pandemic extracted from the websites of Centers for Disease Control and Prevention (CDC) and World Health Organization. It read "Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. People with COVID-19 have had a wide range of symptoms reported – ranging from mild symptoms to severe illness. Symptoms may appear 2–14 days after exposure to the virus. Anyone can have mild to severe symptoms. People with these symptoms may have COVID-19: fever or chills, cough, shortness of breath or difficulty breathing, fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, congestion or runny nose, nausea or vomiting, diarrhea. The best way to prevent and slow down transmission is to be well informed about the COVID-19 virus."

The second control condition paragraph contained information regarding the safety benefit of mask-wearing revised from CDC's website. It read "Using a mask can protect against the transmission of COVID-19. A recent review (Li et al., 2021) summarized three studies of 887 participants and reported on the effectiveness of wearing masks against the spread of COVID-19. In general, face masks

were effective in preventing the spread of SARS-CoV-2. After wearing a mask, the risk of contracting COVID-19 was significantly reduced, with the pooled OR of 0.38 and 95% CI: 0.21–0.69. Make wearing a mask a normal part of being around other people to protect you and them!"

The first experimental condition paragraph contained information regarding the self-presentational benefit of mask-wearing based on findings from our pilot studies.[3] It read "Using a mask can make you more liked. A recent review (Wu et al., 2021) summarized three studies of 832 participants and reported on the appearance effects of wearing masks. In general, face masks made people appear more likable because they appeared to be kinder. Wearing a mask was significantly associated with being perceived positively, with the pooled r of 0.19 and p value <.001. Make wearing a mask a normal part of being around other people and be more liked!"

The second experimental condition paragraph combined the safety and self-presentation conditions. It read "Using a mask can make you safe and more liked. A recent review (Li et al., 2021) summarized three studies of 887 participants and reported on the effectiveness of wearing masks against the spread of COVID-19. In general, face masks were effective in preventing the spread of SARS-CoV-2. After wearing a mask, the risk of contracting COVID-19 was significantly reduced, with the pooled OR of 0.38 and 95% CI: 0.21–0.69. Another recent review (Wu et al., 2021) summarized three studies of 832 participants and reported on the appearance effects of wearing masks. In general, face masks made people appear more likable because they appeared to be kinder. Wearing a mask was significantly associated with being perceived positively, with the pooled r of 0.19 and p value <.001. Make wearing a mask a normal part of being around other people and be safe and be more liked!"

Manipulation checks. We used two items as manipulation checks: "How much do you believe that you wearing a mask makes you more safe?" and "How much do you believe that you wearing a mask makes you more likable to others?," from *not at all* (1) to *completely* (7).

Future mask intentions. To measure participants' mask-wearing intentions in the near future, we used two corresponding items: "How often do you intend to wear a mask in public indoor places?" and "How often do you intend to wear a mask in crowded outdoor places?," from *not at all* (1) to *completely* (7). We averaged these items to create a composite of intentions to wear face masks, with a higher score indicating a stronger intention ($\alpha = .86$).

Current mask behaviors. We revised the two items above to measure participants' mask-wearing behaviors in the recent past: "How often have you worn a mask in public indoor places?" and "How often have you worn a mask in crowded outdoor places?," from *never* (1) to *every time* (7). We again averaged across both items to create a composite score, with a higher score indicating more frequent mask-wearing ($\alpha = .82$).

Perceived infectability. Participants completed the 15-item Perceived Vulnerability to Disease scale (Duncan et al., 2009), where responses ranged from *strongly disagree* (1) to *strongly agree* (7). After appropriate reverse-coding, we created a mean score for the perceived infectability subscale, with higher scores indicating higher perceived infectability to diseases ($\alpha = .90$).

Political orientation. Participants completed a single-item measure assessing their general political orientation from *very liberal* (1) to *very conservative* (7).

Agreeableness. Participants completed the 10-item Agreeableness subscale of the International Personality Item Pool (Goldberg, 1999), where response paragraphs ranged from *very inaccurate* (1) to *very accurate* (5). We averaged across all items after instructed reverse-coding to create a composite score, with higher scores indicating higher levels of agreeableness ($\alpha = .85$).

Table 4. Main Effect and Interaction Findings with Likability Belief Predicting Mask-Wearing Intentions.

	b	*SE*	r^2_{part}	*t*	$CI_{95\%}$	*p*
Model 1						
Gender DC 1	.22	.15	.00	1.50	[−.07, .52]	.135
Gender DC 2	.02	.06	.00	.36	[−.10, .14]	.721
Age	**.11**	**.03**	**.01**	**3.69**	**[.05, .16]**	**<.001**
Likability Belief	**.19**	**.03**	**.03**	**6.74**	**[.13, .25]**	**<.001**
Perceived Infectability	**.16**	**.03**	**.02**	**5.87**	**[.10, .22]**	**<.001**
Political Orientation	**−.42**	**.03**	**.14**	**−14.25**	**[−.48, −.36]**	**<.001**
Narcissism	**−.09**	**.03**	**.01**	**−3.24**	**[−.15, −.03]**	**.001**
Agreeableness	**.08**	**.03**	**.01**	**2.97**	**[.02, .14]**	**.003**
Model 2						
Gender DC 1	.24	.15	.00	1.62	[−.05, .53]	.107
Gender DC 2	.02	.06	.00	.34	[−.10, .14]	.737
Age	**.11**	**.03**	**.01**	**3.82**	**[.05, .16]**	**<.001**
Likability Belief	**.17**	**.03**	**.02**	**5.92**	**[.11, .22]**	**<.001**
Perceived Infectability	**.15**	**.03**	**.02**	**5.68**	**[.10, .20]**	**<.001**
Political Orientation	**−.40**	**.03**	**.12**	**−13.73**	**[−.45, −.34]**	**<.001**
Narcissism	**−.09**	.03	.01	−3.40	[−.14, −.04]	.001
Agreeableness	**.08**	**.03**	**.01**	**2.76**	**[.02, .13]**	**.006**
Perceived Infectability Int	**−.08**	**.03**	**.01**	**−2.93**	**[−.14, −.02]**	.003
Political Orientation Int	**.10**	**.03**	**.01**	**3.85**	**[.04, .16]**	**<.001**
Narcissism Int	.01	.03	.00	.35	[−.05, .07]	.730
Agreeableness Int	.01	.02	.00	.52	[−.03, .05]	.603
Model 3						
Gender DC 1	.23	.15	.00	1.58	[−.06, .52]	.113
Gender DC 2	.02	.06	.00	.38	[−.10, .14]	.704
Age	**.11**	**.03**	**.01**	**3.84**	**[.05, .16]**	**<.001**
Likability Belief	**.17**	**.03**	**.02**	**5.97**	**[.11, .22]**	**<.001**
Perceived Infectability	**.15**	**.03**	**.02**	**5.66**	**[.10, .20]**	**<.001**
Political Orientation	**−.40**	**.03**	**.12**	**−13.74**	**[−.45, −.34]**	**<.001**
Narcissism	**−.09**	**.03**	**.01**	**−3.39**	**[−.15, −.03]**	**.001**
Agreeableness	**.07**	**.03**	**.00**	**2.72**	**[.01, .13]**	**.007**
Perceived Infectability	**−.08**	**.03**	**.01**	**−2.95**	**[−.13, −.02]**	**.003**
Political Orientation	**.10**	**.03**	**.01**	**3.81**	**[.05, .15]**	**<.001**

DC = dummy code. In gender DC 1 both men and women were coded 0; all others were coded 1. In gender DC 2 men were coded 1; all others were coded 0. Int = interaction with likability belief. Based on Bonferroni alpha level correction, associations are significant when p < .0125 and bolded. We transformed all continuous variables into z-scores prior to analyses.

Narcissism. Participants completed the 40-item Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988) using a dichotomous yes (1)-no (0) scale assessing whether they agreed with each item. We created a sum score across all items, with higher scores indicating higher levels of narcissism ($\alpha = .89$).

Results

Materials and data are openly available on the Open Science Framework website at https://osf.io/pgz2c. Zero-order correlations appear in Table 2 of supplemental materials. We transformed continuous variables into z-scores prior to creating interaction terms and conducting analyses. Data met required assumptions for our parametric tests (see supplemental materials).

Unfortunately, two one-way ANOVAs indicated that our manipulation failed to significantly predict either the belief that masks kept people safe, $F(3,989) = 1.12$, $p = .341$, or the belief that masks made people appear more likable, $F(3,992) = .21$, $p = .887$.

Nevertheless, assuming that the manipulation failed because participants already held strong beliefs about the effects of masks on impressions that we were unable to alter with our simple manipulation, we conducted several regression analyses to explore whether such preexisting beliefs about the likability of mask-wearers were associated with mask-wearing intentions in the manner we expected. First, we regressed intentions to wear masks and individual differences likely to minimize mask-

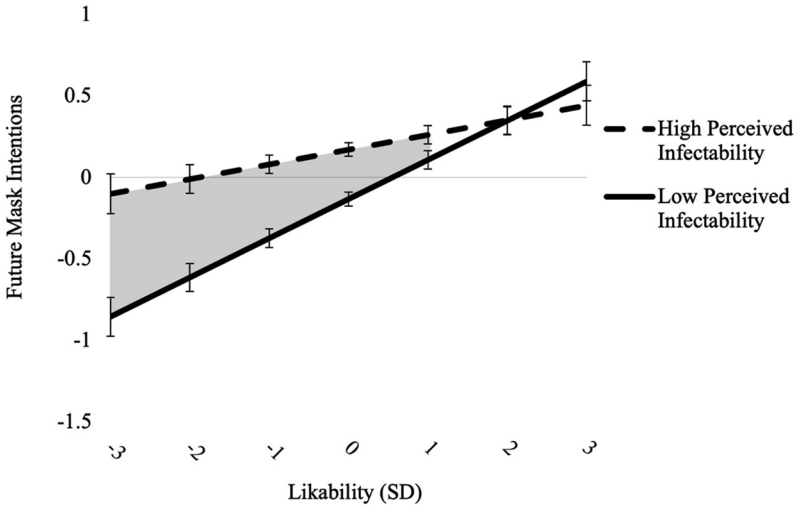

Figure 1. Interaction between Likability Belief and Perceived Infectability Predicting Mask-Wearing Intentions. We transformed all variables into z-scores prior to analyses. Region of significance is shaded.

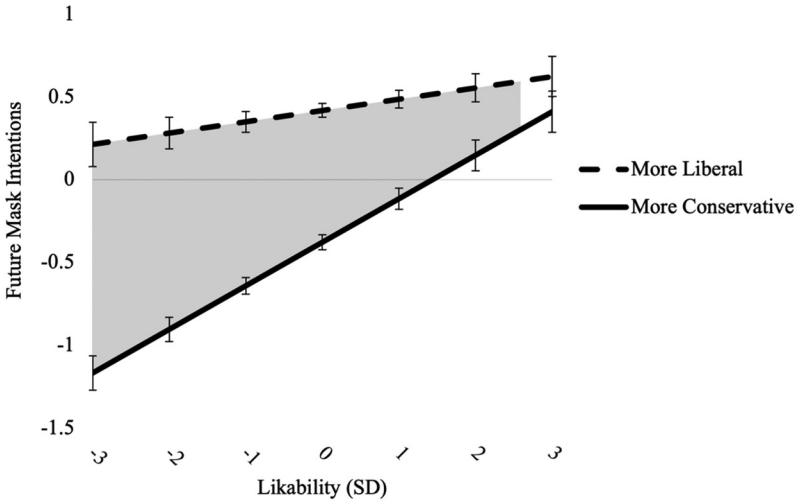

Figure 2. Interaction between Likability Belief and Political Orientation Predicting Mask-Wearing Intentions. We transformed all variables into z-scores prior to analyses. Region of significance is shaded.

wearing (i.e., low perceived infectability, political conservatism, high narcissism, and low agreeableness) onto between-person differences in likability belief, while controlling for age and gender (Model 1). Results appear at the top of Table 4; the belief that masks made targets more likable was positively associated with intentions to wear masks, accounting for 9.6% of the variance in participants' mask-wearing intentions.

Next, we examined whether the belief that masks made targets more likable moderated the individual differences variables by regressing mask-wearing intentions onto likability beliefs, each of the four individual difference factors, and their interactions with likability belief, while still controlling for age and gender (Model 2). To minimize Type II error on these moderation analyses, we used Bonferroni corrections such that the four independent moderators led to an adjusted p value of .0125.

As illustrated by the middle section of Table 4, the belief that masks made people appear more likable to others independently moderated the effects of both perceived vulnerability to infection and political orientation but not agreeableness or narcissism. After removing the nonsignificant interactions,[2] agreeableness became positively and narcissism negatively associated with the intention to wear masks, regardless of perceived likability, age, or gender (Model 3).

We conducted Johnson-Neyman regions of significance tests to identify the exact point of likability belief at which each predictor became significantly associated with the intentions to wear face masks. These analyses indicated that feeling less vulnerable to infection was associated with lower self-reported intentions to wear masks among individuals unless they were more than 1.03 *SD*s above the mean on the belief that masks made people appear more likable (see shaded area of Figure 1). In contrast, although the belief that masks made targets appear more likable weakened the significant negative association between political conservatism and the intention to wear a mask, more politically conservative individuals were still less likely to intend to wear masks than politically liberal individuals unless they were exceptionally high in likability belief (i.e., > 2.58 *SD*s above the mean; see shaded area of Figure 2). Notably, likability beliefs in the current study ranged from −2.13 to 1.66 *SD*s, suggesting there were no benefits to mask-wearing intentions for politically conservative participants in our sample.

General discussion

Motivating the public to wear face masks may bear critical practical implications in times of public health crises. Studies 1–3 join existing research (Kamatani et al., 2021; Oldmeadow & Koch, 2021; Olivera La Rosa et al., 2020) to suggest that targets wearing masks appear weaker, possibly because they seem more unhealthy (Miyazaki & Kawahara, 2016), but are evaluated more positively, possibly because they appear prosaically motivated (Lu et al., 2022). Study 4 revealed that individuals with preexisting beliefs about masks creating desirable impressions reported greater intentions to wear masks in the future, accounting for almost 10% of the variance in the intentions to wear face masks.

The belief that masks made people appear likable also helped compensate for two individual differences that minimized intentions to wear masks. Although individuals less concerned with infections were less inclined to wear masks when they did not endorse the belief that masks made people appear likable, individuals who did endorse this belief intended to wear masks regardless of their infection concerns. Although believing that masks made people appear more likable also weakened the negative association between political conservatism and mask-wearing intentions, political conservatism remained significantly associated with mask-wearing intentions, except among individuals extremely high in the belief that wearing face masks made people appear more likable. This finding joins prior research to emphasize the unique implication political orientation has for person perception and mask-wearing (Dudarev et al., 2022).

The current investigation also revealed that individuals with high agreeableness and low narcissism more strongly intended to wear masks regardless of their beliefs about masks making people appear more likable, highlighting the importance of prosocial motivations in guiding one's decision to wear masks. These nonsignificant interactions suggest that individuals with *low* agreeableness and *high* narcissism are less strongly motivated by impression management desires. Indeed, existing research has established a positive association between agreeableness and impression management motivations (Robie et al., 2010). Future work may benefit from examining whether similarly framed messages highlighting the negative impression management consequences of *not* wearing masks would motivate individuals high in narcissism to wear masks.

Despite several notable strengths, including the use of implicit and explicit measures and adequate sample sizes ($N = 1{,}829$), the current research has several limitations. First, results from the primary study were correlational and exploratory and thus findings should be interpreted with some caution until they are replicated and extended. Second, our experimental manipulation was unsuccessful. This

implies a potential limit in the extent to which one can leverage impression management motives to promote engagement in public health behaviors. We designed these manipulations based on evidence showing that individuals wearing masks appeared more likable to others. However, it remains possible that reframing the message to highlight that those *not* wearing masks appear *less* likable may make for a more effective manipulation (Kahneman & Tversky, 1979). Finally, Study 4 relied solely on self-report measures of intentions for mask-wearing, rather than more robust measures such as behavioral observations.

These limitations notwithstanding, our findings highlight a promising direction for future public health campaigns. In the case of the COVID-19 pandemic, campaigns urging the population to adhere to mask-wearing guidelines in the U.S. may have reached higher efficacy if they further emphasized the self-presentational benefit in impression management of appearing more altruistic and likable to others. This may especially be the case to subpopulations who believed themselves to be less susceptible to diseases or individuals with a more conservative political ideology. In the case of future public health crises, campaigns should consider emphasizing the self-presentational benefit associated with visible preventative health behaviors to attain higher efficacy.

That said, the implementation of this strategy may be challenging, as illustrated by our unsuccessful experimental manipulation. Future research may draw on the persuasion literature (Crano & Prislin, 2006) to test potential mechanisms contributing to effective changes in individuals' beliefs about how likable face masks make them appear to others. One promising avenue may be through self-persuasion (Briñol et al., 2012). Compared to other-persuasion strategies using empirically supported evidence to assert the positive effect of mask-wearing on impression management, self-persuasion tasks asking participants to generate arguments for why others would find mask-wearing individuals more likable may prove more effective. These tasks can take the form of written text generation, conversational exchange with others, or recording a video of themselves speaking on this issue.

Conclusion

At the peak of the COVID-19 pandemic in the U.S., adherence to mask-wearing guidelines was low despite active campaigns promoting the safety benefit of compliance. The current investigation examined whether the benefit in impression management of mask-wearing could be leveraged to promote compliance. Results from exploratory analyses showed that believing that masks made people appear more likable was associated with stronger mask-wearing intentions and can help offset the of influence of individual differences that minimize mask-wearing intentions.

Notes

1. $Z = \beta 1 - \beta 2/\sqrt{((SE\beta 1)2 + (SE\beta 2)2)}$.
2. We used flexmix (Grün & Leisch, 2008) in R version 4.2.2 to calculate Bayesian information criterion (BIC) for model comparison to justify the exclusion of nonsignificant interaction terms in Model 3. The BIC for Model 2 is 2486.50; the BIC for Model 3 is 2473.13.
3. Referred to as Wu et al., (2021) in relevant manipulation paragraphs.

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Data availability statement

The data described in this article are openly available in the Open Science Framework at https://osf.io/pgz2c.

Open scholarship

This article has earned the Center for Open Science badges for Open Data and Open Materials through Open Practices Disclosure. The data and materials are openly accessible at https://osf.io/pgz2c.

References

Associated Press. (2020). *Trump tells allies his wearing a mask would 'send the wrong message,' make him look ridiculous*. https://www.nbcnews.com/politics/donald-trump/trump-tells-allies-his-wearing-mask-would-send-wrong-message-n1202001

Baker, E. (2020). *Hong Kong student "punched for wearing a face mask", accused of having coronavirus*. https://www.abc.net.au/news/2020-03-20/coronavirus-hong-kong-student-assaulted-for-wearing-face-mask/12075470

Bereczkei, T., Birkas, B., & Kerekes, Z. (2010). The presence of others, prosocial traits, Machiavellianism. *Social Psychology*, *41*(4), 238–245. https://doi.org/10.1027/1864-9335/a000032

Briñol, P., McCaslin, M. J., & Petty, R. E. (2012). Self-generated persuasion: Effects of the target and direction of arguments. *Journal of Personality & Social Psychology*, *102*(5), 925. https://doi.org/10.1037/a0027231

Campos-Mercade, P., Meier, A. N., Schneider, F. H., & Wengström, E. (2021). Prosociality predicts health behaviors during the COVID-19 pandemic. *Journal of Public Economics*, *195*, 104367. https://doi.org/10.1016/j.jpubeco.2021.104367

Crano, W. D., & Prislin, R. (2006). Attitudes and persuasion. *Annual Review of Psychology*, *57*(1), 345–374. https://doi.org/10.1146/annurev.psych.57.102904.190034

Dudarev, V., Kamatani, M., Miyazaki, Y., Enns, J. T., & Kawahara, J. I. (2022). The attractiveness of masked faces is influenced by race and mask attitudes. *Frontiers in Psychology*, *13*, 864936. https://doi.org/10.3389/fpsyg.2022.864936

Duncan, L. A., Schaller, M., & Park, J. H. (2009). Perceived vulnerability to disease: Development and validation of a 15-item self-report instrument. *Personality & Individual Differences*, *47*(6), 541–546. https://doi.org/10.1016/j.paid.2009.05.001

Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality & Social Psychology*, *69*(6), 1013–1027. https://doi.org/10.1037/0022-3514.69.6.1013

Goldberg, L. R. (1999). A broad-bandwidth, public domain, personality inventory measuring the lower-level facets of several five-factor models. In I. Mervielde, I. J. Deary, F. D. Fruyt, & F. Ostendorf (Eds.), *Personality psychology in Europe* (Vol. 7, pp. 7–28). Tilburg University Press.

Grün, B., & Leisch, F. (2008). FlexMix Version 2: Finite mixtures with concomitant variables and varying and constant parameters. *Journal of Statistical Software*, *28*(4), 1–35. https://doi.org/10.18637/jss.v028.i04

Jan, T. (2020). Two black men say they were kicked out of Walmart for wearing protective masks. Others worry it will happen to them. *Washington Post*. https://www.washingtonpost.com/business/2020/04/09/masks-racial-profiling-walmart-coronavirus/

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, *47*(2), 263–291. https://doi.org/10.2307/1914185

Kamatani, M., Ito, M., Miyazaki, Y., & Kawahara, J. I. (2021). Effects of masks worn to protect against COVID-19 on the perception of facial attractiveness. *I-Perception*, *12*(3), 20416695211027920. https://doi.org/10.1177/20416695211027920

Key, J. (2021). *Half of U.S. adults don't wear masks when in close contact with non-household members*. University of Southern California Dornsife College of Letters, Arts, and Sciences. http://dornsife.usc.edu/news/stories/3388/understanding-coronavirus-in-america-mask-use-among-us-adults/

Li, Y., Liang, M., Gao, L., Ayaz Ahmed, M., Uy, J. P., Cheng, C., Zhou, Q., & Sun, C. (2021). Face masks to prevent transmission of COVID-19: A systematic review and meta-analysis. *American Journal of Infection Control*, *49*(7), 900–906. https://doi.org/10.1016/j.ajic.2020.12.007

Lu, J. G., Song, L. L., Zheng, Y., & Wang, L. C. (2022). Masks as a moral symbol: Masks reduce wearers' deviant behavior in China during COVID-19. *Proceedings of the National Academy of Sciences*, *119*(41), e2211144119. https://doi.org/10.1073/pnas.2211144119

Makhanova, A., & Shepherd, M. A. (2020). Behavioral immune system linked to responses to the threat of COVID-19. *Personality & Individual Differences*, *167*, 110221. https://doi.org/10.1016/j.paid.2020.110221

Makhanova, A., Shepherd, M. A., Plant, E. A., Gerend, M. A., & Maner, J. K. (2020). Childhood illness as an antecedent of perceived vulnerability to disease. *Evolutionary Behavioral Sciences*. https://doi.org/10.1037/ebs0000238

Mallinas, S. R., Maner, J. K., & Ashby Plant, E. (2021). What factors underlie attitudes regarding protective mask use during the COVID-19 pandemic? *Personality & Individual Differences*, *181*, 111038. https://doi.org/10.1016/j.paid.2021.111038

March, D. S., Gaertner, L., & Olson, M. A. (2021). Danger or dislike: Distinguishing threat from negative valence as sources of automatic anti-Black bias. *Journal of Personality & Social Psychology*, *121*(5), 984. https://doi.org/10.1037/pspa0000288

Martin-Raugh, M. P., Kell, H. J., & Motowidlo, S. J. (2016). Prosocial knowledge mediates effects of agreeableness and emotional intelligence on prosocial behavior. *Personality & Individual Differences*, *90*, 41–49. https://doi.org/10.1016/j.paid.2015.10.024

Miyazaki, Y., & Kawahara, J. -I. (2016). The sanitary-mask effect on perceived facial attractiveness. *The Japanese Psychological Research*, *58*(3), 261–272. https://doi.org/10.1111/jpr.12116

The New York Times. (2021). *Coronavirus in the U.S.: Latest map and case count*. https://www.nytimes.com/interactive/2021/us/covid-cases.html

Oldmeadow, J. A., & Koch, C. (2021). Effects of face masks on person perception. *Perception*, *50*(10), 876–889. https://doi.org/10.1177/03010066211045172

Olivera La Rosa, A., Chuquichambi, E. G., & Ingram, G. P. D. (2020). Keep your (social) distance: Pathogen concerns and social perception in the time of COVID-19. *Personality & Individual Differences*, *166*, 110200. https://doi.org/10.1016/j.paid.2020.110200

Payne, B. K., Cheng, C. M., Govorun, O., & Stewart, B. D. (2005). An inkblot for attitudes: Affect misattribution as implicit measurement. *Journal of Personality & Social Psychology*, *89*(3), 277–293. https://doi.org/10.1037/0022-3514.89.3.277

Peer, E., Brandimarte, L., Samat, S., & Acquisti, A. (2017). Beyond the Turk: Alternative platforms for crowdsourcing behavioral research. *Journal of Experimental Social Psychology*, *70*, 153–163. https://doi.org/10.1016/j.jesp.2017.01.006

Raskin, R., & Terry, H. (1988). A principal-components analysis of the narcissistic personality inventory and further evidence of its construct validity. *Journal of Personality & Social Psychology*, *54*(5), 890–902. https://doi.org/10.1037/0022-3514.54.5.890

Rieger, M. O. (2020). To wear or not to wear? Factors influencing wearing face masks in Germany during the COVID-19 pandemic. *Social Health and Behavior*, *3*(2), 50. https://doi.org/10.4103/SHB.SHB_23_20

Robie, C., Komar, S., & Brown, D. J. (2010). The effects of coaching and speeding on Big Five and impression management scale scores. *Human Performance*, *23*(5), 446–467. https://doi.org/10.1080/08959285.2010.515278

Rodriguez, N. (2022). Florida restaurant denies service to people wearing masks. *Nexstar Media Wire*. https://www.kxan.com/news/national-news/florida-restaurant-denies-service-to-people-wearing-masks/

Schlenker, B. R. (1982). Translating actions into attitudes: An identity-analytic approach to the explanation of social conduct. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 15, pp. 193–247). Academic Press. https://doi.org/10.1016/S0065-2601(08)60298-1

Solak, Ç., Peker Dural, H., Karlıdağ, S., & Peker, M. (2022). Linking the behavioral immune system to COVID-19 vaccination intention: The mediating role of the need for cognitive closure and vaccine hesitancy. *Personality & Individual Differences*, *185*, 111245. https://doi.org/10.1016/j.paid.2021.111245

Stocks, E. L., Lishner, D. A., & Decker, S. K. (2009). Altruism or psychological escape: Why does empathy promote prosocial behavior? *European Journal of Social Psychology*, *39*(5), 649–665. https://doi.org/10.1002/ejsp.561

Tofighi, D., & MacKinnon, D. P. (2011). Rmediation: An R package for mediation analysis confidence intervals. *Behavior Research Methods*, *43*(3), 692–700. https://doi.org/10.3758/s13428-011-0076-x

West, T. N., Le Nguyen, K., Zhou, J., Prinzing, M. M., Wells, J. L., & Fredrickson, B. L. (2021). How the affective quality of social connections may contribute to public health: Prosocial tendencies account for the links between positivity resonance and behaviors that reduce the spread of COVID-19. *Affective Science*, *2*(3), 241–261. https://doi.org/10.1007/s42761-021-00035-z

Zhou, H., & Zhang, B. (2010). Relationships among narcissism, empathy, and prosocial behaviors. *Chinese Journal of Clinical Psychology*, *18*(2), 228–231.