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Empirical Research Paper

Moral Judgments of COVID-19 Social Distancing Violations: The Roles of Perceived Harm and Impurity

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Abstract

Can perceptions of impurity uniquely explain moral judgment? Or is moral judgment reducible to perceptions of harm? Whereas some perspectives posit that purity violations may drive moral judgment distinctly from harm violations, other perspectives contend that perceived harm is an essential precursor of moral condemnation. We tested these competing hypotheses through five preregistered experiments (total $N = 2{,}944$) investigating U.S. adults' perceptions of social distancing violations during the COVID-19 pandemic. Perceived harm was more strongly related to moral judgment than was perceived impurity. Nevertheless, over and above perceived harm, perceived impurity reliably explained unique variance in moral judgment. Effects of perceived harm and impurity were significant among both liberal and conservative participants but were larger among liberals. Results suggest that appraisals of both harm and impurity provide valuable insights into moral cognition. We discuss implications of these findings for dyadic morality, moral foundations, act versus character judgments, and political ideology.

Keywords

morality, harm, purity, moral foundations, dyadic morality

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The COVID-19 pandemic turned even the most mundane social environments into arenas of moral judgment. With widespread COVID-19 cases, a trip to the park, grocery store, or movie theater each carries with it new moral norms that prescribe social distancing. When efforts to curtail the spread of COVID-19 are in place, coming into close proximity with another person or eschewing a face mask in public can be seen as moral transgressions. The moral judgments many people make of such behaviors are apparent; less clear, however, are the specific psychological appraisals underlying these judgments. Namely, do people deem social distancing violations immoral because they violate social standards of *purity* or because they cause *harm*?

In recent years, moral psychologists have debated whether violations of purity alone—in the absence of perceived harm—suffice to elicit moral condemnation. Moral foundations theory (Graham et al., 2013) posits that perceived violations of purity and harm can each impart unique direct effects on moral judgment. In this sense, individuals can deem an action immoral if they perceive it as impure, even if they believe the action caused no harm whatsoever (Haidt, 2001; Haidt & Graham, 2007). Conversely, the theory of dyadic morality (Schein & Gray, 2018) contends that perceived harm is an essential precursor of moral condemnation, and any effect of perceived impurity on moral judgment is likely explained by confounding perceptions of harm (Schein et al., 2016; Schein & Gray, 2016).

Influential support for purity's unique effects has come from moral dumbfounding (Haidt, 2001), where individuals deem a purity violation as immoral without providing any rationalist justification for their judgment—It simply "feels" wrong based on intuition. Moral dumbfounding suggests that moral emotions drive moral judgment (Graham et al., 2011; Haidt, 2001; Haidt & Graham, 2007), with feelings of disgust explaining reactions to purity violations (Haidt & Graham, 2007; Rozin et al., 1999). Recent studies have found that perceptions of impurity offer unique explanatory value, over and above perceived harm, for moral judgments of actions across moral and ideological domains (Piazza et al., 2019; Rottman et al., 2014; Yilmaz & Saribay, 2019) and across relational context (Dungan et al., 2017). Regarding COVID-19, these findings suggest that people can readily view a social distancing violation as immoral because it seems impure, irrespective of its perceived harmfulness.

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Alternatively, accounts of harm-centric moral judgment maintain that perceived impurity cannot cause moral condemnation without perceived harm (Schein & Gray, 2018). Perceptions of harm overlap strongly with perceptions of other moral foundations (Schein & Gray, 2015); ostensibly "harmless" purity violations psychologically activate concepts of harm and suffering (Gray et al., 2014; Royzman et al., 2015); and perceived harm mediates cross-sectional associations between disgust and moral condemnation (Schein et al., 2016). That people can construe purity violations as harmful undermines support for moral dumbfounding and moral foundations theory by suggesting that perceived harm is a necessary ingredient for moral judgment—one that is influential even in responses to supposedly harmless purity violations (Gray et al., 2014).

The above review highlights conflicting evidence regarding whether perceived impurity may evoke moral condemnation uniquely from perceived harm. A core source of conflict likely lies in the conceptualization and assessment of perceived harm (Schein & Gray, 2015, 2018). Schein and Gray (2018) emphasize that people can perceive harm not only in obvious ways that comprise proximal threats with clear victims (e.g., murder, physical abuse) but also in less-obvious distal threats with less-clear victims (e.g., sickening one's future self, threats to societal/cultural coordination). Thus, a potential reason why people rate purity violations as immoral is that they perceive such violations as harmful to agent's self or to societal functioning (Chakroff et al., 2013; Schein et al., 2016; Schein & Gray, 2018). Empirical assessments of such less-obvious perceived harms, however, remain largely lacking in the current literature (cf. Rottman et al., 2014).

What makes the COVID-19 pandemic particularly conductive to moral judgment research is that violations of social distancing norms can be perceived as purity *and/or* harm violations. People may deem a social distancing violation as *impure* because it spreads germs and makes the disgusting essence of pathogens salient or as *harmful* because it increases the amount of pain and suffering to be endured by those who experience COVID-19 illness and also threatens societal functioning. Likely, for many people, social distancing violations arouse perceptions of both harm and impurity together. Therefore, situating our investigation in the context of COVID-19 may foster worthwhile theory-testing with enhanced ecological validity. Notably, many previous experiments have designed moral judgment scenarios to be high in either harm *or* impurity, rather than high in both (e.g., Chakroff et al., 2013, 2016, 2017; Chakroff & Young, 2015; Dungan et al., 2017; Rottman & Young, 2019; Schein et al., 2016). While presumably offering an internally valid means of distinguishing between violations across moral domains, this practice reveals little about how individuals subjectively perceive actions that blatantly violate both harm *and* purity concurrently, which are common in the real world and particularly during the era of COVID-19.

In the current research, we examined perceptions of a target's behaviors during the COVID-19 pandemic to provide a sensitive test of the following question: Can perceptions of impurity uniquely explain moral judgment, over and above the effect of perceived harm? In investigating this question, we considered the relevance of three factors, which were of secondary interest throughout our studies: (a) act-based versus person-based moral judgments, (b) target gender, and (c) participant and target political ideology.

Act-Based Versus Person-Based Moral Judgments

First, we sought to distinguish between act-based and person-based moral judgments. Moral judgments about an agent's *actions* can be distinct from judgments about what the agent is like *as a person* (i.e., their moral character), and separating such act-based and person-based judgments offers valuable insights into moral cognition (Tannenbaum et al., 2011; Uhlmann et al., 2013, 2015). Evaluating morality on actions alone provides limited inferences about the social world; just as good people can do bad things in certain situations (e.g., Haney et al., 1973), bad people can surely do good things at times. Even more so, judgments of acts and character can diverge: For example, performing a morally praiseworthy act can lead one to receive unfavorable moral character ratings, such as when one practices consequentialist behavior (i.e., behavior that maximizes good outcomes and minimizes bad outcomes) but appears to lack empathy (Uhlmann et al., 2013).

The inclination to make inferences about someone's deeper underlying moral character is likely adaptive evolutionarily, as individuals with good character should presumably make for trustworthy cooperative partners (Pizarro & Tannenbaum, 2011). Whether an agent's actions seem harmful versus impure may influence what inferences a perceiver makes about the agent's moral character. Namely, people may be more inclined to condemn an agent's character—rather than the act itself—for purity violations compared with harm violations (Uhlmann & Zhu, 2014). The validity of this effect, however, remains debated, as some scholars (e.g., Gray & Keeney, 2015; Schein & Gray, 2018) attribute it to methodological confounds of scenarios designed to portray violations across moral domain. Thus, we sought presently to distinguish between the relative roles of perceived harm and impurity in explaining moral judgments of acts versus character, with potential for theoretical clarification by having participants report perceived harm and impurity subjectively.

Agent Gender

Second, we explored whether an agent's gender would moderate (a) the extents to which participants viewed their actions/them as impure, harmful, and immoral for violating social distancing and (b) the indirect effects of violations on moral judgment through perceived harm and impurity. These exploratory analyses served to address recent concerns about

leaving the social identities (e.g., gender) of targets unspecified within moral psychology scenarios (Hester & Gray, 2020), so as to test whether effects generalize across agent gender or reveal potentially meaningful differences to unravel in further research.

Political Ideology

Third, we investigated effects of political ideology in moral judgment, regarding both participant and target ideology as well as their interaction. There is reason to suspect significant effects of participant ideology and the interaction between participant and target ideologies, respectively, in light of moral foundations theory and ideological conflict effects.

Research on moral foundations theory has highlighted that liberals (relative to conservatives) are more inclined to make moral judgments based on perceived harm whereas conservatives (relative to liberals) are more inclined to consider perceived impurity as morally relevant (Graham et al., 2009). Exemplifying the most absolute end of this notion, some scholars have called purity one of the "moral intuitions that liberals may not recognize" (Haidt & Graham, 2007). Other perspectives, meanwhile, suggest that while conservatives do rely more on purity concerns in making moral judgments than do liberals, purity is a common moral foundation shared by members of both political groups (Frimer et al., 2013, 2015). We aimed to test, in the present research, whether an ideological difference would exist in the magnitudes to which perceived harm and impurity explain moral judgments of social distancing violations; we expected the indirect effect of harm to be larger among liberals and impurity among conservatives. Given that COVID-19 has been politicized in the United States, with liberals more concerned than conservatives are about social distancing (Pew Research Center, 2020; Rothgerber et al., 2020), our research can provide a test of how robust typically observed ideological differences in moral foundation relevance may be.

Target ideology—whether the person violating social distancing is liberal or conservative—may also be relevant. Specifically, we considered the possibility of an ideological conflict effect (Brandt et al., 2014), whereby individuals at one end of the liberal-conservative spectrum are intolerant of individuals at the opposing end. Motivated cognitions might intensify judgments of out-group moral violations among both liberal and conservative perceivers: Whereas liberals might disparage a conservative target especially harshly because they assume conservatives are unconcerned about the pandemic's risks (and thus, potentially, pose greater harms through spreading COVID-19), conservatives might disparage a liberal target harshly because they perceive hypocrisy in a liberal presumably vocalizing heightened pandemic concern yet failing to practice social distancing themselves. Thus, we theorized that individuals would be especially motivated to morally condemn members of their political out-group for violating social distancing.

Overview of the Current Research

Aims and Hypotheses

Through five preregistered experiments, we investigated the relative contributions of perceived harm versus impurity in moral judgments of those who violate COVID-19 social distancing norms. We considered perceived harm and impurity as two potential mediators of the effects of social distancing violations on moral judgment. In each study, we manipulated our independent variable—social distancing behavior—and tested mediation models. Aside from hypothesizing that participants would rate distancing violations as more immoral than compliance, we set no specific hypotheses for mediation effects so as to test two competing theories.

Throughout Studies 1 to 4, we also manipulated the level of moral judgment (actions vs. character) and target gender (man vs. woman). Studies 1 and 3 focused on the perceived immorality of a target's *actions*; Studies 2 and 4 on a target's *character*. We hypothesized that perceived impurity would have a larger mediating effect for character than for action judgments (see https://osf.io/gurtf and https://osf.io/qtcy6 for preregistrations of this "across-studies" hypothesis). Target gender varied randomly within each study; we set no directional hypotheses. In Study 5, we kept levels of moral judgment and target gender constant and instead manipulated target political ideology. We also assessed participant ideology. We hypothesized that (a) the indirect effect of social distancing behavior on perceived immorality through perceived impurity would be larger among conservative participants than among liberal participants whereas the indirect effect through perceived harm would be larger among liberal participants than among conservative participants; and (b) an ideological conflict effect would occur, such that conservative participants would give harsher immorality ratings to liberal (vs. conservative) targets for not social distancing and liberal participants would give harsher immorality ratings to conservative (vs. liberal) targets for not distancing. We expected that, should this conflict effect occur, perceiving hypocrisy in a liberal target who fails to socially distance would particularly strongly explain conservative participants' harsher immorality ratings of them.

A Note on Measurement

Precise measurement is critical to any research, and especially so when assessing two potentially strongly related constructs like perceived harm and impurity concurrently. We note that, in response to reviewer comments, we decided to revise our initially preregistered scales of perceived harm and impurity post hoc after collecting data for Studies 1 to 4 and analyzing these scales' psychometric properties using Studies 1 and 2's data. These revisions resulted in deviations from Studies 1 to 4's preregistration plans. Whereas these studies' preregistrations specified a three-item scale of perceived harm and five-item scale of perceived impurity, we ultimately operationalized these variables through two-item

scales, dropping one initial item from perceived harm and three items from perceived impurity. We specified this measurement strategy a priori in Study 5's preregistration. Consideration of item performance and comparisons of model fit strongly supported the use of these two-item scales to assess perceived harm and impurity as distinct constructs. The results of these psychometric analyses appear in Supplemental Material.

Data Quality, Analysis, and Availability

In every study, we prescreened participants to ensure they resided in the United States, disallowed repeat responses from the same IP address, and included an attention check. In Study 5, we also included Captcha to screen out bots.

All analyses, except for tests of moderated mediation, were conducted using R. Scripts used to conduct these analyses are publicly available for each study, along with data, at https://osf.io/4ngdc/. Moderated mediation analyses were conducted using the PROCESS macro in SPSS (Hayes, 2013). Confidence intervals (CIs) for indirect effects reflect lower-bound and upper-bound estimates of an indirect effect as a percentage of the observed total effect.

Study 1

Method

This study's sample size, materials, procedure, hypotheses, and analyses were preregistered at https://osf.io/k4sh5.

Participants. Participants were 600 adults from the United States, recruited via Amazon Mechanical Turk (MTurk) on April 25–26, 2020. After excluding seven participants who failed an attention check in the survey, 593 participants (305 men, 282 women, six other) between the ages of 18 and 79 (M_{age} = 40.00, SD = 13.42) were retained for analyses. This sample provided 80% power to detect small main effects of d = 0.23 and small mediated effects (Fritz & MacKinnon, 2007).

Materials

Social distancing vignette. Participants read one of four possible vignettes that described a target. In a 2 × 2 design, the vignettes varied randomly along two factors: (1) the social distancing compliance (compliance vs. violation) and (2) the gender (man vs. woman) of the target. The names "John" and "Jane" indicated target gender as man versus woman, respectively, with each vignette presented depicting one of these names and corresponding pronouns (he or him for John, she or her for Jane).

The full text of the compliant man condition appears below. In the violation condition, the last two sentences were replaced with the italicized text in parentheses:

> John earns an average salary and regularly donates a moderate portion of his income to charity. His hobbies include watching movies, hiking, and playing with his young nephews and nieces. Over the past few weeks, John has been taking the coronavirus pandemic seriously. He has been staying home most of the time, wears a facemask when out, has socially distanced himself from others, washes his hands frequently throughout the day, and avoids touching his face. (*Over the past few weeks, John has not been taking the coronavirus pandemic seriously at all. He has been leaving home several times per day, rarely wears a facemask when out, regularly gathers in crowded areas, washes his hands only occasionally, and touches his face many times throughout the day.*)

Table 1. Intercorrelations Between Variables in Study 1 (all $p < .001$).

Variable	Perceived impurity	Perceived immorality
Perceived harm	.85	.88
Perceived impurity	—	.79

Perceived harm. Perceived harm (α = .99) was assessed by participants rating the target in terms of how "dangerous" and "harmful" his or her actions are (adapted from Schein et al., 2016). Each item was rated on a scale from 1 (*not at all*) to 7 (*extremely*).

Perceived impurity. Perceived impurity (α = .98) was assessed by participants rating the target in terms of how "disgusting" and "gross" his or her actions are (adapted from Schein et al., 2016). Each item was rated on a scale from 1 (*not at all*) to 7 (*extremely*).

Perceived immorality. Perceived immorality of the target's actions was assessed by the question, "How moral or immoral are John's/Jane's actions?" Ratings ranged from –3 (*extremely immoral*) to +3 (*extremely moral*), scored such that 1 = *extremely moral* and 7 = *extremely immoral*.

Procedure. First, participants read one of the four possible social distancing vignettes, at random. Following the vignette, participants completed the measures of perceived harm and impurity in a randomized order. Next, participants completed the measure of perceived immorality. Finally, participants completed demographic questions.

Results

Correlations between variables are presented in Table 1. Welch's t-tests revealed very large differences in participants' perceptions of the target who does versus does not socially distance across all outcomes (see Table 2). Participants rated the actions of a target who violated social distancing guidelines as more immoral, harmful, and impure than the actions of a target who complied with guidelines.

Table 2. Perceptions of a Target Who Does Versus Does Not Socially Distance in Study 1.

	Social distancing compliance					
	Yes (n = 293)	No (n = 300)				
Outcome	Mean (*SD*)	Mean (*SD*)	95% CI of difference	*t*	*d*	*p*
Perceived Immorality	1.50 (0.88)	5.37 (1.33)	[–4.05, –3.69]	41.68***	3.43	<.001
Perceived harm	1.21 (0.80)	5.52 (1.53)	[–4.50, –4.11]	42.96***	3.53	<.001
Perceived impurity	1.16 (0.74)	4.23 (1.88)	[–3.30, –2.84]	26.17***	2.15	<.001

Note. Perceived immorality reflects perceptions of how immoral the target's actions are. CI = confidence interval.
***p < .001.

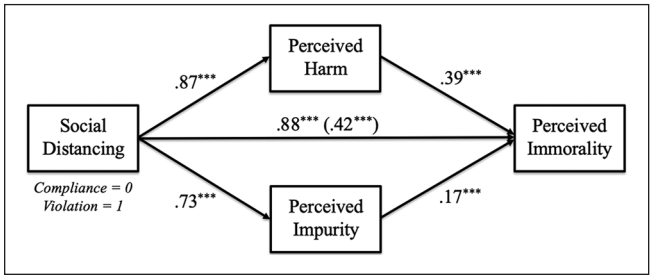

Figure 1. Mediation model for the effect of social distancing violation on perceived immorality of the target's actions through perceived harm and impurity in Study 1.
Note. All path coefficients are standardized (β).
***p < .001.

Main mediation analysis. A mediation analysis—using path analysis via structural equation modeling with the lavaan package in R—revealed that perceived harm and impurity each uniquely mediated the effect of social distancing violation on perceived immorality (see Figure 1).

The combined indirect effect of perceived harm and impurity was significant, $b = 2.03$, $SE = 0.17$, $p < .001$, 95% (CI) [1.71, 2.36]. Accounting for perceived harm and impurity together explained 53% of the total effect of social distancing violation on perceived immorality of the target's actions, reducing the effect from $b = 3.87$ (β = .88, $p < .001$) to $b = 1.84$ (β = .42, $p < .001$), indicating partial mediation. Each mediator explained unique variance ($p < .001$), with perceived harm explaining 39% (95% CI [32%, 46%]) of the total effect and perceived impurity explaining 14% (95% CI [10%, 18%]).

Moderation by target gender. Two-way analyses of variance (ANOVAs) revealed nonsignificant interaction effects between target gender and social distancing violation on perceived immorality, $F(1, 587) = 2.00$, $p = .157$; perceived harm, $F(1, 584) = 0.72$, $p = .396$; and perceived impurity, $F(1, 587) = 1.88$, $p = .171$, suggesting that a target's gender did not affect how participants viewed them for violating social distancing.

Moderated mediation (post hoc). Target gender did not moderate the indirect effect of social distancing violation on perceived immorality through perceived harm, $b = 0.06$, $SE = 0.07$, 95% CI [–0.08, 0.20], or impurity, $b = 0.06$, $SE = 0.04$, 95% CI [–0.02, 0.15].

Study 2

Whereas Study 1 assessed perceived immorality of a target's *actions*, Study 2 focused on the perceived immorality of a target's *character*.

Method

This study was preregistered at https://osf.io/hw69s.

Participants. Participants were 600 U.S. adults, recruited via MTurk on April 25–26, 2020. After excluding 11 participants who failed an attention check, 589 participants (307 men, 280 women, two other) between the ages of 18 and 89 ($M_{age} = 40.70$, $SD = 13.21$) were retained for analyses.

Materials

Social distancing vignette. Vignettes were identical to those in Study 1.

Perceived harm and impurity. Perceived harm (α = .99) and impurity (α = .98) were assessed as in Study 1.

Perceived immorality. Perceived immorality of the target's character was assessed by the question, "How moral or immoral is John/Jane as a person?" Ratings ranged from –3 (*extremely immoral*) to +3 (*extremely moral*), scored such that 1 = *extremely moral* and 7 = *extremely immoral*.

Procedure. Procedure was identical to that of Study 1.

Results

Correlations between variables are presented in Table 3. Welch's *t*-tests revealed very large differences in participants' perceptions of the target who does versus does not socially distance (see Table 4), with effects in the same directions as in Study 1.

Table 3. Intercorrelations Between Variables in Study 2 (all $p < .001$).

Variable	Perceived impurity	Perceived immorality
Perceived harm	.86	.82
Perceived impurity	—	.76

Main mediation analysis. Perceived harm and impurity each uniquely mediated the effect of social distancing violation on perceived immorality (see Figure 2).

The combined indirect effect of perceived harm and impurity was significant, $b = 1.67$, $SE = 0.18$, $p < .001$, 95% CI [1.32, 2.03]. Accounting for perceived harm and impurity together explained 53% of the total effect of social distancing violation on perceived immorality, reducing the effect from $b = 3.17$ ($\beta = .82$, $p < .001$) to $b = 1.49$ ($\beta = .39$, $p < .001$), indicating partial mediation. Each mediator explained unique variance ($p < .001$), with perceived harm explaining 32% (95% CI [23%, 42%]) of the total effect and perceived impurity explaining 21% (95% CI [15%, 26%]).

Moderation by target gender. Two-way ANOVAs revealed nonsignificant interaction effects between target gender and social distancing violation on perceived immorality, $F(1, 585) = 1.13$, $p = .287$; perceived harm, $F(1, 584) = 0.27$, $p = .605$; and perceived impurity, $F(1, 584) = 0.17$, $p = .685$.

Moderated mediation (post hoc). Target gender did not moderate the indirect effect of social distancing violation on perceived immorality through perceived harm, $b = 0.03$, $SE = 0.05$, 95% CI [–0.06, 0.13], or impurity, $b = –0.02$, $SE = 0.05$, 95% CI [–0.12, 0.08].

Meta-Analysis of Studies 1 and 2: Act-Based Versus Person-Based Moral Judgments

To test the hypothesis that perceived impurity would have a larger mediating effect for person-based (character) moral judgment than for act-based judgment, we conducted a moderated mediation analysis post hoc using the combined data of Studies 1 and 2. Notably, participants judged a target's actions in Study 1 but a target's character in Study 2; all other details were constant across these studies.

Type of moral judgment (act vs. character) did not moderate the indirect effect of social distancing violation on perceived immorality through perceived impurity, $b = 0.02$, $SE = 0.03$, 95% CI [–0.05, 0.08], nor did it moderate the indirect effect through perceived harm, $b = 0.01$, $SE = 0.04$, 95% CI [–0.08, 0.09].

Study 3

Studies 1 and 2 found that although perceived harm mattered most for moral judgment, perceived impurity still explained unique variance. The theory of dyadic morality, however, may contend that the way these studies assessed perceived harm failed to capture distal harms with less-obvious victims, such as threats to an agent's self or to society (Schein & Gray, 2018), which may covary with perceived impurity. Accordingly, to provide a more conservative test of purity's unique effects, Study 3 emphasized an expanded view of harm by assessing perceptions of harm toward three distinct possible victims: the target's self, other people, and society.

Method

This study was preregistered at https://osf.io/7pfhg.

Participants. Participants were 600 U.S. adults, recruited via MTurk on July 9–10, 2020. After excluding 15 participants who failed an attention check, 585 participants (287 men, 294 women, four other) between the ages of 18 and 77 ($M_{age} = 38.58$, $SD = 12.49$) were retained for analyses.

Materials

Social distancing vignette. Vignettes were identical to those in Studies 1 and 2.

Perceived harm to self, others, and society. Based on theorizing by Janoff-Bulman and Carnes (2013) and Schein and Gray (2018) as well as empirical research by Rottman et al. (2014), we assessed participants' perceptions of harm with regard to three moral patients: the agent's self, other people, and society. These perceived harms were assessed by participants rating the extent to which they think that the target's actions cause harm to himself or herself, other people, and society. Each item was rated on a scale from 1 (*not at all*) to 7 (*extremely*).

Perceived impurity. Perceived impurity ($\alpha = .98$) was assessed as in Studies 1 and 2.

Perceived immorality. Perceived immorality of the target's actions was assessed as in Study 1.

Procedure. First, participants read one of the four possible social distancing vignettes, at random. Following the vignette, participants completed the measures of perceived harm and impurity in a randomized order. Next, participants completed the measure of perceived immorality. Finally, participants completed demographic questions.

Table 4. Perceptions of a Target Who Does Versus Does Not Socially Distance in Study 2.

	Social Distancing Compliance					
	Yes (n = 292)	No (n = 297)				
Outcome	Mean (*SD*)	Mean (*SD*)	95% CI of Difference	*t*	*d*	*p*
Perceived immorality	1.76 (0.99)	4.93 (1.32)	[–3.36, –2.98]	33.03***	2.72	<.001
Perceived harm	1.20 (0.81)	5.53 (1.51)	[–4.52, –4.13]	43.39***	3.57	<.001
Perceived impurity	1.16 (0.75)	4.32 (1.92)	[–3.40, –2.92]	26.35***	2.17	<.001

Note. Perceived immorality reflects perceptions of how immoral the target's character is. CI = confidence interval.
***$p < .001$.

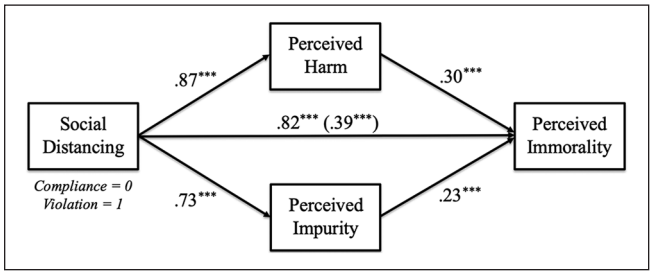

Figure 2. Mediation model for the effect of social distancing violation on perceived immorality of the target's character through perceived harm and impurity in Study 2.
Note. All path coefficients are standardized (β).
***$p < .001$.

Results

Correlations between variables are presented in Table 5. Welch's *t*-tests revealed very large differences in participants' perceptions of the target who does versus does not socially distance (see Table 6), with effects in the same directions as in Studies 1 and 2.

Main mediation analysis. Perceived harm to the target's self, harm to other people, harm to society, and impurity each uniquely mediated the effect of social distancing violation on perceived immorality (see Figure 3).

The combined indirect effect of perceived harm to the target's self, harm to other people, harm to society, and impurity was significant, $b = 2.28$, $SE = 0.25$, $p < .001$, 95% CI [1.79, 2.77]. Accounting for perceived harms and impurity together explained 63% of the total effect of social distancing violation on perceived immorality, reducing the effect from $b = 3.64$ ($\beta = .84$, $p < .001$) to $b = 1.36$ ($\beta = .31$, $p < .001$), indicating partial mediation. Each mediator explained unique variance (each $p < .001$), with perceived harm to the target's self explaining 13% (95% CI [6%, 20%]) of the total effect, perceived harm to other people explaining 19% (95% CI [11%, 27%]), perceived harm to society explaining 21% (95% CI [14%, 28%]), and perceived impurity explaining 10% (95% CI [5%, 14%]).

Moderation by target gender. Two-way ANOVAs revealed nonsignificant interaction effects between target gender and social distancing violation on perceived immorality, $F(1, 580) = 0.13$, $p = .724$; perceived harm to the target's self, $F(1, 580) = 0.01$, $p = .905$; perceived harm to other people, $F(1, 580) = 0.16$, $p = .694$; perceived harm to society, $F(1, 579) = 0.14$, $p = .713$; and perceived impurity, $F(1, 578) = 0.03$, $p = .860$.

Moderated mediation (post hoc). Target gender did not moderate the indirect effect of social distancing violation on perceived immorality through perceived harm to the target's self, $b = 0.00$, $SE = 0.03$, 95% CI [–0.06, 0.07]; perceived harm to other people, $b = 0.02$, $SE = 0.05$, 95% CI [–0.07, 0.13]; perceived harm to society, $b = 0.02$, $SE = 0.05$, 95% CI [–0.08, 0.13]; or perceived impurity, $b = 0.00$, $SE = 0.03$, 95% CI [–0.07, 0.06].

Study 4

In Study 4, we again assessed perceived harms to self, others, and society (like Study 3) but focused on moral judgments of a target's *character* rather than actions (like Study 2).

Method

This study was preregistered at https://osf.io/2bwq6.

Participants. Participants were 600 U.S. adults, recruited via MTurk on July 9–10, 2020. After excluding 16 participants who failed an attention check, 584 participants (304 men, 275 women, five other) between the ages of 18 and 76 ($M_{age} = 39.00$, $SD = 12.69$) were retained for analyses.

Materials

Social distancing vignette. Vignettes were identical to those in Studies 1 to 3.

Perceived harm to self, others, and society. Perceived harm to the target's self, other people, and society were assessed as in Study 3.

Table 5. Intercorrelations Between Variables in Study 3 (all $p < .001$).

Variable	Perceived harm to others	Perceived harm to society	Perceived impurity	Perceived immorality
Perceived harm to self	.94	.93	.83	.83
Perceived harm to others	—	.97	.86	.85
Perceived harm to society	—	—	.85	.84
Perceived impurity	—	—	—	.76

Note. We recognize that correlations between types of perceived harm were extremely high, suggesting a lack of distinctiveness between these three constructs. We note that testing our main mediation model with these harms combined into a single variable yielded virtually the same effects for perceived impurity as reported presently for our model treating these harms as three unique variables.

Table 6. Perceptions of a Target Who Does Versus Does Not Socially Distance in Study 3.

	Social distancing compliance					
	Yes (n = 292)	No (n = 297)				
Outcome	Mean (*SD*)	Mean (*SD*)	95% CI of difference	t	d	p
Perceived immorality	1.52 (0.90)	5.15 (1.68)	[–3.85, –3.41]	32.43***	2.69	<.001
Perceived harm to self	1.42 (1.03)	5.24 (1.66)	[–4.04, –3.60]	33.43***	2.77	<.001
Perceived harm to others	1.31 (0.95)	5.47 (1.61)	[–4.38, –3.94]	37.86***	3.15	<.001
Perceived harm to society	1.36 (1.03)	5.31 (1.70)	[–4.18, –3.72]	33.82***	2.81	<.001
Perceived impurity	1.24 (0.93)	4.15 (1.87)	[–3.15, –2.67]	23.72***	1.97	<.001

Note. Perceived immorality reflects perceptions of how immoral the target's actions are. CI = confidence interval.
***$p < .001$.

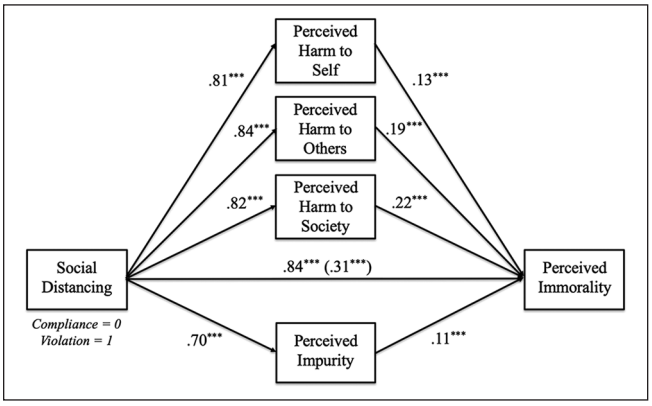

Figure 3. Mediation model for the effect of social distancing violation on perceived immorality of the target's actions through perceived harms and impurity in Study 3.
Note. All path coefficients are standardized (β).
***$p < .001$.

Perceived impurity. Perceived impurity (α = .97) was assessed as in Studies 1 to 3.

Perceived immorality. Perceived immorality of the target's character was assessed as in Study 2.

Procedure. Procedure was identical to that of Study 3.

Results

Correlations between variables are presented in Table 7. Welch's t-tests revealed very large differences in participants' perceptions of the target who does versus does not socially distance (see Table 8), with effects in the same directions as in Studies 1 to 3.

Main mediation analysis. Perceived harm to the target's self, harm to other people, harm to society, and impurity each uniquely mediated the effect of social distancing violation on perceived immorality (see Figure 4).

The combined indirect effect of perceived harm to the target's self, harm to other people, harm to society, and impurity was significant, b = 1.92, SE = 0.23, $p < .001$, 95% CI [1.46, 2.37]. Accounting for perceived harms and impurity together explained 62% of the total effect of social distancing violation on perceived immorality, reducing the effect from b = 3.20 (β = .81, $p < .001$) to b = 1.28 (β = .32, $p < .001$), indicating partial mediation. Each mediator explained unique variance (each $p < .01$), with perceived harm to the target's self explaining 13% (95% CI [6%, 20%]) of the total effect, perceived harm to other people explaining 29% (95% CI [21%, 37%]), perceived harm to society explaining 11% (95% CI [3%, 18%]), and perceived impurity explaining 7% (95% CI [2%, 13%]).

Moderation by target gender. Two-way ANOVAs revealed nonsignificant interaction effects between target gender and social distancing violation on perceived immorality, $F(1, 580) = 4.17$, $p = .042$[1]; perceived harm to the target's self, $F(1, 580) = 0.42$, $p = .519$; perceived harm to other people, $F(1, 579) = 0.30$, $p = .583$; perceived harm to society, $F(1, 580) = 0.10$, $p = .748$; and perceived impurity, $F(1, 580) = 0.69$, $p = .406$.

Table 7. Intercorrelations Between Variables in Study 4 (all $p < .001$).

Variable	Perceived harm to others	Perceived harm to society	Perceived impurity	Perceived immorality
Perceived harm to self	.93	.94	.83	.80
Perceived harm to others	—	.96	.85	.82
Perceived harm to society	—	—	.85	.81
Perceived impurity	—	—	—	.72

Note. As in Study 3, we recognize that correlations between types of perceived harm were extremely high and we note that testing our main mediation model with these harms combined into a single variable yielded virtually the same effects for perceived impurity as reported presently for our model treating these harms as three unique variables.

Table 8. Perceptions of a Target Who Does Versus Does Not Socially Distance in Study 4.

	Social distancing compliance					
	Yes (n = 292)	No (n = 297)	95% CI of			
Outcome	Mean (*SD*)	Mean (*SD*)	difference	*t*	*d*	*p*
Perceived immorality	1.66 (0.97)	4.86 (1.56)	[–3.41, –2.99]	29.86***	2.46	<.001
Perceived harm to self	1.55 (1.31)	5.32 (1.61)	[–4.01, –3.53]	31.06***	2.57	<.001
Perceived harm to others	1.44 (1.13)	5.47 (1.65)	[–4.26, –3.80]	34.47***	2.85	<.001
Perceived harm to society	1.52 (1.29)	5.44 (1.67)	[–4.16, –3.68]	31.72***	2.63	<.001
Perceived impurity	1.34 (1.10)	4.26 (1.89)	[–3.18, –2.68]	22.94***	1.89	<.001

Note. Perceived immorality reflects perceptions of how immoral the target's character is. CI = confidence interval.
***$p < .001$.

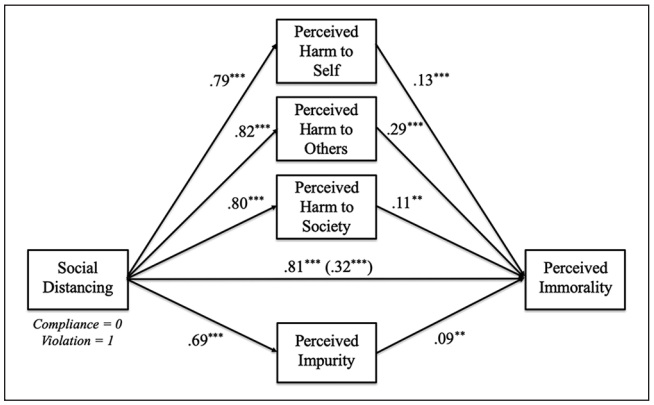

Figure 4. Mediation model for the effect of social distancing violation on perceived immorality of the target's character through perceived harms and impurity in Study 4.
Note. All path coefficients are standardized (β).
**$p < .01$. ***$p < .001$.

Moderated mediation (post hoc). Target gender did not moderate the indirect effect of social distancing violation on perceived immorality through perceived harm to the target's self, $b = 0.02$, $SE = 0.03$, 95% CI [–0.04, 0.10]; perceived harm to other people, $b = 0.03$, $SE = 0.06$, 95% CI [–0.09, 0.14]; perceived harm to society, $b = 0.01$, $SE = 0.03$, 95% CI [–0.05, 0.08]; or perceived impurity, $b = 0.02$, $SE = 0.03$, 95% CI [–0.03, 0.07].

Meta-Analysis of Studies 3 and 4: Act-Based Versus Person-Based Moral Judgments

To test the hypothesis that perceived impurity would have a larger mediating effect for person-based (character) moral judgment than for act-based judgment, we conducted a moderated mediation analysis post hoc using the combined data of Studies 3 and 4. As in Studies 1 and 2, respectively, participants judged a target's actions in Study 3 but a target's character in Study 4; all other details were constant across these two studies.

Type of moral judgment (act vs. character) did not moderate the indirect effect of social distancing violation on perceived immorality through perceived impurity, $b = 0.00$, $SE = 0.02$, 95% CI [–0.04, 0.04], nor did it moderate the indirect effects through perceived harm to the target's self, $b = 0.00$, $SE = 0.02$, 95% CI [–0.05, 0.03]; harm to other people, $b = –0.03$, $SE = 0.04$, 95% CI [–0.11, 0.04]; or harm to society, $b = 0.00$, $SE = 0.02$, 95% CI [–0.05, 0.05].

Study 5

Studies 1 to 4 documented a strong and reliable effect whereby participants morally condemned a target who violates social distancing norms. Perceptions of the target's actions as harmful and impure each uniquely explained this

moral condemnation. These studies, however, overlooked two potentially critical factors: (a) the political ideology of the participant expressing moral judgment and (b) the ideology of the target of being judged. With regard to participant ideology, moral foundations theory (Graham et al., 2009, 2013) posits that perceived impurity is a more relevant factor in moral judgment for conservatives than liberals whereas perceived harm is more relevant for liberals. Regarding target ideology, perspectives on ideological conflict (Brandt et al., 2014) suggest that people might be inclined to make harsher moral judgments of targets from their political outgroup versus in-group. It is possible that participants in Studies 1 to 4 made inferences about a target's political ideology based on their social distancing behavior—presumably assuming that distance violators were more likely conservative, given that conservatives have been less concerned about COVID-19 and reported lower distancing compliance than liberals (Pew Research Center, 2020; Rothgerber et al., 2020). These inferences could have added undetected, yet meaningful, variance to our effects.

In Study 5, accordingly, we tested whether moral judgments of social distancing violations would vary depending on participant and/or target political ideology. We manipulated target political ideology (liberal vs. conservative), in addition to social distancing behavior, and assessed participant ideology as a stable individual-differences variable.

Whereas Studies 1 to 4 portrayed social distancing behavior through multiple actions together (e.g., staying home, handwashing), Study 5 focused on a single action: mask-wearing. To capture individual differences in moral judgment more sensitively than in Studies 1 to 4, we sought in Study 5 to increase variance in participants' beliefs about whether eschewing a face mask is immoral. Specifically, we manipulated whether a target wears a mask while able to keep reasonable social distance in a public outdoor space. The moral status of mask-wearing here is ambiguous by design: Although eschewing a mask in public violates social distancing protocols, COVID-19 is much less likely to spread in outdoor than indoor settings (Bulfone et al., 2020). This ambiguity may foster more sensitive tests of political ideology, perceived harm, and perceived impurity effects.

Notably, along with manipulating social distancing behavior, Studies 1 to 4 manipulated (a) whether participants' moral judgments focused on a target's actions versus character and (b) whether the target was a man versus woman. Effects of perceived harm and impurity were invariant across both of these factors. Thus, in Study 5, we held these factors constant (with all participants judging the morality of a target man's actions).

Whereas participants in Studies 1 to 4 were recruited via MTurk, participants in Study 5 were recruited via Prolific Academic, which contributed to generalizability and permitted prescreening based on participant ideology to obtain a balanced sample with equal numbers of liberal and conservative participants.

Method

This study was preregistered at https://osf.io/ywpj5.

Participants. Preacher et al. (2007) suggest that a sample of 500 participants provides roughly 80% power to detect small moderated mediation effects of the nature of interest to our study. Thus, to ensure adequate power and account for excluding participants who fail an attention check, we recruited 600 participants, 300 of whom were liberal and 300 conservative. Participants were U.S. adults recruited via Prolific on February 17, 2021. After excluding seven participants who failed an attention check, 593 participants (289 men, 291 women, 13 other) between the ages of 18 and 78 (M_{age} = 35.49, SD = 13.90) were retained for analyses.

Materials

Participant political ideology. Participant political ideology was assessed by question, "On the following scale from 1 (*very liberal*) to 7 (*very conservative*), how would you rate your political views?"

Mask-wearing vignette. Participants read one of four possible vignettes that described a target. In a 2 × 2 design, the vignettes varied randomly along two factors: (a) mask-wearing behavior (yes vs. no) and (b) political ideology (liberal vs. conservative) of the target. The vignette template read as follows:

> John is 35 years old and considers himself to be politically liberal (*conservative*). Every morning, John goes for a 20-minute run in the park. The park where John runs is somewhat crowded in the morning, but most people are able to stay 6 feet apart from one another if they try to do so. John always (*never*) wears a face mask during his run.

Perceived harm. Perceived harm (α = .97) was assessed as in Studies 1 and 2.

Perceived impurity. Perceived impurity (α = .98) was assessed as in Studies 1 to 4.

Perceived hypocrisy. Perceived hypocrisy[2] was assessed by two items (α = .97), adapted from Laurent et al. (2014), which read, "John is a hypocrite" and "John's actions are hypocritical," with responses ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

Perceived immorality. Perceived immorality of the target's actions was assessed as in Studies 1 and 3.

Procedure. First, participants reported demographics (e.g., age, gender), in which the political ideology item was embedded. Then, participants read one of the four possible vignettes, at random. Following the vignette, participants completed

Table 9. Intercorrelations Between Main Variables in Study 5 (all $p < .001$).

Variable	Harm	Impurity	Immorality
Political ideology (of participant)	–.25	–.22	–.15
Perceived harm	—	.82	.69
Perceived impurity	—	—	.65

Note. For political ideology, higher scores indicate greater conservativism.

Table 10. Perceptions of a Target Who Does Versus Does Not Wear a Mask in Study 5 (all $p < .001$).

	Mask-wearing		
	Yes (n = 293)	No (n = 300)	
Outcome	Mean (*SD*)	Mean (*SD*)	*d*
Perceived immorality	2.65 (1.41)	4.21 (1.50)	1.07
Perceived harm	1.86 (1.13)	3.54 (1.83)	1.10
Perceived impurity	1.28 (0.85)	2.64 (1.88)	0.93

the measures of perceived harm, impurity, and hypocrisy in a randomized order. Finally, participants completed the measure of perceived immorality.

Results

Correlations between main variables are presented in Table 9. Mask-wearing condition effects are presented in Table 10.

Two-way ANOVAs revealed nonsignificant interaction effects between target political ideology and mask-wearing on perceived immorality, $F(1, 582) = 2.38$, $p = .123$, and perceived harm, $F(1, 587) = 2.35$, $p = .126$. The interaction effect was significant on perceived impurity, $F(1, 588) = 5.68$, $p = .018$, such that eschewing a mask seemed more impure when the target was conservative ($M_{difference} = 1.64$, $p < .001$) versus liberal ($M_{difference} = 1.08$, $p < .001$).

Post hoc linear regression analyses indicated that participant political ideology moderated effects of mask-wearing on perceived harm, $b = –0.27$, $SE = 0.06$, 95% CI [–0.38, –0.16], $\beta = –0.08$, $p < .001$, and impurity, $b = –0.36$, $SE = 0.05$, 95% CI [–0.47, –0.26], $\beta = –0.11$, $p < .001$, with effects larger among liberal participants ($\beta = 0.63$ on harm, 0.58 on impurity; both $p < .001$) than among conservative participants ($\beta = 0.32$ on harm, 0.21 on impurity; both $p < .001$).

Main mediation analysis. Perceived harm and impurity each uniquely mediated the effect of eschewing a mask on perceived immorality (see Figure 5).

The combined indirect effect of perceived harm and impurity was significant, $b = 0.99$, $SE = 0.09$, $p < .001$, 95% CI [0.81, 1.17]. Accounting for perceived harm and impurity together explained 63% of the total effect of eschewing a mask on perceived immorality, reducing the effect from $b = 1.58$ ($\beta = .51$, $p < .001$) to $b = 0.59$ ($\beta = .19$, $p < .001$), indicating partial mediation. Each mediator explained unique variance ($p < .001$), with perceived harm explaining 43% (95% CI [34%, 52%]) of the total effect and perceived impurity explaining 20% (95% CI [13%, 26%]).

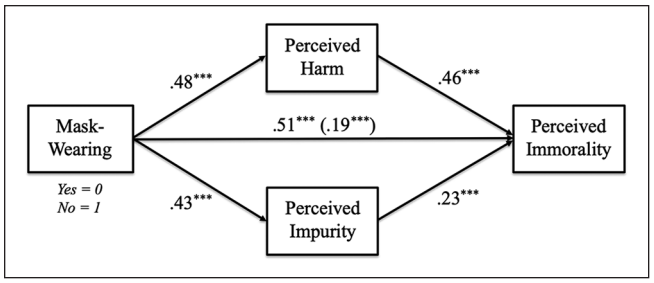

Figure 5. Mediation model for the effect of eschewing a face mask on perceived immorality through perceived harm and impurity in Study 5.
Note. All path coefficients are standardized (β).
***$p < .001$.

Do indirect effects of perceived harm and/or impurity on moral judgment differ between liberal and conservative participants? A moderated mediation analysis indicated that participant political ideology moderated the indirect effect of mask-wearing on perceived immorality through perceived harm, $b = –0.11$, $SE = 0.03$, 95% CI [–0.17, –0.06], and perceived impurity, $b = –0.08$, $SE = 0.02$, 95% CI [–0.13, –0.04], such that the indirect effect of each mediator was larger among liberal participants ($b = 0.97$ for harm, 0.40 for impurity; both $p < .05$) than among conservative participants ($b = 0.38$ for harm, 0.15 for impurity; both $p < .05$).

Post hoc linear regression analyses indicated that participant political ideology did not moderate the effect of perceived impurity on perceived immorality, $b = 0.00$, $SE = 0.02$, 95% CI [–0.03, 0.03], $\beta = 0.00$, $p = .916$, but did moderate the effect of perceived harm on immorality, $b = –0.03$, $SE = 0.01$, 95% CI [–0.06, 0.00], $\beta = –0.04$, $p = .021$, with harm having a larger effect among liberal participants ($\beta = 0.75$, $p < .001$) than among conservative participants ($\beta = 0.59$, $p < .001$).

Testing for an ideological conflict effect. A linear regression revealed a nonsignificant three-way interaction effect between mask-wearing, participant ideology, and target ideology on perceived immorality, $b = 0.05$, $SE = 0.11$, 95% CI [–0.16, 0.27], $\beta = 0.02$, $p = .623$, yielding no evidence for an ideological conflict effect in moral judgments of targets who eschew a mask.

General Discussion

Results across five experiments suggest that perceptions of harm and impurity largely explain moral judgments of people who violate COVID-19 social distancing norms, with perceived harm and impurity each offering unique

mediational value. Perceived harm was more strongly related to moral judgment than was perceived impurity. Yet over and above any perception of harm, perceived impurity reliably remained a significant mediator of moral judgment.

Mediated effects of perceived impurity did not differ between moral judgments of an agent's actions versus character, nor did effects of perceived harm. All effects were invariant across an agent's gender. Whereas conservative agents were perceived as more impure for eschewing a face mask than were liberal agents, perceptions of harm and immorality were invariant across an agent's political ideology. Perceptions of both harm and impurity exhibited larger indirect effects on moral condemnation of eschewing a face mask among liberal participants than among conservative participants. No ideological conflict effect emerged; participants' moral judgments of mask-wearing did not depend on whether or not the agent shared their political ideology.

Evidence for the Unique Role of Purity in Moral Judgment?

These findings suggest that perceived harm is likely the most influential—but not the only—appraisal driving moral judgment, at least for behaviors that threaten pathogen transmission. While these findings lend clear support for the theory of dyadic morality (Schein & Gray, 2018) in highlighting large explanatory power of perceived harm for moral judgment, they challenge its core prediction of harm's *full* explanatory power whereby "acts are immoral to the extent that they are harmful" (p. 43). Perceived impurity reliably offered unique insights into moral judgment, highlighting value in moral foundations theory (Graham et al., 2013) as a framework for understanding the moral mind: People may indeed perceive immorality directly from an appraisal of impurity, even when teased apart from appraisals of harm.

We emphasize that multiple interpretations of our data exist. On one hand, very high correlations between perceived harm and impurity ($r > .8$) suggest little distinction between these two constructs, and given that perceived harm reliably explained more variance in moral judgment than did impurity, this observation generally supports dyadic morality's notions of a harm-based moral template (e.g., Gray & Keeney, 2015; Schein & Gray, 2015, 2018). On the other hand, our psychometric analysis (see Supplemental Materials) suggests that, despite their high overlap, perceived harm and impurity are distinct constructs. In addition, while perceived harm was the stronger mediator of moral judgment, perceived impurity nevertheless reliably accounted for unique variance.

Do the current findings imply that perceived impurity can drive moral judgment in the absence of any perceived harm at all? Not necessarily. For one, participants tended to perceive a substantial amount of harm in social distancing violations. It is plausible that the moralization of purity hinged upon this perceived harm (Schein & Gray, 2018) and thus that perceived impurity would be unrelated to moral judgment in a case where people perceive no significant harm in social distancing violations. Moreover, significant effects attributed to perceived impurity could in reality reflect covariance with other forms of perceived harm that we did not assess; an important limitation of the current research is that participants could have perceived social distancing violations as harming entities beyond the self, others, or society. An additional limitation is our studies' assessments of perceived harm via explicit self-report. It remains possible that implicit perceptions of harm could account for the presently observed effects of perceived impurity (Gray et al., 2014). As such, we caution that our findings are applicable only to explicitly self-reported perceptions of harm and purity.

Moral judgment is intuitive (Haidt, 2001), and an explicit assessment of perceived harm might fail to capture instinctive perceptions people have about the harms of infectious disease. Pathogens that cause a disease like COVID-19 are clearly harmful, as they threaten human health and survival. Yet the intuitive perception of this harm, and thus the moral judgments of other people whose behaviors pose transmission risk, might manifest through disgust and register consciously (via self-report) as perceived impurity. People readily respond to disease-threatening stimuli with a feeling of disgust, and this core disgust response likely evolved to motivate disease avoidance instinctively—without conscious deliberation (Curtis et al., 2011; Oaten et al., 2009; Rozin & Fallon, 1987; Tybur et al., 2013). What could it even mean for an individual to experience a core disgust response without also perceiving a legitimate threat of harm? We advance that with regard to infectious disease threat, perceiving impurity in the actions of other people who fail to socially distance signals an elevated risk of experiencing harm (e.g., becoming ill or dying due to contracting COVID-19) instinctively—and perhaps unconsciously—which in turn can elicit a conscious feeling of disgust.

This line of reasoning suggests that perceived impurity might be considered a type of perceived harm, with the difference between perceived harm and impurity being more semantic than epistemic. The implication of this perspective for the present studies' findings is profound with regard to whether moral cognition operates via modular foundations (e.g., Graham et al., 2011, 2013) or from a constructionist template that detects harm in diverse forms (e.g., Schein & Gray, 2018). Noting the currently observed unique effects of perceived impurity on moral judgment over and above perceived harm supports the idea that the explicit perception of impurity is a distinct underpinning of moral judgment. Nevertheless, what remains to be ruled out is whether the *implicit* cognitions underlying such perceived impurities are simply reducible to intuitions about potential harm, as the theory of dyadic morality suggests (Schein & Gray, 2018).

Notably, while our studies found a reliably significant contribution of perceived impurity to moral judgment, it is certainly not the case that perceived impurity is relevant for

every moral judgment, even with regard to COVID-19 responses. For example, when considering differences in individuals' support versus opposition for COVID-19 stimulus relief payments, it is possible that perceptions of purity would have no effect on moral beliefs about such policy. Our research, we emphasize, entailed testing whether perceived impurity has the *potential* to explain moral judgments uniquely from perceived harm in certain cases, and our data cannot speak to the frequency with which impurity perceptions play a role in moral judgment across diverse situations. The present studies focused specifically on moral judgments about behavioral responses to an infectious disease threat, which likely has much greater relevance for impurity perceptions than do most other threats and instances involved in everyday moral judgment. Thus, our research likely posed a highly sensitive test of purity's effects on moral cognition.

It is also worth considering the *type* of disgust response involved in perceiving impurity. People can feel disgusted for many different reasons, and disgust toward COVID-19 social distancing violations most likely serves a disease-avoidance function. This type of *core disgust*, or specifically *pathogen disgust*, may inform moral judgment differently from other types of disgust (see Tybur et al., 2013, for a review of disgust types), and future research would benefit from investigating the extents to which perceived harms relate to various disgust responses.

Act-Based Versus Person-Based Moral Judgments

A secondary aim of our research was to identify whether perceptions of harm and impurity differ in their relationships to moral judgments of a person's *actions* versus *character*. That perceived impurity did not have a larger mediating effect for person-based (i.e., character) than act-based judgments helps clarify debate in the current literature. Some scholars (e.g., Chakroff & Young, 2015; Uhlmann & Zhu, 2014) have posited that purity violations convey unique information about an agent's core character because they reflect factors more intrinsic to the agent's self, rather than external motivators of behavior. Yet others (e.g., Gray & Keeney, 2015) have contested this moral modularity account, suggesting that previous experiments manipulating harm versus impurity scenarios lend misguided inferences because they suffer from a methodological confound: Purity violations tend to be portrayed through weirder and less severe scenarios than are those portraying harm (Gray & Keeney, 2015). Our data potentially point toward this latter account. Assessing perceived harm and impurity as subjective construals, and thus avoiding potential confounds across domain-specific scenarios, our research suggests no unique link between the amount of impurity people perceive in an agent's actions and the moral judgments they make of agent's actions versus character.

The test of this secondary aim, however, had notable limitations. One potential reason why we did not find differences in the contributions of perceived harm versus impurity to moral judgment of action versus character in Studies 1 to 4 is that these studies' vignette focused heavily on a target's character. This methodological feature may have reduced participants' inclinations to separate actions from character. Another potential limitation pertains to measurement. Some previous research has addressed moral character judgment by directly asking whether a target "has poor moral character" (e.g., Uhlmann & Zhu, 2014), whereas other research has assessed this judgment through character attributes, such as whether a target is "sick and twisted" (e.g., Chakroff & Young, 2015; Tannenbaum et al., 2011). In the present research, Studies 2 and 4, we assessed moral character judgment in a different way, asking about how moral a target seems "as a person." This divergent assessment could explain why such previous studies suggest differences in how purity violations drive act-based versus character-based moral judgments.

In one interpretation, thus, our assessment might lack sufficient construct validity; in another interpretation, if we take our assessment to be valid, then our results conceptually fail to replicate any unique link between impurity and moral character evaluation. Of importance to note, in considering the meaning of impurity here, is that we did not manipulate harm versus purity violations through scenarios, as previous studies have done (e.g., Chakroff & Young, 2015; Uhlmann & Zhu, 2014), but instead assessed harm and purity as subjective perceptions.

Alternatively, previous findings suggest that impure actions signal more about character than do harmful actions because impure acts seem abnormal and weird (Chakroff & Young, 2015; Gray & Keeney, 2015). Perceptions of impurity in COVID-19 social distancing violations might seem neither abnormal nor weird: For most of U.S. adults' lives, walking outdoors without a face mask has been normal, and while doing so during the pandemic may constitute a social norm violation, it likely does not constitute a weird behavior. Our data do not speak empirically perceptions of abnormality or weirdness (or severity; see Gray & Keeney, 2015), and thus preclude testing these accounts. We suggest that investigating the implications of violations across moral domains for act versus character judgments through both experimental manipulations and subjective perceptions could help isolate artifacts and clarify existing debates about moral cognition as operating via modular foundations or a harm-based template.

Effects of Participant Political Ideology

A long-standing position of moral foundations theory is that harm is more relevant to the moral judgments of liberals than conservatives whereas purity is more relevant to the moral judgments of conservatives than liberals (Graham et al., 2009; Haidt & Graham, 2007). However, we found that with regard to moral judgments of mask-wearing behavior, perceptions of

both harm *and* purity explained more about moral judgment among liberals than conservatives. Whereas this harm effect aligns with moral foundations theory, the purity effect challenges it. That purity can potentially explain even more about liberals' moral judgments than conservatives' judgments aligns with previous findings by Frimer et al. (2015), wherein the perception of sacrilege/offensiveness principally explained why liberals morally condemn alterations to nature—an effect stronger among liberal than conservative participants. It is possible that purity may be especially relevant for liberals' moral judgments in domains where liberals moralize transgressions more than conservatives (e.g., the environment, COVID-19); as Frimer et al. (2015) speculate with regard to preserving nature, we suggest that complying with COVID-19 social distancing guidelines may seem sacred in the eyes of liberals. Purity, as a "binding" moral foundation, might support effective group cohesion (Haidt, 2012), and liberals' construing social distancing violations as impure may serve to enhance coordinated punishment of deviants (Frimer et al., 2015; Tybur et al., 2013).

This theorizing raises the possibility that perceptions of social distancing violations as impure might not stem exclusively from core disgust evoked by perceiving disease risk, but rather might pertain uniquely to *moral disgust* that motivates protection of the social order (Tybur et al., 2013). Disentangling whether the type of disgust response tied to perceived impurity differs between liberals and conservatives may help clarify what motivations and psychological mechanisms underlie these groups' moral judgments.

Limitations for Generalizability

We note that all study participants were from the United States, highlighting a need to test cross-cultural generalizability of observed effects. Moreover, while many of our studies did systematically vary the agent's gender and political ideology, it is unclear whether and how an agent's identity in other domains might moderate moral judgment effects (e.g., Hester & Gray, 2020); in considering moral judgments of behaviors related to COVID-19 and other diseases, the identities of the perceiver, agent, and patient could be critical factors.

Limitations for Causal Inference

A limitation of the present studies is that their measurement-of-mediation designs (see Spencer et al., 2005) cannot confirm a causal role of perceived harm and/or impurity in driving moral judgments (Pirlott & MacKinnon, 2016); we manipulated our independent variable (social distancing compliance), but the relationship between our mediators (perceived harm and impurity) and outcome (moral judgment) remained inherently correlational. These data thus do not rule out alternative explanations that the significant indirect effects attributed to these variables could reflect either spurious effects or inverse mediation whereby post hoc cognitions about harm and/or purity arise from the act of making moral judgments (Fiedler et al., 2011, 2018). It would be valuable for future research to pursue experimental manipulations of our mediator variables, perceived harm and impurity, which could complement the present studies to yield double randomization designs (Pirlott & MacKinnon, 2016). Such a combination of data would provide causal tests of all paths of our theorized mediation model (i.e., evaluating a social distancing violation → perceiving harm and impurity → making a moral judgment).

However, given the high correlations between perceived harm and impurity, it would be critical for theoretical clarity to control for perceptions of the non-manipulated construct and identify the unique effect of the manipulated construct on moral judgment. Cross-over effects are probable, with scenarios intended to manipulate harm likely amplifying perceived impurity and scenarios intended to manipulate impurity likely amplifying perceived harm (e.g., Gray & Keeney, 2015). Moreover, in performing experimental inductions of disgust to manipulate impurity, researchers should consider two possible mechanisms: one in which disgust directly and uniquely causes moral condemnation (the moralization hypothesis) and another in which disgust does not *cause* but rather *intensifies* moral condemnation (the amplification hypothesis) (Landy & Goodwin, 2015). The theory of dyadic morality suggests that amplification of moral condemnation from induced disgust might reflect more generally a strengthened effect of perceived harm on moral judgment under heightened negative affect, rather than anything unique to the disgust experience (Schein & Gray, 2018**).**

Conclusion

The new set of social norms accompanying a pandemic may seem unfamiliar, but the moral cognition underlying judgments of such norm violations may be intuitive as to pose a valuable test of foundational theories. While moral judgments of social distancing violations hinged largely on perceived harm, they were also accounted for by perceived impurity, albeit to a lesser extent. Understanding these effects not only sheds light on the "new normal" of modern society but also clarifies what basic appraisals form the essence of everyday moral judgment.

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Supplemental Material

Supplemental material is available online with this article.

Notes

1. Tests of moderation by target gender were evaluated at a Bonferroni-corrected threshold of $p < .01$, as specified in this study's preregistration plan. Thus, we considered this effect nonsignificant.
2. Post hoc analyses on perceived hypocrisy appear in Supplemental Material.

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