



Demystifying Schadenfreude: How disposition theorizing explains responses to social media stories of unvaccinated COVID-19 deaths

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Abstract

Herman Cain Awards are presented on reddit.com/r/hermancainaward to individuals who share COVID-19 misinformation on social media (SM) and subsequently die from the disease. We apply affective disposition theory's moral judgment predictions regarding message and audience factors and Schadenfreude theorizing to explain reactions to similar SM posts. In an experiment with a large census-matched sample, participants viewed a series of SM posts similar to those featured on reddit.com/r/hermancainaward. We manipulated two message factors: whether the poster was dogmatic or uncertain in their anti-COVID-19-vaccination stance and whether they expressed regret before they died. Dogmatic posting resulted in perceptions of the poster as more immoral and deserving of worse health outcomes, but regret mitigated these effects. Notably, political party and vaccination status, two audience factors, moderated these processes. Our findings demonstrate that SM posting is a morally relevant behavior and that narrative moral judgment theories seem capable of explaining reader's responses.

Keywords

Affective disposition theory, COVID-19, experiment, media psychology, moral judgments, moral psychology, morality, online behavior, Schadenfreude, social media

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By mid-April 2021, COVID-19 vaccination was widely available for US adults. Yet, over 30% were still not fully vaccinated by October (Centers for Disease Control and Prevention [CDC], 2021b), resulting in an estimated 163,000 additional deaths from June to November 2021 (Ortaliza et al., 2021). Many who chose to remain unvaccinated discussed their opinions on social media (SM), sharing misinformation, conspiracy theories, and general COVID-19 denialism. Americans watched as Facebook friends who had previously shared their anti-vaxx opinions began posting that they had contracted COVID-19, often resulting in hospitalization and death. Struck by the irony of this morbid phenomenon, some witnesses began to curate these cautionary tales. Reddit's *r/hermancainaward* (*r/hca*) subreddit—named after Herman Cain, a Republican politician who contracted COVID-19 and died, and whose SM accounts continued to disseminate COVID-19 misinformation after his death—became a particularly popular venue for sharing these stories.

The popularity of *r/hca* and other related sites (e.g. *sorryantivaxxers.com*) resulted in news coverage, which categorized the sites as cruel, heartless, and filled with Schadenfreude (see <https://doi.org/khvg>, Supplemental Materials, Table S1). Yet, comments on such sites are not uniformly celebratory or necessarily heartless. Some express sympathy, and most indicate moral judgment processes at work, suggesting that the expression of COVID-19 denialism in SM posts was seen by others as a moral violation that deserved a form of karmic retribution.

The current study seeks to explore the processes that may underlie such judgments. How does viewing SM posts activate moral judgments? How do these moral judgments result in viewers wishing ill on the poster and feeling satisfaction when negative events befall them? We apply affective disposition theory (ADT; Zillmann, 2000, 2013) and Schadenfreude theorizing (Leach and Spears, 2008; Wang et al., 2019) to answer these questions and examine systematic patterns based on both message and audience factors. We hope to move past the contempt expressed in popular media articles and toward an understanding of the nuances of moral reasoning that may underlie responses to SM posts regarding COVID-19 denialism and explicate how SM can result in moral outrage (see Crockett, 2017).

This research contributes to media theory by both *extending the range of* ADT to the new context of reading SM posts of others and *elucidating contingencies* of these processes through the testing of novel interactions (see DeAndrea and Holbert, 2017: 171; Slater and Gleason, 2012). It also fills a gap in the literature. Research has examined and identified what might lead users to engage in antagonistic online behaviors (e.g., trolling and “doing it for the lulz”; see Kurek et al., 2019). However, we note that this research has focused on message generation. The current study instead focuses on how reading the SM messages generated by others can elicit moral judgment processes as evidenced through approbation of behavior, person-perception judgments, and desires for retributive justice (cf., Sawaoka and Monin, 2020, which examined emotional responses).

Affective disposition theory

ADT (Zillmann, 2013) broadly explicates how responses to narrative events may be understood through a viewer's moral judgments (see Grizzard et al., 2023, for a recent comprehensive experimental test of ADT and its various subprocesses). Moral judgment is defined in ADT as relating to the approbation/disapprobation of a character's behavior:

. . . observed behavior is thought to be assessed in moral terms (i.e., good versus bad, to varying degrees), and such assessment is expected to foster emotional dispositions. The approval of actions and their apparent purpose is thought to prompt liking and caring; disapproval, in contrast, is thought to prompt disliking and resenting. (Zillmann, 2000: 53–54)

Observing character behaviors results in approbation/disapprobation from the viewer, with approbation leading to positive dispositions/person-perceptions (e.g. thinking of a character as moral, warm) and disapprobation leading to negative dispositions/person-perceptions (e.g. thinking of a character as immoral, cold). We note here that while ADT's description of moral judgment processes predates more recent theories of morality, it is also consistent with these approaches. Approval and disapproval of behavior is a central determinant of moral judgments in the work of several prominent moral psychologists (see Malle, 2021: 295, for extensive list). We further note that defining morality in terms of approbation is consistent with Vaisey and Miles (2014: 312) whereby moral goods are described in terms of "good, bad, worthy, valuable, and essential" and moral prohibitions are defined in terms of "(un) acceptable, (in)appropriate, right and wrong." Thus, the definitions provided by ADT, although specific to ADT, are also consistent with the general assumptions of other moral theories. Once morally relevant dispositions are formed through approbation/disapprobation, desires for reward and punishment emerge. These processes are further moderated by the contextualization of behaviors through message features and the morality subculture of the individual appraising the behavior.

Message features that contextualize a behavior can cause an audience to judge a character's moral violation as more/less severe, resulting in desires for harsher/more lenient punishment. For example, a character expressing regret can indicate a change of heart resulting in desires for less extreme (or no) punishment. In addition to message features, the morality subculture(s) to which an individual belongs can also moderate moral judgments (see Eden and Tamborini, 2017; Tamborini et al., 2013). The literature defines morality subcultures as "groups of individuals who share similar moral sensitivities" (Francemone and Matthews, 2022: 2). For example, eating a hamburger may seem morally innocuous to many but may represent a moral violation to specific groups (e.g., vegans). Empirical evidence suggests that political affiliation likely represents a morality subculture as liberals and conservatives differ in their moral sensitivities (see Graham et al., 2011). Morality subculture membership can also influence perceptions of what is a just punishment (see Zillmann, 2000: 60–61). Punishments deemed too harsh or lenient leave audiences feeling disturbed, whereas punishments deemed appropriately harsh leave audiences feeling satisfied (see Grizzard et al., 2021). We note that audiences' desires for punishment are often nonspecific (see Zillmann, 2000), and thus may be fulfilled by official sanctions (e.g., a prison term) or karmic retribution (e.g., illness, death).

ADT, justice sequences, and Schadenfreude

ADT's focus on retributive justice relates to typical narrative structures. Narratives often begin with a situation in which justice has been disturbed by the immoral actions of a character (e.g., a villain), resulting in desires for just retribution through punishment of the character. Witnessing such punishment (if deemed deserved and proportional)

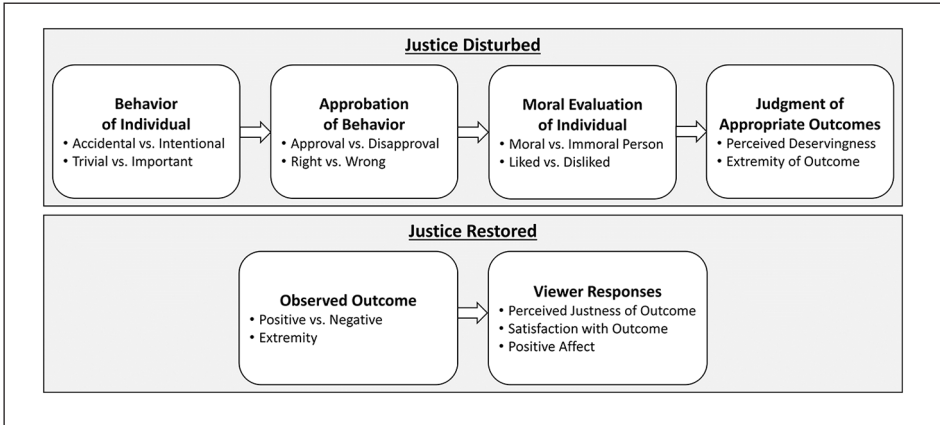


Figure 1. Model of justice sequences and processes implicated.

restores justice in the eyes of the audience, resulting in satisfaction and enjoyment/appreciation of the story. This narrative structure has been defined as a *justice sequence* (see Raney and Bryant, 2002; see also, Rothmund et al., 2013; Zillmann, 2013).

ADT's description of enjoyment derived from witnessing justice sequences has conceptual overlap with the phenomenon of Schadenfreude (see Figure 1). Schadenfreude has been defined as “feelings of pleasure that a person experiences in response to another person's failures or misfortunes” (Dasborough and Harvey, 2017: 693; cf., Leach and Spears, 2008; Watanabe et al., 2022). Schadenfreude is understood to be a complex emotional response, ranging from benign to malicious (Crysel and Webster, 2018) and motivated by priorities as varied as social justice, aggression, and intergroup rivalry (Wang et al., 2019). Yet across diverse contexts and motivations, researchers find that the perceived deservingness is a core predictor of the extent to which an observer is likely to experience Schadenfreude (Dasborough and Harvey, 2017; Peplak et al., 2022; Schindler et al., 2015; Van Dijk et al., 2005; Wang et al., 2019).

Given that moral judgments of deservingness often underlie experiences of Schadenfreude, a number of researchers categorize Schadenfreude as a *moral emotion*, alongside others such as guilt, pity, and sympathy (see Dasborough and Harvey, 2017; Van Dijk et al., 2005; Zillmann, 2013). Schindler et al. (2015) found that children develop the capacity for Schadenfreude by 4 years old, and that young children experience heightened Schadenfreude when observed actors are seen as pursuing immoral goals. Thus, although some incidences of Schadenfreude may be driven by self-centered motivations such as a desire for superiority over an outgroup (see Leach and Spears, 2008; Wang et al., 2019), developmental research implicates moral judgment processes as outlined in ADT's justice sequences (see Zillmann, 2013) as a primary determinant. Overall, the literature suggests an overlap between the processes that culminate in Schadenfreude and ADT's justice sequences, with both having relevance for explaining moral judgments of others' SM posting behaviors, particularly those exemplified by the content curated on r/hca.

The content of r/hca as exemplars of justice sequences

The half-million members of r/hca curate, share, and view the stories of Herman Cain Award (HCA) nominees. Qualifications for an HCA are described as follows: “Nominees have made public declaration of their anti-mask, anti-vax, or Covid-hoax views, followed by admission to hospital for Covid. The Award is granted upon the nominee’s release from their Earthly shackles.” The content on r/hca is semi-autobiographical in that each nomination includes screenshots of a nominee’s SM posts, such as Facebook status updates, that express COVID-19 denialism. Nominees’ stories typically follow a similar progression, which our study sought to emulate, and we describe the relevant hypotheses/research questions in order of that progression.

The first screenshots in an r/hca post are typically antivaccination memes, articles, and/or original thoughts posted by the nominee prior to their infection. Reading anti-COVID-19-vaccination SM posts may activate disposition formation processes resulting in approbation/disapprobation of the SM poster’s behavior and positive/negative person-perception judgments of the poster. We thus ask,

RQ1: Are anti-COVID-19-vaccination SM posts perceived as (im)moral behavior?

If posting thoughts related to COVID-19 denialism is a morally relevant behavior, then variance in the dogmatism of such denialism should lead to covariance in behavioral approbation/disapprobation and resulting person-perception judgments in accordance with ADT’s disposition formation processes. We thus manipulated the tone of the SM posts in our study to be uncertain (i.e., “Is COVID-19 a hoax?”) or dogmatic (i.e., “COVID-19 is a hoax!”).

After the initial screenshots, r/hca posts shift to the nominee receiving a positive diagnosis of COVID-19. If ADT’s propositions regarding desires for justice apply to SM posting behavior, then approbation of behavior and person-perception judgments should predict what outcomes of COVID-19 infection are perceived as being deserved for the poster (e.g., full recovery, death).

H1: More negative approbation and person-perception judgments will predict harsher outcomes as being more deserved.

Following infection, r/hca posts will often include messages from the nominee that reflect an updating/maintenance of their attitudes regarding COVID-19 vaccination, particularly as their condition worsens. Some of these messages indicate opinion reversal (e.g., “NO—I NEVER GOT VACCINATED . . . [BUT I WOULD HAVE HAD I KNOWN THIS NO QUESTION],” content from an actual r/hca post), whereas others indicate opinion maintenance (e.g., “I’m still not screaming for people to wear their mask or get vaccinated,” again, content from an actual r/hca post). Expressing regret for a moral infraction indicates remorse whereas doubling-down does not, and both provide information to an outside observer on whether the person expressing opinion reversal/maintenance is moral (see Sperber and Baumard, 2012). To the extent that the initial SM posts were perceived as being moral/immoral, we should then also see effects of statements that indicate reversal or maintenance. We thus ask,

RQ2: Will a SM poster expressing regret for earlier posts alter moral judgment processes as described in RQ1?

The final SM posts within an r/hca post usually reflect the death of an individual. ADT suggests that satisfaction with narrative outcomes is positively associated with what outcomes are perceived to be deserved. Consistent with Schadenfreude theorizing, if an individual believes a severe punishment for another is deserved, then observing a severe punishment should result in satisfaction. In the current study, these processes should be reflected in responses to the final elements of the stimulus.

H2: There is a positive relationship between those outcomes perceived as deserved and satisfaction with those outcomes.

If ADT processes are present in audience responses to anti-COVID-19 vaccination SM posts, work by Zillmann (2000) and Raney and Bryant (2002) suggests that morality subculture membership should moderate the processes reflected in RQ1 through H2. In other words, dogmatic anti-COVID-19-vaccination posts may be seen as a positive behavior (for those who share such beliefs) or a negative behavior (for those who do not share such beliefs). Because political affiliation had been identified in past work as a morality subculture (see Graham et al., 2011) and there was specific evidence suggesting that Republicans tend to be more resistant to COVID-19 mitigation strategies (see Ye, 2023), we utilize participants' political affiliation as one of our morality subculture indicators. Our other morality subculture indicator is the participants' COVID-19 vaccination status. Since our data collection, research has provided evidence that COVID-19 vaccination status covaries with various moral sensitivities (see Reimer et al., 2022). We thus pose two research questions:

RQ3: Does a reader's own COVID-19 vaccination status moderate the judgment processes described in RQ1 through H2?

RQ4: Does a reader's own political party identification moderate the judgment processes described in RQ1 through H2?

Finally, some have suggested that the Schadenfreude-like processes experienced when viewing a COVID-19 denier being infected with COVID-19 might negatively influence attitudes toward COVID-19 vaccination (i.e., a boomerang effect; see <https://doi.org/khvg>, Supplemental Materials, Table S1). One scientific study found that Schadenfreude reactions in those who had heard about Senator Rand Paul's COVID-19 diagnosis were associated with decreased behavioral intentions for COVID-19 prevention strategies (Myrick and Chen, 2022). Yet broader work has argued that—at times—Schadenfreude resulting from seeing bad behavior punished can motivate positive behavioral change (Dasborough and Harvey, 2017; see also Wang et al., 2019), because such stories serve a social learning function (see Moyer-Gusé, 2008). We thus pose our final research question:

Experimental Condition		Stimuli Part 1: Initial Opinions (Uncertain vs. Dogmatic)	Stimuli Part 2: COVID-19 Diagnosis	Stimuli Part 3: Pre-Intubation Opinions (Opinion Maintenance vs. Opinion Reversal)	Stimuli Part 4: Death	
Uncertain/Opinion Reversal	Survey Part 1 (T1)	Social Media Posts Indicating Uncertain Anti-Vaccine Opinions [Uncertain Condition]	Social Media Posts Indicating Positive COVID-19 Test	Survey Part 3 (T3)	Survey Part 4 (T4)	Survey Part 5 (T5)
Uncertain/Opinion Maintenance						
Dogmatic/Opinion Reversal						
Dogmatic/Opinion Maintenance						

Figure 2. Visual depiction of study procedure.

RQ5: Does exposure to SM posts of individuals who shared anti-COVID-19 vaccination content and later died influence COVID-19 vaccination attitudes?

Method

Procedure

Data were collected online using Qualtrics. All data were collected between 29 October and 8 November 2021, at which time daily US Delta-variant-COVID-19 infections had already peaked, but the first known case of Omicron had not yet been detected in the United States (Iuliano et al., 2022). In a 2 (Dogmatic vs Uncertain Anti-COVID-19 Vaccination SM Posts; dogmatic manipulation) X 2 (Opinion Maintenance vs Opinion Reversal SM Post; maintenance manipulation) between-subjects experiment, participants provided consent and were randomly assigned to view one of four versions of the stimuli. The procedure was broken into five timepoints (T1 to T5, within-subjects) with survey questions presented at each (see Figure 2).

Stimuli and experimental conditions

The stimuli (see Figure 3, for example; see <https://doi.org/khvg> for full stimuli) were a series of mock Facebook status updates (FBSUs) that mimicked the content of actual r/hca posts and were presented in a four-part, time-dependent manner. In the first part, participants were presented four FBSUs by Terry Adams (a pseudonym generated by the authors; gender intentionally unspecified) wherein they espoused (1) uncertainty about COVID-19 vaccines (i.e., the uncertainty conditions) or (2) dogmatic anti-COVID-19-vaccination beliefs (i.e., the dogmatic conditions). These four



Figure 3. Example of stimuli. Part of the T2 stimuli for the dogmatic condition is depicted here.

FBSUs involved an initial statement of either wariness of or antagonism toward the vaccine, memes that undermine the reality of COVID-19 and the vaccine’s legitimacy, and ultimately a declaration of their refusal to get the vaccine. In the second part, all participants saw the same three FBSUs wherein Terry announced that they left work feeling sick, tested positive for COVID-19, and then visited an emergency room due to worsening symptoms. In the third part, participants viewed a single FBSU wherein Terry shared their condition is critical and either (1) expressed remorse for not getting vaccinated and encouraged others to get vaccinated (i.e., the opinion reversal conditions), or (2) did not express remorse and encouraged others to avoid vaccination (i.e., the opinion maintenance conditions). The fourth and final part consisted of a single FBSU from Terry’s SM account made by Terry’s brother, which announced Terry’s death.

Participants

To ensure adequate diversity in political affiliation and vaccination status, we used a professional panel company (Dynata) to recruit a US adult sample that was census matched on the factors of age, sex, race/ethnicity, and region. Participants were considered completes by the company if they had (1) complete data, (2) a realistic study completion time of 10 minutes or more, and (3) successfully answered a simple attention check. Our final sample size was $N=932$. Our recruitment resulted in a sample that matched our goals of variance in political affiliation and vaccination status (see <https://doi.org/khvg>, Supplemental Materials, for details on sample size goals, power, demographics and verification of random assignment).

Measures

Unless specified, measures use 7-point scales (1 = *strongly disagree* to 7 = *strongly agree*) with the midpoint (4) indicating *neither agree nor disagree*. All measures and details on their scoring are present in the Online Supplement (see <https://doi.org/khvg>).

COVID-19 attitudes and behaviors

COVID-19 vaccine support attitudes. Six questions measured general COVID-19 vaccine support. Items were taken from the US Centers for Disease Control and Prevention's (CDC, 2021a) Vaccine Confidence Survey Bank. The same measures were given at T1 ($M=4.09$, $SD=1.54$; $\alpha=.86$) and T5 ($M=4.16$, $SD=1.53$; $\alpha=.85$).

COVID-19 vaccination status. Participants reported their COVID-19 vaccination status (at least one dose, yes/no), with follow-up questions based on vaccination status. We recoded this measure such that participants who received at least 1 dose of a COVID-19 vaccine ($n=652$; 70.0%) and those who were not eligible to receive the vaccine but desired to receive it ($n=10$; 1.1%) were considered vaccinated/provaccination ($n=662$; 71.0%). All other unvaccinated participants ($n=270$; 29.0%) were coded as unvaccinated.

Political party. Participants were asked the following question: "In terms of political party, do you identify as a Democrat, Republican, Independent, or Other?" Participants who identified as Independent were also asked if they lean Democrat, lean Republican, or neither. After recoding those who identified as leaning toward a party or who answered "Other," our final sample consisted of 393 (42.2%) coded as Democrats, 239 (25.6%) as Independents, and 300 (32.2%) as Republicans.

Behavioral approbation. Behavioral approbation reflecting the moral acceptability of Terry's SM posting was assessed using an adapted measure (see Grizzard et al., 2018) with 11 items, four of which were reverse-coded. All items answered the prompt "Terry's Facebook posts regarding the COVID-19 vaccine are. . .," and example items are "ethical," "immoral" (reversed), and "acceptable." Behavioral approbation was measured at T2 ($M=3.64$, $SD=1.54$; $\alpha=.95$) and T4 ($M=4.27$, $SD=1.45$; $\alpha=.94$).

Person-perception judgments. Perceptions of Terry were composed of several measures, including perceived morality of Terry, liking of Terry, and perceptions of Terry's warmth and competence. All person-perception scales were measured at T2 and T4.

Perceived morality. Perceived morality was measured using the character moral foundations questionnaire short form (Grizzard et al., 2020), which is based on moral foundations theory's definition of morality (see Graham et al., 2011). Questions asked whether Terry seemed like a person who would, "physically hurt another person," "deny others their rights," "betray their group," "cause chaos or disorder," and "do something disgusting." Answers were reverse-coded such that higher scores indicated higher morality (T2: $M=4.41$, $SD=1.65$, $\alpha=.94$; T4: $M=4.79$, $SD=1.66$, $\alpha=.95$).

Liking. Participants rated their agreement/disagreement with six statements adapted from Krakowiak and Tsay-Vogel (2013). Example items include, "I like Terry," and "I would like to be friends with someone who is like Terry" (T2: $M=3.63$, $SD=1.45$, $\alpha=.91$; T4: $M=3.84$, $SD=1.39$, $\alpha=.89$).

Warmth and competence. Perceptions of Terry's warmth (T2: $M=3.89$, $SD=1.75$, $\alpha=.91$, $r=.83$; T4: $M=4.20$, $SD=1.79$, $\alpha=.93$, $r=.87$) and competence (T2: $M=3.95$, $SD=1.88$, $\alpha=.91$, $r=.83$; T4: $M=4.11$, $SD=1.83$, $\alpha=.91$, $r=.83$) were measured using 7-point semantic differential scales adapted from past research (see Frazer et al., 2023). Warmth items were "unfriendly/friendly" and "cold/warm," and competence items were "incapable/capable" and "unintelligent/intelligent."

Combined person-perception/morality score. Given that perceived morality, liking, warmth, and competence each constitute positive or negative perceptions of Terry as an individual and have been observed to correlate in past research (see Frazer et al., 2023), we ran a principal component analysis with Promax rotation ($Kappa=4$) on the T2 data to test whether these four scales might be reduced into a single person-perception composite for ease of reporting. Results suggest that a single factor explained 77.60% of the variance in the data, with an average factor loading of .88 (minimum=.82). We thus averaged the four scales to form a person-perception/morality composite at each time point (T2: $M=3.97$, $SD=1.48$, $\alpha=.94$; T4: $M=4.24$, $SD=1.46$, $\alpha=.94$).

Deserved outcome judgments. Deserved outcomes for Terry were assessed at two time points: T3 (following diagnosis) and T4 (following the worsening of Terry's condition).

T3. Participants were asked, "Which of the following COVID-19 outcomes do you think Terry deserves?" Seven increasingly severe options coded as 1 to 7 were presented to participants ranging from (1) "**very mild case** with full recovery at home after three days," to (7) "**death** (at the end of a critical case)," ($M=2.70$, $SD=1.67$).

T4. After seeing that Terry was in the hospital and briefly put on oxygen, participants were asked again what outcome Terry deserved with only three options: "full recovery"

($n=665$, 71.4%), “recovery with long-term complications” ($n=223$, 24.0%), and “death” ($n=43$, 4.6%).

Outcome satisfaction. At T5, participants were asked six items to evaluate their satisfaction with Terry’s death. Sample items include, “Terry got what was deserved,” “I am glad that Terry died,” and “I am satisfied with Terry’s death” ($M=2.73$, $SD=1.24$, $\alpha=.84$). We also measured how much happiness participants felt with Terry’s death as a purer indicator of Schadenfreude. Anchors for the measure were 0 *not at all* and 6 *extreme*.

Results

The moral judgments explored in this paper implicate a sequential process that informed our procedure and analyses. The procedure begins with the dogmatic/uncertain manipulation (T2), which should influence moral judgments (RQ1). Next comes the diagnosis of COVID-19 and perceptions of deserved outcomes (T3), which should be influenced by the dogmatic manipulation and prior moral judgments (H1). Following the diagnosis is the maintenance manipulation (T4), which should influence moral judgments and deserved outcomes (RQ2). Finally, the death announcement is posted (T5), and perceived deserved outcomes should predict reactions (H2). Because participants’ political party and vaccination status may be important determinants of moral judgment processes in this context, we incorporate them as predictors in our analyses (RQ3 and RQ4). Finally, we test the potential impact of exposure to Terry’s story on changes in participants’ vaccine attitudes (RQ5).¹

T2: antivaccination posts and their effects on moral judgment variables

Terry’s initial posts (T2) were antivaccination opinions manipulated to be either dogmatic (e.g., “I know the vaccine is harmful”) or uncertain (e.g., “Is the vaccine harmful?”). To examine moral judgment effects, we performed a 2 (dogmatic manipulation: Dogmatic vs Uncertain posts) X 2 (participant’s vaccination status: Unvaccinated vs Vaccinated/Provaccination) X 3 (participant’s political party: Democratic vs Independent vs Republican) between-groups multivariate analysis of variance (MANOVA). Dependent variables were approbation of Terry’s behavior (T2) and person-perception judgments of Terry (T2). Box’s M test was significant ($p=.001$), so we interpreted Pillai’s Trace. Results showed a multivariate main effect of each of the three factors: dogmatic manipulation, Pillai’s Trace=.03, $F(2, 919)=11.57$, $p<.001$, $\eta_p^2=.03$; participant vaccination status, Pillai’s Trace=.20, $F(2, 919)=114.74$, $p<.001$, $\eta_p^2=.20$; and participant political party, Pillai’s Trace=.05, $F(4, 1840)=12.40$, $p<.001$, $\eta_p^2=.03$. No significant multivariate interactions emerged (smallest interaction p -value=.16).

Univariate effects indicated that the dogmatic depiction of Terry resulted in significantly more disapprobation of Terry’s behavior, $F(1, 920)=19.06$, $p<.001$, $\eta_p^2=.02$, and significantly more negative person-perception judgments of Terry, $F(1, 920)=21.05$, $p<.001$, $\eta_p^2=.02$ (see Table 1 for mean differences). In addition, vaccinated participants as compared to unvaccinated participants reported significantly more disapprobation of Terry’s behavior, $F(1, 920)=223.54$, $p<.001$,

Table 1. Means of approbation and person-perception judgments by dogmatic manipulation.

	Uncertain, <i>M</i> (<i>SD</i>)	Dogmatic, <i>M</i> (<i>SD</i>)
Approbation	3.89 (1.45)	3.41 (1.58)
Person-perception	4.23 (1.43)	3.72 (1.49)
<i>N</i>	457	475

The midpoint of the scale is 4 *neither agree nor disagree*. *SD*: standard deviation.

Table 2. Means of approbation and person-perception judgments by participant vaccination status.

	Unvaccinated, <i>M</i> (<i>SD</i>)	Vaccinated/Provaccination, <i>M</i> (<i>SD</i>)
Approbation	4.78 (1.30)	3.18 (1.38)
Person-perception	4.93 (1.27)	3.58 (1.38)
<i>N</i>	270	662

The midpoint of the scale is 4 *neither agree nor disagree*. *SD*: standard deviation.

Table 3. Means of approbation and person-perception judgments by participant political party.

	Democratic, <i>M</i> (<i>SD</i>)	Independent, <i>M</i> (<i>SD</i>)	Republican, <i>M</i> (<i>SD</i>)
Approbation	3.08 (1.48) _a	3.86 (1.38) _b	4.21 (1.48) _c
Person-perception	3.48 (1.46) _a	4.09 (1.32) _b	4.51 (1.42) _c
<i>N</i>	393	239	300

Within rows, means that do not share a subscript differ, $p < .01$ (Bonferroni-corrected). The midpoint of the scale is 4 *neither agree nor disagree*. *SD*: standard deviation.

$\eta_p^2 = .20$, and significantly more negative person-perception judgments of Terry, $F(1, 920) = 161.30$, $p < .001$, $\eta_p^2 = .15$ (see Table 2). Finally, participant political party also had significant effects on approbation, $F(2, 920) = 22.29$, $p < .001$, $\eta_p^2 = .05$, and on person-perception judgments, $F(2, 920) = 19.06$, $p < .001$, $\eta_p^2 = .04$, such that Democrats reported the most disapprobation and most negative person-perception judgments, followed by Independents, and Republicans (see Table 3).

T3: Terry gets sick and judgments of deserved outcome

At T3, the posts reveal Terry has tested positive for COVID-19, resulting in an emergency room visit for supplemental oxygen. We performed a 2 (dogmatic manipulation) X 2 (participant vaccination status) X 3 (participant political party) between-groups ANOVA, with the dependent variable being deserved outcome for Terry to identify predictors of deserved outcome judgments. The dogmatic manipulation's effect was nonsignificant ($p = .59$). However, vaccinated participants ($M = 2.92$, $SD = 1.68$) judged Terry to deserve harsher outcomes than unvaccinated participants ($M = 2.17$, $SD = 1.52$), $F(1,$

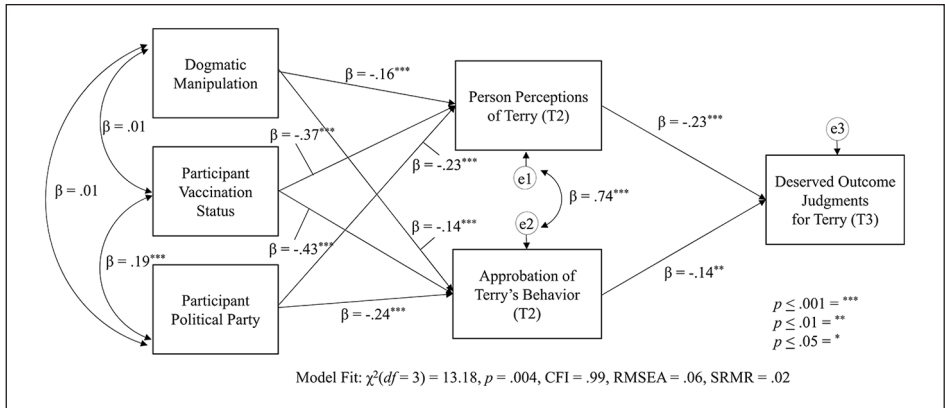


Figure 4. Path model of T3 deserved outcome judgments.

918) = 25.49, $p < .001$, $\eta_p^2 = .03$. In addition, participants’ political party had a significant main effect, $F(2, 918) = 8.74, p < .001$, $\eta_p^2 = .02$, with Democrats ($M = 3.12, SD = 1.74$) judging Terry to deserve significantly harsher outcomes (Bonferroni-corrected) than Republicans ($M = 2.32, SD = 1.50$). Independents ($M = 2.49, SD = 1.59$) fell between Democrats and Republicans, but did not significantly differ from either. No significant interactions emerged (smallest p -value = .10).

Given ADT’s predictions that moral evaluations of characters determine audiences’ desired outcomes for them (H1; see Zillmann, 2000), we ran a path analysis linking the effects of our dogmatic manipulation and morality subculture variables (i.e., vaccination status and political affiliation) to participants’ moral judgments (approbation, person-perception judgments) of Terry, and linking these moral judgments to deserved outcome judgments. All paths were significant, and the model had excellent fit (see Figure 4), explaining 12.6% of the variance in deserved outcome. Thus, in support of H1, the more participants approved of Terry’s behavior and had positive perceptions of Terry, the less severe outcomes they felt Terry deserved.

T4: Terry’s worsening condition and opinion reversal/maintenance

Effects on moral judgment variables. To examine how the maintenance manipulation might alter moral judgments, we performed a repeated measures MANOVA on the approbation and person-perception scores measured at T2 and T4 (repeated factor time). The use of four between-subjects independent variables and one within-subjects variable represents a five-way design: 2 (participant vaccination status) X 3 (participant political party) X 2 (dogmatic manipulation) X 2 (maintenance manipulation) X 2 (time). We focus on the two-way interaction of Maintenance X Time, and the three-way interactions that involve the Maintenance X Time interaction, because the maintenance manipulation occurs between T2 and T4. Other interactions (e.g., Dogmatic X Time) do not take into account the maintenance manipulation, and thus are not of interest. All the four-way and five-way interactions were nonsignificant (smallest p -value = .38).

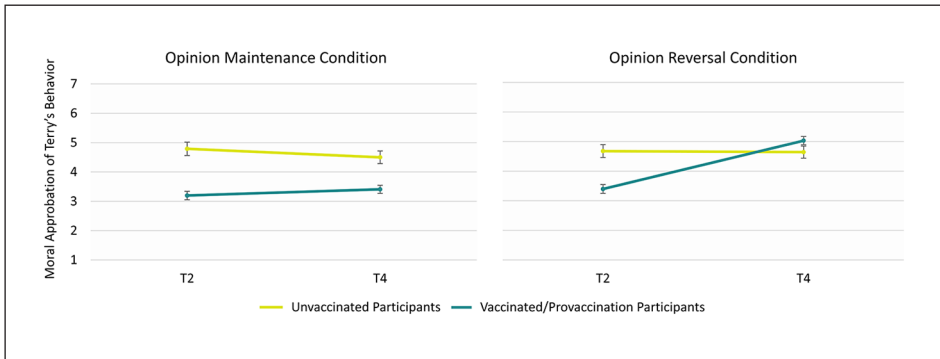


Figure 5. Three-way interaction of time, maintenance, and participant vaccination status on the shift in moral approbation of Terry's behavior from T2 to T4. Means and 95% CIs depicted. The midpoint of the scale is 4 *Neither agree nor disagree*.

For multivariate results, the Maintenance X Time interaction was significant, Pillai's Trace = .07, $F(2, 907) = 34.89$, $p < .001$, $\eta_p^2 = .07$. Univariate effects indicated a significant interaction on both approbation, $F(1, 908) = 57.13$, $p < .001$, $\eta_p^2 = .06$, and person-perception, $F(1, 908) = 45.52$, $p < .001$, $\eta_p^2 = .05$. This Maintenance X Time interaction was qualified by several three-way interactions: Maintenance X Time interacted with participant vaccination status, Pillai's Trace = .03, $F(2, 907) = 14.29$, $p < .001$, $\eta_p^2 = .03$, and participant political party, Pillai's Trace = .02, $F(4, 1816) = 4.22$, $p = .002$, $\eta_p^2 = .01$. The remaining three-way interaction (Maintenance X Time X Dogmatic) was nonsignificant, Pillai's Trace = .00, $F(2, 907) = 1.62$, $p = .20$, $\eta_p^2 = .004$, indicating that the dogmatic manipulation's influence was reduced by the maintenance manipulation at T4.

The significance of the Maintenance X Time X Participant Vaccination Status multivariate interaction was driven by approbation, as indicated by the significant univariate effect, $F(1, 908) = 27.54$, $p < .001$, $\eta_p^2 = .03$. The univariate results for person-perception judgments were nonsignificant, $F(1, 908) = 2.57$, $p = .11$, $\eta_p^2 = .003$. For approbation, when Terry maintains his or her original anti-vaxx opinions (see Figure 5, Panel 1), the difference in approbation at T2 between unvaccinated and vaccinated/provaccination participants remains at T4. However, when Terry reverses his or her antivaccination opinions (see Figure 5, Panel 2), this difference at T2 is reversed.

For the Maintenance X Time X Participant Political Party interaction, the univariate results again indicated that the multivariate interaction was driven by the significant effect on approbation, $F(2, 908) = 8.45$, $p < .001$, $\eta_p^2 = .02$. The univariate results for person-perception judgments were nonsignificant, $F(2, 908) = 2.63$, $p = .07$, $\eta_p^2 = .006$. For approbation, when Terry maintains his or her antivaccination opinions from T2 to T4 (see Figure 6, Panel 1), the differences between Democrats, Independents, and Republicans persist across time. However, when Terry reverses his or her antivaccination opinions (see Figure 6, Panel 2), the differences between Republicans, Democrats, and Independents disappear. Overall, Terry's opinion reversal had a stronger impact on Democrats than on Republicans, resulting in the three parties converging at a higher level of approbation at T4.

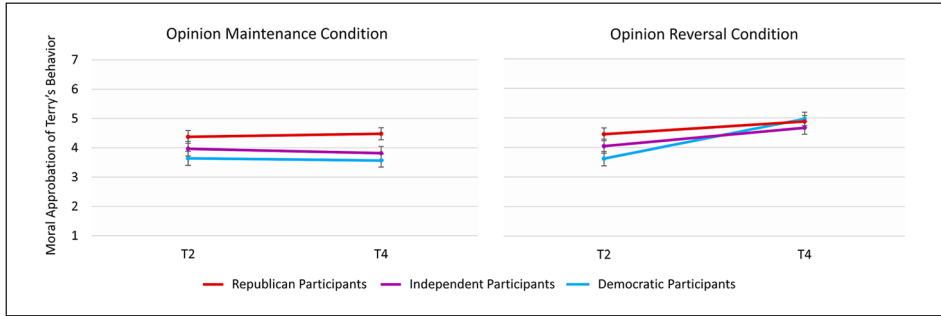


Figure 6. Three-way interaction of time, maintenance, and participant political party on the shift in moral approbation of Terry's behavior from T2 to T4.

Means and 95% CIs depicted. The midpoint of the scale is 4 *neither agree nor disagree*.

Effects on judgments of deserved outcome. Deserved outcomes at T4 were measured with three outcome options: “full recovery,” “recovery with long-term complications,” and “death.” Given the categorical nature of the deserved outcome variable at T4, we used logistic regression to test the significance of effects. Because the number of participants who selected “death” was very small ($n=43$, 4.6% of sample), a multiple logistic regression which analyzed this category separately from both “full recovery” and “recovery with long-term complications” would have been underpowered, preventing us from meaningfully testing differences in deserved outcome based on key predictors. We thus created a binary deserved outcome variable in which “full recovery” was coded as 0 and “recovery with long-term complications” and “death” were both coded as 1. Grouping “recovery with long-term complications” and “death” together compares full recovery to options that indicate that Terry does not deserve to fully recover. Our binary logistic regression on the deserved outcome variable included the dogmatic manipulation, the maintenance manipulation, participant vaccination status, and participant political party as predictors. The only nonsignificant predictor was the dogmatic manipulation ($p=.12$). Participants were more likely to feel that Terry deserved a worse outcome than full recovery when Terry maintained his or her original opinion, $B=.49$, $SE=0.15$, Wald $\chi^2(df=1)=10.48$, $p=.001$, odds ratio=1.63, 95% CI (1.21, 2.19). In addition, vaccinated/pro-vaccination participants were more likely to feel that Terry deserved a worse outcome than full recovery, $B=.75$, $SE=0.19$, Wald $\chi^2(df=1)=16.23$, $p<.001$, odds ratio=2.12, 95% CI (1.47, 3.05). Finally, there was a linear effect of political party on deserved outcome, $B=.38$, $SE=0.09$, Wald $\chi^2(df=1)=17.83$, $p<.001$, odds ratio=1.47, 95% CI (1.23, 1.75). Follow-up tests whereby political party was indicator coded (Coding 1: Republican=0, Independent=1, Democrat=0; Coding 2: Republican=0, Independent=0, Democrat=1) demonstrate that Coding 2 was significant, $B=.77$, $SE=0.18$, Wald $\chi^2(df=1)=17.44$, $p<.001$, odds ratio=2.15, 95% CI (1.50, 3.08); and Coding 1 was nonsignificant, $B=.39$, $SE=0.21$, Wald $\chi^2(df=1)=3.36$, $p=.07$, odds ratio=1.47, 95% CI (0.97, 2.22). These patterns indicate that Democrats were more likely than Independents and Republicans to believe Terry deserved a worse outcome than full recovery (see Figures 7 to 9).

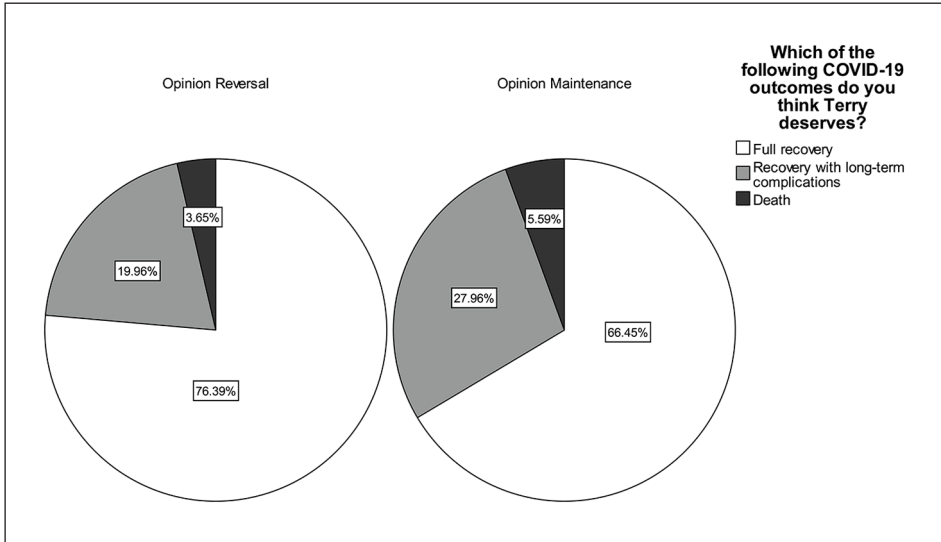


Figure 7. Deserved outcomes (T4) by maintenance manipulation.

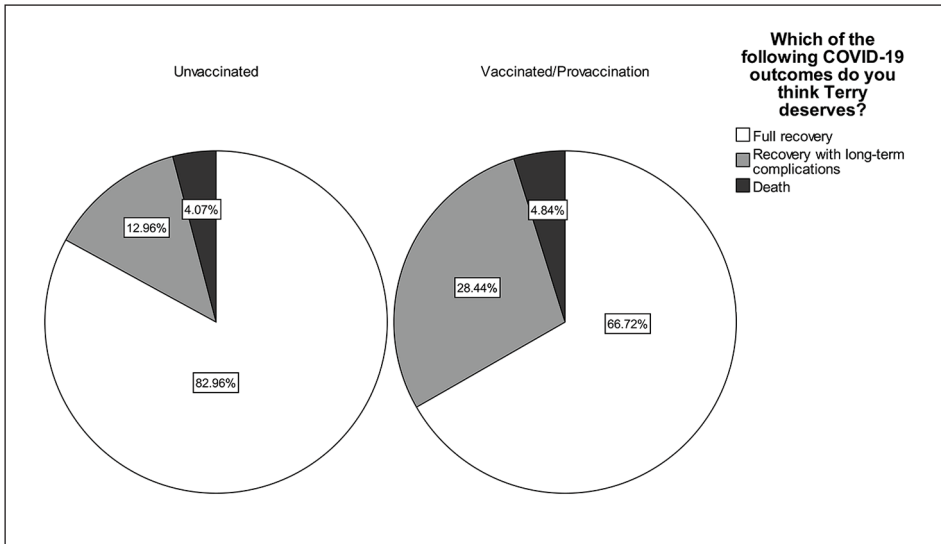


Figure 8. Deserved outcomes (T4) by participant vaccination status.

T5: Terry's death announced

After participants viewed the post announcing Terry's death (T5), we examined participants' satisfaction with this outcome. We performed a 2 (dogmatic manipulation) X 2

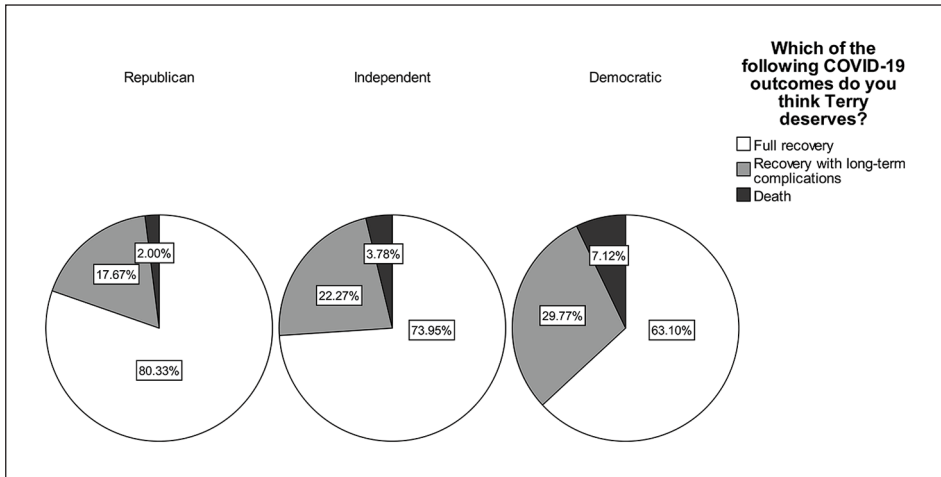


Figure 9. Deserved outcomes (T4) by participant political party.

(maintenance manipulation) X 2 (participant vaccination status) X 3 (participant political party) between-groups ANOVA, with the dependent variable of outcome satisfaction. Results showed no main effect of the dogmatic manipulation on outcome satisfaction ($p = .40$), but significant main effects of the other three factors. Although overall satisfaction with Terry's death was low ($M = 2.73$, $SD = 1.24$), participants were more satisfied with Terry's death when Terry maintained his or her antivaccination views prior to death, $F(1, 907) = 10.01$, $p = .002$, $\eta_p^2 = .01$, (opinion maintenance $M = 2.89$, $SD = 1.28$; opinion reversal $M = 2.57$, $SD = 1.19$). Furthermore, vaccinated participants were more satisfied with Terry's death than unvaccinated participants, $F(1, 907) = 27.06$, $p < .001$, $\eta_p^2 = .03$ (vaccinated/pro-vaccination $M = 2.88$, $SD = 1.24$; unvaccinated $M = 2.35$, $SD = 1.17$). Finally, Democrats ($M = 2.93$, $SD = 1.33$) were more satisfied (Bonferroni-corrected) with Terry's death than Republicans ($M = 2.51$, $SD = 1.15$) or Independents ($M = 2.67$, $SD = 1.17$), $F(2, 907) = 3.41$, $p = .03$, $\eta_p^2 = .01$. Outcome satisfaction for Republicans and Independents did not significantly differ (Bonferroni-corrected). The three-way interaction of Maintenance X Participant Vaccination Status X Participant Political Party approached significance ($p = .05$); however, given the very small effect size ($\eta_p^2 = .01$) combined with the three-way nature of the interaction and the fact that this three-way interaction was nonsignificant on the T4 data, we hesitate to interpret it as meaningful. No other significant interactions emerged.

We further examined how participants' satisfaction with Terry's death was predicted by earlier deserved outcome judgments for Terry at T4 (H2). We performed a one-way ANOVA with deserved outcome judgments for Terry at T4 (three categories: "full recovery," "recovery with long-term complications," and "death") as the independent variable and outcome satisfaction at T5 as the dependent variable. Results showed a significant main effect, such that those who thought Terry deserved more severe outcomes at T4 were more satisfied with Terry's death at T5, $F(2, 927) = 188.33$, $p < .001$, $\eta^2 = .29$ ("full recovery" $M = 2.33$, $SD = 1.00$; "recovery with long-term complications" $M = 3.56$,

$SD=1.05$; “death” $M=4.65$, $SD=1.65$). Each condition was significantly different from the others ($p < .001$, Bonferroni-corrected).

We also examined how much happiness participants felt following Terry’s death—a more direct indicator of Schadenfreude—using the same analysis as outcome satisfaction. Results showed a significant main effect, $F(2, 926)=23.47$, $p < .001$, $\eta^2=.05$, with a significantly linear pattern—linear contrast, $F(1,926)=21.68$, $p < .001$, $\eta^2=.02$. Participants who thought Terry deserved to fully recover experienced the least happiness ($M=0.54$, $SD=1.30$), participants who thought Terry deserved long-term complications experienced greater levels of happiness ($M=1.17$, $SD=1.66$), and participants who thought Terry deserved death experienced the greatest levels of happiness ($M=1.60$, $SD=2.37$). Post-hoc means tests indicated that full recovery differed significantly from both long-term complications and the death ($p < .001$; Bonferroni-corrected), whereas the long-term complications and death conditions did not differ significantly ($p=.21$).

Persuasive effects regarding vaccination attitudes

Finally, we examined whether participation in our study had any effect on COVID-19 vaccine attitudes. We performed a repeated measures ANOVA using the vaccine attitude scores measured before (T1) and after exposure to the study’s stimuli (T5) as the repeated measure (time). Four variables served as between-subjects predictors in this 2 (dogmatic manipulation) X 2 (maintenance manipulation) X 2 (participant vaccination status) X 3 (participant political party) X 2 (time) design.

A repeated measures main effect of time emerged such that participants’ attitudes toward the vaccine were more favorable after the study ($M=4.16$, $SD=1.53$) as compared to before ($M=4.09$, $SD=1.54$), $F(1, 908)=6.76$, $p=.01$, $\eta_p^2=.01$. No significant interactions of between-subjects factors with time emerged, with the exception of an interaction between time and the dogmatic manipulation ($p=.05$); however, the effect size approached zero ($\eta_p^2=.004$), so we hesitate to interpret it as meaningful. Importantly, no interaction of time with participant vaccination status emerged ($p=.28$); rather, mean differences suggest that both vaccinated (T1: $M=4.61$, $SD=1.39$, T5: $M=4.66$, $SD=1.38$) and unvaccinated (T1: $M=2.83$, $SD=1.08$, T5: $M=2.93$, $SD=1.13$) participants experienced a small positive shift in attitude over time. These findings indicate that a positive persuasive effect occurred rather than a boomerang effect.

Discussion

Our study found that reactions to online COVID-19 death stories that may at first glance appear to be inexplicably cruel are in reality the predictable outcomes of known moral judgment processes. Such reactions are neither unexpected nor inexplicable. Consistent with ADT, our findings show participants draw on both their own moral subcultures (defined here by political affiliation and vaccination status) and on specific details of the circumstances present (whether the poster was dogmatic or uncertain and whether they maintained or reversed their opinion) to form predictable moral judgments of Terry’s behaviors, injunctive beliefs about appropriate karmic retribution, and satisfaction and happiness when such retribution occurs.

Specifically, participants judged dogmatic anti-COVID-19-vaccination posting as a form of immorality and felt that those who communicated in this manner deserved worse outcomes from COVID-19 infection, supporting H1. Furthermore, as ADT and retribution theorizing predict, morality subculture membership—operationalized as vaccination status and political affiliation in the current study—predicted systematic differences in moral judgments of behavior and deserved outcome judgments. Consistent with ADT's proposition that viewers are tireless moral monitors capable of updating their moral judgments continuously, the antipathy brought about by anti-COVID-19-vaccination posting was reduced when the poster eventually expressed regret (i.e., moral signaling; see Sperber and Baumard, 2012). In our work, deserved outcome judgments, in turn, predicted people's satisfaction and happiness with the poster's ultimate death, supporting H2. Our findings further speak to the explanatory power and generalizability of ADT; not only is the theory capable of explaining viewers' feelings about entertainment narratives, but it is also capable of explaining person-perception and retribution judgments derived from reading SM posts.

Social media posting as a morally-judged behavior

Our study shows that people are willing to make strong moral judgments of a person simply based on a handful of social media posts about their COVID-19 beliefs. The thoughts and memes we share in our SM posts seem capable of determining whether other people wish us well or ill. These results contribute to research on moral outrage (see Crockett, 2017). Rather than focusing on the purely emotional elements of moral outrage, or the expression of moral outrage in one's own social media posting, our findings document the unfolding of person-perception and desires for retribution that occurs when viewing and reading another person's SM posts. This documentation is important to understand, as previous research indicates that most people simply lurk and never post (see Carron-Arthur et al., 2014).

Schadenfreude: predictable but infrequent

Although a substantial number of people judged Terry to be deserving of some level of suffering, satisfaction and happiness with Terry's death were comparatively low. The number of participants in our study who felt an anti-COVID-19-vaccination poster deserved death was small ($n=43$, 4.6%), yet it was not zero. Many more ($n=223$, 24.0%) felt long-term health complications were deserved based on the memes and thoughts shared in SM posts. Substantial levels of happiness were limited to those who felt Terry had behaved highly immorally and was deserving of extreme punishment (cf., Grizzard et al., 2021), but overall positive emotional reactions (Schadenfreude) to reading about Terry's suffering were remarkably low ($M_{\text{Happiness}}=0.74$, $SD=1.48$, on a 0 to 6 scale).

Consistent with ADT, moral subcultures are observed to predict responses to COVID-19 deaths. Participants' political party and vaccination status predicted systematic differences in moral judgments of behavior and deserved outcome judgments. These findings highlight the reality that COVID-19 vaccination is seen by many Americans as more than a difference of political opinion. Vaccination is communally-relevant behavioral choice with potential life-and-death consequences to others—as is exhorting others to forego vaccination.

Judgments of the harmfulness of others' posting behavior were influenced by morality subculture membership, and a real perceived threat of harm (e.g., the approbation measure including "harmful to others" as an item) appeared to be driving harsher views of Terry's just deserts (see Gray et al., 2014, for a discussion of how threats of harm influence moral judgment processing). Our findings appear consistent with recent work noting that a person's political party was a significant predictor of deservingness judgments and resulting feelings of Schadenfreude in response to former President Trump's 2020 COVID-19 diagnosis (Peplak et al., 2022). Future work seeking to reduce polarization must take into account the moral underpinnings of the issues that result in polarization, rather than treating these issues as benign differences of political opinion. Encouragingly, our work suggests that harshness of moral judgments of others decreases when those who have committed a perceived moral violation are willing to admit they were wrong.

Attitudinal effects of exposure to social media stories of COVID-19 death

Contrary to the fears of some commentators, our study showed no evidence that exposure to COVID-19 death stories resulted in an anti-vaccine attitudinal boomerang. Instead, we found that after participating in our study, participants held significantly more positive views of COVID-19 vaccination than before. Although the effect was small, this positive trend suggests that r/hca posts are likely to have either a small positive effect or a nonsignificant effect on vaccination attitudes. This finding appears consistent with the argument that Schadenfreude-motivated sharing of stories of bad behavior resulting in suffering can—at times—promote positive changes in attitudes or behaviors (Dasborough and Harvey, 2017; see also Wang et al., 2019). This finding also comports with a trend on r/hca where people who were previously reticent to get vaccinated will post their vaccination cards and eliminate themselves for competition for the award (see <https://bit.ly/383tGcc>).

Limitations and future directions

An initial limitation of our study is that all of our stimuli depicted death as the ultimate outcome. We did not include conditions where Terry recovered due to ethical concerns. Depicting a dogmatically anti-COVID-19-vaccination person who maintained their opinion throughout their disease and recovered after a prolonged illness might have shifted some participant attitudes against vaccination through social learning (Moyer-Gusé, 2008). Thus, we determined the risk-to-benefit analysis did not warrant these conditions' inclusion, and it thus it remains unclear how Terry's recovering might have impacted our findings.

The second limitation relates to the absence of comments from other people reacting to Terry's story, a common feature of SM sites. Because the influence of SM comments on moral judgments has already received some attention (see Sawaoka and Monin, 2020), we chose to isolate the effects of message and audience factors. Thus, our findings help to triangulate this prior work. Future work could further integrate these different approaches by conducting linguistic analyses on the corpus of r/hca or related sites. Importantly, this work would contribute to conceptualizations and approaches to storytelling that extend

beyond the boundary conditions of ADT. ADT's purposefully-limited focus trains its theoretical lens on how specific components of stories (i.e., character behaviors, character plights, and narrative resolutions) are evaluated. Broader understandings of narratives and storytelling (see Polletta et al., 2011, for a sociological review) pose questions related to how stories are interpreted and retold, and how meaning is socially and culturally negotiated. The comments provided to r/hca-like narratives that vary in the character's behavior and outcome may provide insight for such questions.

Finally, we note that our work here is limited to the United States in its participant sample and political context. We encourage research examining these processes in international contexts that takes into account unique moral subcultures beyond the US political party system.

Conclusion

The current study sought to explore the moral judgment processes that underlie a reader's responses to SM posting. Our politically diverse sample of participants judged specific SM-posting behaviors as immoral and felt the poster deserved suffering, which was systematically predictable based on the severity of the immorality judgments. ADT—a narrative entertainment theory of moral judgment processes—explained moral judgments in a SM setting, suggesting a broader applicability of narrative theories to studies of SM.


Author contributions

Dr. Grizzard and Dr. Frazer's contributions to this article were equivalent and they share first authorship.

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Supplemental material

Supplemental material for this article is available online.

Note

1. We also examined whether a moral tribalism effect might explain our results. Specifically, we sought to examine whether perceived political similarity might influence morality judgments of Terry and his behavior. Perceived political similarity when included as a covariate altered none of the findings in the paper. We report these results in the online supplement (Grizzard et al. (2023); see <https://doi.org/khvg>).

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