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# Implicit bias attribution reduces prosocial emotions and donation intentions for natural disaster victims

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Concern about biased depictions of individuals, groups, and events in media has intensified across the political spectrum. At the same time, implicit attitudes have become an increasingly common explanation for discriminatory outcomes. The present study examines emotional, cognitive, and behavioral consequences of biased media depictions depending on whether they are attributed to journalists' implicit or explicit attitudes. A sample of U.S. participants ( $N = 350$ ) read about biased media coverage of Muslim natural disaster victims that ostensibly reduced the public's donation behavior relative to other types of victims. The biased reporting was attributed to journalists' implicit (i.e., unconscious) or explicit (i.e., conscious) anti-Muslim attitudes and beliefs. After reading the report, participants in the implicit bias condition felt less outrage, guilt, and anger toward the journalists, held them less culpable, and revealed lower intentions and willingness to donate to similar victims of natural disasters in the future, compared with participants in the explicit bias condition. These findings point to compelling behavioral consequences of emphasizing the role that implicit, rather than more deliberate, biases play in producing discrimination, be it in media or other important societal domains.

Biased depictions of individuals, groups, and events in the media have become the subject of increasing concern among Americans across the political spectrum<sup>1</sup>. The media plays a central role in raising awareness of and shaping perceptions and opinions about any number of issues. According to classic communication theory, media shapes public opinion both by determining which issues receive attention in the first place and by influencing how those issues are framed, discussed, and evaluated—a process known as agenda setting<sup>2</sup>. Whether and how stories are covered can have significant, if not dire, consequences<sup>3,4</sup>. Numerous studies, for instance, implicate biased media coverage in perpetuating and maintaining racial, gender, socio-economic, and other societal inequalities, often by selectively highlighting certain groups' suffering or success while marginalizing that of others<sup>5–10</sup>. For example, issues that primarily concern or pertain to women have been found to receive less media attention than issues that primarily concern or pertain to men<sup>11,12</sup>.

Although media bias is understood to be multiply-determined, including the responsiveness of editors, producers, and journalists alike to market incentives<sup>13</sup>, some degree of even widespread media bias likely stems from unconscious or otherwise automatic processes by these human decision-makers<sup>7,14</sup>. Consistent with this possibility, a recent analysis of 1.8

million headlines from major news outlets in the U.S. found that political polarization of news coverage between 2014 and 2022 was largely observed in subtle differences in the language right- and left-leaning outlets used to report on domestic policy and social issues<sup>15</sup>. Crucially, even relatively minor, presumably unintentional variations in language (e.g., “want” versus “need” in donation appeals) can shift audience behavior (e.g., how much money people donate)<sup>16</sup>, in part by communicating who deserves attention, moral concern, and aid<sup>17</sup>.

As the effects of even subtle, unintentional, biased media portrayals become increasingly clear and garner attention themselves, it is important to understand how people respond when they learn about them. The present study examines whether individuals' responses to evidence of quite harmful, widespread media bias differ depending on whether they believe the disparate coverage is due to negative beliefs and attitudes that journalists hold consciously (i.e., explicit) or those of which they may not be aware (i.e., implicit). Specifically, we assess people's emotional, cognitive, and behavioral reactions to evidence that members of the U.S. mainstream media engage in biased coverage of natural disasters that occur in majority-Muslim, Middle Eastern countries, compared with non-Muslim nations in other parts of the world, as a function of whether this bias is attributed to

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journalists' implicit or explicit anti-Muslim beliefs. Examining whether and how attributions for media bias shape public responses to it may be essential to holding media companies accountable for their harms.

### Implicit bias attribution and moral judgments

Decades of social psychological research have shed light on the subtle yet profound impact of implicit bias on our judgments and decisions. Unlike explicit bias, which is conscious, deliberate, and when necessary, able to be identified and communicated to others<sup>18–20</sup>, implicit bias refers to automatic associations and responses that often occur without conscious awareness<sup>21,22</sup>. Just like explicit bias, however, implicit bias can shape any number of important encounters and outcomes, including physician-patient interactions<sup>23,24</sup>, policing<sup>25</sup>, and even mortality rates<sup>26</sup>.

During the last decade or so, implicit bias entered the public discourse about discrimination. Attention to implicit bias increased markedly after Hilary Clinton, then the 2016 Democratic Party nominee for president, pointed to its potential role in contributing to racial disparities in policing during a nationally-televised debate<sup>27</sup>. Since then, the term “implicit bias” has increasingly been used in media, policy debates, and corporate diversity efforts, as well as among the general public<sup>28</sup>. Further, incidents of racial and gender discrimination are now often attributed to implicit bias, as opposed to someone's explicitly held prejudices, not only by those accused of wrongdoing, but also by observers. For example, following a viral incident of two Black men being arrested at a Starbucks in Philadelphia after requesting restroom access without purchasing beverages, the company closed its stores nationwide to conduct implicit bias training, suggesting the incident likely stemmed from the employees' implicit bias, despite no formal investigation or clear evidence to warrant that attribution<sup>29</sup>.

As implicit bias becomes a frequent explanation for discriminatory behavior, questions arise about the psychological and behavioral consequences such attributions engender. Specifically, because implicit bias is understood to be unconscious, people infer that the discrimination it causes is unintentional. And, because perpetrators of unintentional wrongdoing are generally perceived as less culpable than perpetrators of intentional wrongdoing<sup>30–32</sup>, perpetrators of discrimination attributed to implicit bias are similarly judged as less blameworthy than perpetrators of explicit bias. Consequently, when an act of discrimination is attributed to the perpetrator's implicit rather than explicit bias, people hold the perpetrator less accountable and are less supportive of punishing them<sup>33–36</sup>. This reduction in perpetrator culpability for discrimination born of implicit bias has been observed across multiple types of bias (e.g., race, gender, age, political ideology), multiple contexts (e.g., health care, employment, lending, policing), and appears to be relatively insensitive to the severity of the consequences of the discrimination<sup>34</sup>.

### Consequences of bias attribution on prosocial emotions and behavior

The present work extends this research by examining how implicit vs. explicit attributions for discrimination shape judgments of perpetrator culpability, by exploring their potential emotional and behavioral consequences. Specifically, we examined how these bias attributions may differentially trigger a number of emotions associated with witnessing discrimination and other injustices; namely, outrage/anger, empathy for victims, and guilt<sup>37</sup>. According to responsibility attribution theory, people feel outrage and anger when a harmful act is seen as controllable, especially when the actor failed to exert effort to control it<sup>38</sup>. Further, intent to harm evokes more anger than the level of harm itself<sup>39</sup>. Given that implicit bias is perceived to be less controllable and intentional than explicit bias<sup>33,40</sup>, discrimination should also elicit less outrage and anger toward the perpetrators when it is attributed to their implicit, compared with explicit, bias.

The potential influence of bias attributions on empathy for victims is less clear. On the one hand, empathy typically stems from perceptions of harm<sup>39</sup>, and because bias attributions do not necessarily alter the actual level of harm experienced by victims, they may not influence perceivers' empathy. On the other hand, harm perceptions themselves can be influenced by

perceived intent<sup>41</sup>, and empathy and anger often co-occur<sup>39,42</sup>. Thus, when discrimination is attributed to implicit (vs. explicit) bias, empathy may be reduced just like anger. Last, people often experience guilt after reading about injustices, especially if they feel implicated in or somewhat responsible for the wrongdoing and/or identify with the perpetrators<sup>37,43,44</sup>. Because implicit bias attributions reduce the perceived culpability of the perpetrators<sup>34</sup>, however, they may similarly assuage participants' feelings of responsibility and, thus, their guilt, compared with an explicit bias attribution.

Understanding how implicit compared with explicit bias attributions may shape these moral emotions is especially important because these emotions are known to motivate prosocial behavior. For example, moral outrage predicts efforts to restore justice and promote social change<sup>37,42,45,46</sup>. Similarly, although anger is associated with aggression or punishment of perpetrators, it can also motivate efforts to compensate their victims<sup>44,47,48</sup>. Empathy for victims can also motivate helping, as a way to alleviate others' suffering<sup>49</sup>, and has been associated with a range of prosocial behaviors, including offers of direct assistance and donations<sup>50–53</sup>. Guilt, too, can be a powerful motivator of reparative behavior. When people feel responsible for injustice, be it personally or due to collective identities, they often seek to alleviate their guilt by helping disadvantaged others<sup>47,54–56</sup>. Thus, to the extent that participants in the present work experience moral outrage/anger, empathy for victims, or guilt in response to biased media coverage, they may be motivated to repair the harm by donating to the perceived victims of the bias.

### The present research

The present research investigates the effects of attributing discrimination to perpetrators' implicit versus explicit attitudes on perceivers' emotional reactions, subsequent behavioral intentions, and perceptions of perpetrator culpability, in the context of media coverage of natural disaster victims. We chose this context because 1) media is an important channel through which biases are communicated, be they implicit or explicit<sup>57</sup>, 2) media coverage is often the primary way people learn about natural disasters, especially those that occur in other countries, and is a key driver of donation behavior<sup>58–60</sup>, and 3) natural disasters tend to evoke strong emotional responses and, thus, often motivate direct behavioral engagement, such as donations to victims, while offering a context in which victims are rarely blamed for their suffering. This context, therefore, provides an opportunity to examine the robustness of prior findings on bias attributions and perpetrator culpability, as well as to extend this line of inquiry to consider potential emotional and behavioral outcomes.

A sample of participants from the U.S. was exposed to information about biased media portrayals of natural disaster victims from majority-Muslim, Middle Eastern countries, which were said to have negatively affected charitable giving in support of the victims. Similar to prior research, the media bias was attributed to journalists' implicit or explicit anti-Muslim attitudes. After reading this information, participants reported their emotional responses (e.g., outrage, guilt, anger toward journalists, empathy for victims) and intentions to donate to future victims of similar disasters. They also indicated how accountable the journalists were for the media bias and donation disparities. Consistent with past work<sup>33–35</sup>, we predicted that participants in the implicit bias attribution condition would report less outrage, guilt, and anger toward the journalists, as well as hold the journalists less accountable, compared with participants in the explicit bias attribution condition. We also predicted that participants would report less empathy for victims and lower donation intentions in the implicit, compared with explicit, bias attribution condition.

## Methods

### Participants

The study was conducted in March 2024, and 350 U.S. residents ( $M_{\text{age}} = 39.75$ ,  $SD_{\text{age}} = 13.40$ ) were recruited using Prolific's built-in nationality prescreening questionnaire. This sample size was determined a priori to provide 80% power to detect small to medium effect sizes

( $d \geq 0.30$ ) for two-tailed independent samples  $t$  tests ( $\alpha = 0.05$ ). Participants self-reported their demographic information. Of these participants, 158 identified as men, 184 as women, and 8 as another gender; 232 participants identified as White, 42 as Asian, 25 as Black, 16 as Hispanic, and 31 as belonging to multiple racial groups; 149 participants identified as Christian, 89 as agnostic, 68 as atheist, and the rest as another religion, including 7 Muslim. Data from self-identified Muslim participants were retained in the main analyses; excluding these data did not alter the results. Participants were randomly assigned to either the explicit ( $n = 175$ ) or implicit ( $n = 175$ ) bias attribution condition. Participants were compensated \$1.57 for their time.

### Bias attribution manipulation

Participants read a report detailing that people in the U.S. donate less money to Middle Eastern natural disaster victims than to European victims. This disparity was attributed to biased portrayals of Muslims in U.S. media, highlighting both underreporting and negative portrayals of Muslim disaster victims. Participants then saw an actual news article, which exemplified the pattern of biased media coverage by minimizing the suffering of Muslim victims.

The biased media coverage was attributed to negative attitudes toward Muslims held by American journalists. Participants in the implicit bias attribution condition learned that implicit biases are “attitudes or stereotypes that influence our actions and decisions, often operating beneath conscious awareness,” followed by information that journalists “unconsciously associate Islam ... with terrorism, danger, and threat” and that they were “not aware that they hold negative beliefs and stereotypes about Muslims.” Participants in the explicit bias attribution condition read that “many journalists associate Islam ... with terrorism, danger, and threat” and that they “self-report that they hold negative beliefs and stereotypes about Muslims.” At the end of the study, participants completed a 1-item manipulation recall question asking if the article they read mentioned “implicit” or “unconscious” bias, with three response options: yes, no, or I don’t know. Most participants in the implicit bias condition (85%) responded “yes,” indicating successful recall of the manipulation. In contrast, recall in the explicit bias condition was only slightly above chance (37%), suggesting limited memory or uncertainty in this condition. We retained all participants in the subsequent analyses; thus, any observed condition differences likely reflect conservative estimates of the effects.

### Dependent measures

**Emotions.** Participants indicated the extent to which they felt prosocial emotions after reading the report. Specifically, they rated eight emotions: moral outrage, anger, guilt, shame, empathy for victims, sympathy for victims, anger toward journalists, and disappointment toward journalists. To ensure clarity, we labeled the victims as “Muslim victims negatively portrayed in the media” and provided definitions of empathy (“putting yourself into the victim’s shoes”) and sympathy (“feeling pity or sorrow towards the victim’s misfortune”), based on prior work<sup>37</sup>. Each emotion was assessed on a 7-point Likert scale from 1 (“not at all”) to 7 (“strongly”). Based on both conceptual overlap and observed inter-correlations among participants’ ratings, moral outrage and anger ( $r = 0.86$ ) were averaged to create an outrage composite; guilt and shame ( $r = 0.75$ ) were averaged to create a guilt composite; empathy and sympathy for victims ( $r = 0.86$ ) were averaged to create an empathy for victims composite; and anger and disappointment toward journalists ( $r = 0.79$ ) were averaged to create an anger toward journalists composite.

**Donation intentions.** Donation intentions were measured in multiple ways. First, participants were asked to report how interested they would be in donating to victims of a future natural disaster in the Middle East. This item was embedded among two other items assessing interest in non-donation forms of prosocial behavior: a) raising awareness about the same disaster on social media and b) participating in a vigil for its victims.

Responses were rated on 7-point Likert scales, with 1 indicating “not at all interested” and 7 indicating “strongly interested.” Next, participants were presented with information about a recent natural disaster: the Libyan floods that occurred in September 2023. Libya was selected as the focal example due to the severity and recency of the 2023 floods and its status as a Muslim-majority country in the Middle East/North Africa region. They were asked if they were interested in receiving information about how to donate to Libyan victims at the end of the study. Participants indicated their interest by selecting either “Yes” or “No.” Participants who requested information were provided with a description of a charity accepting donations for the victims of the Libyan floods, along with a hyperlink to the donations page, at the end of the study. They were assured that the decision was voluntary and that the researchers were not able to track it. Although there was no way to measure participants’ actual donation behavior (i.e., whether and how much they donated), we recorded whether they clicked to open the donation page as a behavioral measure of donation intentions. The latter two binary items (i.e., requesting information, clicking the donation link) were combined into a single three-level behavioral donation intention index, reflecting increasing levels of engagement with the donation opportunity: 0 = did not request information, 1 = requested information but did not click the donation link, and 2 = requested information and clicked the donation link.

**Accountability.** Perpetrator accountability was assessed with two items (“I blame journalists for the disparities in humanitarian aid based on religion” and “Journalists should be held accountable for the biased reporting of Muslims”;  $r = 0.69$ ), which were averaged to create a composite. Participants rated their responses on 7-point Likert scales, with 1 indicating “strongly disagree” and 7 indicating “strongly agree.” An exploratory item assessing personal accountability (“I feel responsible for the disparities in humanitarian aid based on religion”) was also measured (see Supplementary Analysis 5).

### Procedure

After providing informed consent, participants completed a demographic questionnaire and were then randomly assigned to read either the implicit bias or explicit bias attribution article. Next, they completed measures assessing their emotional reactions, future donation intentions, accountability perceptions, and recall of the bias attribution manipulation information. Participants who requested donation information were shown a brief description of the Zakat Foundation of America—an organization that was accepting donations for Libyan flood victims at the time—along with a link to its website. Finally, participants were debriefed, thanked, and compensated for their participation. All procedures were performed in accordance with relevant guidelines and regulations and approved by the Institutional Review Board at Yale University (#1610018508). This study was not preregistered. All study materials, data, and the analysis script are publicly available<sup>61</sup>.

### Statistical analysis

All statistical analyses were performed in R (v. 4.5.1)<sup>62</sup>. Continuous dependent variables were analyzed using two-tailed independent samples  $t$  tests, and the behavioral donation intention index was analyzed using an ordinal logistic regression. Although Q-Q plots showed some deviations from normality, we proceeded with the  $t$ -tests given their robustness to violations of this assumption, especially with large samples<sup>63</sup>. Levene’s tests indicated no violation of the homogeneity of variance assumption. A Brant test indicated that the proportional odds assumption for the ordinal logistic regression was met, suggesting that the effect of condition was consistent across thresholds.

### Reporting summary

Further information on research design is available in the Nature Portfolio Reporting Summary linked to this article.

## Results

We examined the effect of the bias attribution manipulation on each dependent measure. Controlling for participants' religion (religious vs. not religious) and gender (man vs. not man) did not alter the overall pattern of results. Full results of these robustness checks are provided in Supplementary Table 3. Descriptive statistics and intercorrelations among all dependent measures are provided in Table 1. Condition means and standard deviations for each dependent measure are provided in Table 2.

## Emotions

Each emotion composite was analyzed using a series of independent samples *t* tests (two-tailed). No family-wise correction for multiple comparisons was applied because the measures represent conceptually distinct constructs; however, the results do not change when such a correction is applied. Moreover, a mixed-model ANOVA including all emotion measures simultaneously as a within-subjects factor yielded the same overall pattern of results (see Supplementary Analysis 1). Analyses of individual emotion items yielded results identical to those of their corresponding composites.

As shown in Fig. 1, bias attribution conditions significantly affected outrage, guilt, and anger toward journalists. Participants in the implicit bias condition reported lower levels of outrage than those in the explicit bias condition,  $t(348) = 2.76$ , 95% CI [0.16, 0.94],  $p = 0.006$ ,  $d = 0.30$ . Similarly, participants felt significantly lower guilt when media bias was attributed to journalists' implicit bias, compared to their explicit bias,  $t(348) = 2.74$ , 95% CI [0.15, 0.89],  $p = 0.006$ ,  $d = 0.29$ . Attributing media bias to journalists' implicit bias significantly reduced anger toward journalists as well, compared to explicit bias,  $t(348) = 3.97$ , 95% CI [0.37, 1.09],  $p < 0.001$ ,  $d = 0.42$ . Although empathy for the victims was somewhat lower among participants in the implicit, compared with explicit bias attribution condition, the difference did not reach conventional levels of statistical significance,  $t(348) = 1.81$ , 95% CI [-0.03, 0.64],  $p = 0.071$ ,  $d = 0.19$ . A two-sided test of equivalence, however, did not provide evidence that the means were statistically equivalent within the bounds of  $d = \pm 0.30$ .

## Donation intentions

*T* tests revealed a significant effect of bias attribution on participants' self-reported intention to donate to the Middle Eastern natural disaster victims in the future,  $t(348) = 2.49$ , 95% CI [0.11, 0.95],  $p = 0.013$ ,  $d = 0.27$ . That is, participants in the implicit bias attribution condition ( $M = 3.49$ ,  $SD = 2.01$ ) reported lower interest in donating to future victims in the Middle East than participants in the explicit bias attribution condition ( $M = 4.22$ ,  $SD = 1.99$ ). Analyses of non-donation prosocial behaviors revealed no statistically significant effects of condition on intentions to raise awareness on social media,  $t(348) = 1.87$ , 95% CI [-0.02, 0.88],  $p = 0.062$ ,  $d = 0.20$ , or to participate in a vigil,  $t(348) = 1.61$ , 95% CI [-0.07, 0.74],  $p = 0.108$ ,  $d = 0.17$ .

Intentions to donate to Libyan flood victims were analyzed using an ordinal logistic regression, with the three-level behavioral intention index (0 = did not request information, 1 = requested information but did not click the donation link, 2 = clicked the link) as the dependent measure. As shown in Fig. 2, participants in the implicit bias attribution condition demonstrated significantly lower odds of progressing to a higher level of donation behavior compared with participants in the explicit bias attribution condition,  $b = -0.63$ ,  $SE = 0.22$ ,  $p = 0.005$ ,  $OR = 0.53$ , 95% CI [0.34, 0.82]. That is, participants in the implicit bias condition were 47% less likely to engage in donation behavior (i.e., requesting information or clicking the donation link) than participants in the explicit bias condition.

## Perpetrator accountability

Consistent with past research<sup>34,35</sup>, the bias attribution condition affected perceived "perpetrator" accountability,  $t(348) = 2.24$ , 95% CI [0.04, 0.67],  $p = 0.026$ ,  $d = 0.24$ . That is, participants held journalists less accountable for their biased reporting and the resultant disparities in humanitarian aid when they were attributed to the journalists' implicit bias ( $M = 4.57$ ,  $SD = 1.56$ ) rather than to their explicit bias ( $M = 4.92$ ,  $SD = 1.42$ ).

## Mediation analyses

Given that bias attribution affected donation intentions, we examined whether these effects may be accounted for statistically by participants' emotional reactions. Hence, we conducted mediation analyses with condition (0 = explicit bias condition, 1 = implicit bias condition) as the independent variable, the 7-point donation intention measure as the dependent variable, and the emotion measures (i.e., guilt, outrage, empathy for victims, and anger toward journalists) as potential mediators. Given the high intercorrelations and conceptual overlap among the emotion variables (particularly between outrage and anger toward journalists;  $r = 0.73$ ), we opted to estimate two separate multiple mediation models rather than a single model with all four emotion measures. We examined emotions without explicitly labeled targets (guilt and outrage) in one model, and emotions with explicitly labeled targets (empathy for victims and anger toward journalists) in a second model. We used the *lavaan* package in R<sup>64</sup>, with 10,000 bias-corrected and accelerated bootstrap resamples to estimate indirect effects and their 95% confidence intervals. Indirect effects were considered statistically significant when the bootstrap confidence interval did not include zero.

The first model included guilt and outrage as parallel mediators. Results revealed significant indirect effects of bias attribution condition on donation intention through guilt ( $b = -0.15$ , 95% CI [-0.32, -0.05]) and outrage ( $b = -0.24$ , 95% CI [-0.45, -0.07]). The direct effect of condition on donation intention was not significant,  $b = -0.13$ ,  $p = 0.436$ , indicating that the effect was fully mediated by these emotional responses. The second

**Table 1 | Descriptive statistics and intercorrelations for all measures**

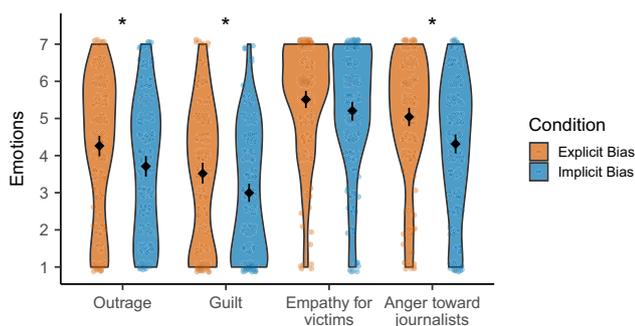
	<i>M</i>	<i>SD</i>	1.	2.	3.	4.	5.	6.	7.	8.
Emotions										
1. Outrage	3.99	1.88	—							
2. Guilt	3.26	1.79	0.70	—						
3. Empathy for victims	5.36	1.58	0.69	0.54	—					
4. Anger toward journalists	4.68	1.75	0.73	0.56	0.66	—				
Prosocial intentions for future victims										
5. Donate to victims	3.95	2.01	0.60	0.56	0.56	0.47	—			
6. Raise awareness on social media	3.83	2.15	0.65	0.54	0.55	0.57	0.72	—		
7. Participate in a Vigil	3.10	1.93	0.55	0.52	0.44	0.41	0.67	0.75	—	
8. Behavioral donation intentions for Libyan flood victims <sup>†</sup>	1.44	0.65	0.44	0.41	0.40	0.39	0.67	0.54	0.52	—
9. Perpetrator accountability	4.74	1.50	0.59	0.47	0.59	0.69	0.45	0.49	0.42	0.34

<sup>†</sup>Ordinal variable (0 = did not request information, 1 = requested information but did not click the donation link, 2 = clicked the link).

**Table 2 | Means and standard deviations of dependent variables by bias attribution condition**

	Explicit bias condition (n = 175)		Implicit bias condition (n = 175)	
	M	SD	M	SD
<b>Emotions</b>				
Outrage	4.26	1.89	3.71	1.85
Guilt	3.52	1.86	3.00	1.69
Empathy for victims	5.51	1.51	5.21	1.65
Anger toward journalists	5.04	1.64	4.31	1.79
<b>Prosocial intentions for future victims</b>				
Donate to victims	4.22	1.99	3.69	2.01
Raise awareness on social media	4.05	2.09	3.62	2.19
Participate in a vigil	3.27	1.88	2.94	1.97
<b>Behavioral donation intentions<sup>†</sup></b>				
Behavioral donation intentions <sup>†</sup>	1.54	0.70	1.34	0.58
Perpetrator accountability	4.92	1.42	4.57	1.56

<sup>†</sup>Ordinal variable (0 = did not request information, 1 = requested information but did not click the donation link, 2 = clicked the link).

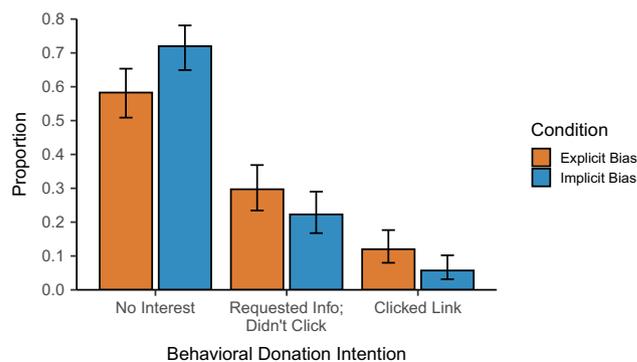


**Fig. 1 | Emotional reactions by bias attribution condition.** Error bars represent 95% confidence intervals around the mean. Asterisks (\*) indicate statistically significant differences between conditions (Explicit bias condition, n = 175; Implicit bias condition, n = 175).

model included empathy for victims and anger toward journalists as parallel mediators. Results revealed a significant indirect effect via anger toward journalists ( $b = -0.13$ , 95% CI  $[-0.30, -0.04]$ ) and a non-significant indirect effect via empathy for victims ( $b = -0.18$ , 95% CI  $[-0.39, 0.01]$ ). Again, the direct effect of condition on donation intention was not significant,  $b = -0.22$ ,  $p = 0.223$ , indicating full mediation. Taken together, these results suggest that the effect of implicit (vs. explicit) bias attributions on participants' donation intentions was due to the dampening effect those attributions had on participants' feelings of guilt, outrage, and anger toward journalists for their discriminatory reporting. Mediation analyses with the behavioral donation intention index (requesting information and clicking the link) mirrored these patterns, albeit the indirect effect of guilt was not reliable (see Supplementary Analysis 6).

**Discussion**

The present study revealed that attributing discrimination to implicit, rather than explicit, bias can diminish individuals' willingness to engage in reparative prosocial behavior. U.S. resident participants learned about biased media coverage that negatively affected Americans' donations to Muslim natural disaster victims. When the biased coverage was attributed to journalists' implicit, rather than their explicit, anti-Muslim attitudes, participants experienced significantly less outrage, guilt, and anger toward



**Fig. 2 | Proportion of participants at each level of behavioral donation intention by condition.** Proportions are calculated within condition (i.e., bars within each condition sum to 1; Explicit bias condition, n = 175; Implicit bias condition, n = 175). Error bars represent 95% binomial confidence intervals.

journalists, and held the journalists less accountable for the biased reporting. In addition, participants in the implicit bias attribution condition were significantly less likely to express interest in donating, request donation information, or click a donation link to help similar victims of natural disasters in the future, compared with participants in the explicit bias condition. These findings demonstrate the behavioral consequences of attributing discrimination—be it by media figures or others—to its perpetrators' implicit vs. explicit biases and beliefs.

In addition to revealing these behavioral consequences, the present work replicates the findings of past research on culpability judgments<sup>33–35</sup>. Specifically, this study revealed, once again, that perpetrators of discrimination are held less accountable if the discrimination is thought to be born of their implicit, compared with explicit, attitudes. In so doing, our work generalizes this pattern to a previously unexamined form of bias (i.e., anti-Muslim attitudes) and a new context (i.e., mass media). The present work also investigates a broad set of emotional consequences of these biased attributions for discrimination, revealing modulation of outrage, guilt, and anger toward the perpetrators. The implicit bias attribution, in other words, blunted the arousal of emotions typically triggered by perceived injustice. Indeed, mediation analyses suggested that the effects of the bias attribution manipulation on individuals' donation intentions were due to its dampening effects on these emotions—especially outrage—consistent with prior research linking these moral emotions to charitable giving<sup>48,65</sup>.

These results are consistent with prevailing models of moral psychology that link perceptions of intent and control to judgments of blame<sup>30</sup>. Because implicit bias is widely recognized as unconscious and/or difficult to control, people often view its outcomes as largely unintentional<sup>40</sup> and, consequently, hold its perpetrators less accountable for the resulting harm, compared with perpetrators of explicit bias<sup>33,34</sup>. The present findings further suggest that implicit bias attributions can also dampen moral outrage and anger toward those responsible. One possible explanation for this attenuation of culpability and emotion is that participants may have had some level of identification with, if not empathy for, the journalists in the implicit bias condition. They may have recognized that they, too, could be susceptible to unintended bias, thereby reducing their condemnation and outrage. Consistent with this possibility, prior work has shown that even people who share group membership with victims of discrimination nevertheless hold out-group perpetrators less accountable when the discrimination is attributed to implicit rather than explicit bias<sup>35</sup>.

Perhaps a more surprising finding of the present work is the effect of the bias attribution manipulation on guilt. Presumably, when people are implicated in harmful outcomes—e.g., depressed donations by Americans to Muslim natural disaster victims in the Middle East—they are likely to experience guilt. Although the harm resulting from biased media coverage was the same across conditions, participants felt less guilt when it was attributed to journalists' implicit rather than explicit anti-Muslim attitudes.

One possible explanation for this finding is that participants experienced a form of vicarious guilt on behalf of the American journalists, rather than collective guilt as members of the group who failed victims of natural disasters that have occurred in majority-Muslim, Middle Eastern nations. Alternatively, the implicit bias attribution may have reduced the perceived moral gravity of the harm, thereby attenuating guilt despite shared group membership with those implicated in the donation disparity. Although it is not possible to distinguish between these pathways, the findings are consistent with prior work finding that people often experience collective guilt in response to ingroup members' wrongdoing, even if they were not directly involved<sup>43,44</sup>. Future research should investigate these potential sources of guilt more directly.

It is also interesting and important to note that empathy for the victims did not differ across conditions at a statistically significant level, although the condition means were in the predicted direction. Given that the equivalence test did not provide evidence for equivalence, the true nature of this effect remains uncertain and warrants investigation in future research. It is possible that empathy, which is primarily associated with the harm suffered by a victim rather than the perpetrator's intent<sup>39,49</sup>), may genuinely be unaffected by bias attribution information. Alternatively, emotionally evocative contexts involving grave harm and suffering—such as natural disasters compounded by biased reporting, as in the present study—may elicit uniformly high levels of empathy across conditions, masking any potential effects of the bias attribution manipulation.

### Limitations

Several limitations should be noted. First, the study measured donation intentions and related behavior (i.e., requesting and clicking a donation link), but not actual donations. While these proxy measures are informative, future research should assess actual donation behavior to better understand the impact of implicit vs. explicit bias attributions for discrimination. Similarly, future research should examine the effects of implicit vs. explicit bias attributions for discriminatory media coverage on behaviors, including decisions to unsubscribe from news outlets, and other important outcomes, such as individuals' trust in media<sup>1</sup>. Second, the study did not include a traditional manipulation check assessing participants' belief in the bias attribution manipulation. Instead, participants were simply asked near the end of the study whether they recalled that the article mentioned "implicit" or "unconscious" bias—an item that may favor "yes" responses, leading to the lower accuracy in the explicit compared with the implicit bias condition. Although we believe that the manipulation worked as intended, given that its format was nearly identical to that used in prior research<sup>34</sup> and that it produced effects consistent with theoretical expectations, future research should more directly probe participants' understanding of the bias attribution manipulation in this context.

Third, the targets of individuals' guilt and outrage were not specified in the current study. For instance, it is unclear whether participants' guilt was directed at themselves, the journalists, or society more broadly, or which moral standards participants referenced that engendered outrage. Future work should incorporate more targeted emotion measures to provide a better understanding of the role these emotions play in shaping reparative behavioral responses to perceived injustice. Fourth, the study used the terms Muslim and Middle Eastern somewhat interchangeably to situate the research in an ecologically valid media context of disparate coverage of natural disaster victims; however, these groups are not identical. This flexible use of terms may have introduced some ambiguity about the targets of bias or the beneficiaries of donations. Future research in this context should more cleanly distinguish between religious and regional identities to enhance conceptual precision and interpretive clarity.

Last, the study was conducted during the ongoing Israel-Gaza conflict and amid documented increases in Islamophobic and Antisemitic incidents in the U.S.<sup>66,67</sup>. This broader sociopolitical context may have affected baseline empathy or other emotional reactions toward Muslim victims, the perceived acceptability of anti-Muslim bias among journalists, and/or the plausibility that anti-Muslim bias is implicit. Moral outrage and anger toward

discrimination rooted in explicit attitudes likely depend on the operation of social norms that condemn overt prejudice<sup>68</sup>. In contexts where such anti-prejudice norms are weaker, contested, or not consistently applied across social groups, differences in these emotional and moral responses may be attenuated. Future research should therefore replicate this work during a more politically neutral period, if possible, and among other types of targets of media bias to assess the generalizability of the findings.

### Conclusion

The media has a powerful influence on the public's awareness of, opinions about, and even behaviors toward societal issues and events<sup>58,59,69</sup>. If the stories that appear in the news are imbued with and/or shaped by social biases, not only will the public be misinformed, but the coverage is likely to perpetuate distorted and stereotypical beliefs that, in turn, sustain, if not produce, systemic inequalities<sup>10</sup>. The present research suggests that citing implicit, unconscious attitudes, rather than explicit, conscious attitudes, as the cause of biased media coverage will dampen outrage, reduce the perceived culpability of its perpetrators, and, ultimately, reduce action to repair the perceived harms of the coverage. Understanding the psychological processes through which biased attributions shape public responses to discriminatory or otherwise disparate media portrayals may determine whether and on whose behalf government officials, media executives, and even journalists will intervene to ensure more egalitarian coverage. Given the prevalence of bias in media<sup>70,71</sup>, rising concern about its influence in today's media landscape, and the increasing tendency to attribute at least some discriminatory outcomes to individuals' implicit bias, the present work could not be more timely. We call on researchers, educators, journalists, and policymakers to consider not only how implicit bias may shape discriminatory behavior, but also to begin to explore what implicit bias attributions for discrimination may unwittingly excuse.

### Data availability

A de-identified dataset including all participants who completed the study is available at <https://osf.io/h6rde/>.

### Code availability

The R script, including all code used for the main and supplementary analyses, is available at <https://osf.io/h6rde/>.

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## Author contributions

H.B. contributed to conceptualization, data collection, data analysis, data interpretation, visualization, manuscript writing, and manuscript review and editing. G.K. contributed to conceptualization, data interpretation, and manuscript writing. S.S. contributed to data analysis and data interpretation. J.A.R. contributed to conceptualization, funding acquisition, data interpretation, manuscript writing, and manuscript review and editing.

## Competing interests

The authors declare no competing interests.

## Additional information

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