



# Chronic frames of social inequality: How mainstream media frame race, gender, and wealth inequality

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How social inequality is described—as advantage or disadvantage—critically shapes individuals' responses to it [e.g., B. S. Lowery, R. M. Chow, J. R. Crosby, *J. Exp. Soc. Psychol.* 45, 375–378, 2009]. As such, it is important to document how people, in fact, choose to describe inequality. In a corpus of 18,349 newspaper articles (study 1), in 764 hand-coded news media publications (study 2), and in a preregistered experiment of 566 lay participants (study 3), we document the presence of chronic frames of race, gender, and wealth inequality. Specifically, race and gender inequalities are more likely to be framed as subordinate groups' disadvantages than as dominant groups' advantages, and wealth inequality is more likely to be described with no frame (followed by dominant group advantage, then subordinate group disadvantage). Supplemental lexicon-based text analyses in studies 1 and 2, survey results in study 3, and a preregistered experiment (study 4;  $N = 578$ ) provide evidence that the differences in chronic frames are related to the perceived legitimacy of the inequality, with race and gender inequalities perceived as less legitimate than wealth inequality. The presence of such chronic frames and their association with perceived legitimacy may be mechanisms underlying the systematic inattention to White individuals' and men's advantages, and the disadvantages of the working class.

racial inequality | gender inequality | wealth inequality

While all social inequalities share an objective reality in which one group possesses a different amount of valued resources than another group, this reality can be described using at least one of two frames: as one group's advantages or another group's disadvantages. Despite describing the same objective reality, inequality frames have a powerful effect on people's understandings of and responses to inequality. Specifically, inequality frames influence individuals' judgments about what actors "ought to have," and allow for the identification of deviant actors that "need to be explained" (1–3). Deviant actors, in the case of inequality frames, are typically the subject of the sentence. For instance, when the racial wage gap is portrayed as non-White individuals making less than White individuals, non-White individuals are highlighted as the deviant subjects who are making less than they should be making. In contrast, when the same gap is portrayed as White individuals making more than non-White individuals, White individuals are highlighted as making more than they should.

Past research has found that inequality frames and the resulting judgments of who is "deviant" impact the self-relevance of the inequality (4, 5). For example, White Americans exposed to information about racial inequality using the White advantage frame, as compared to the minority disadvantage frame, respond with higher levels of collective guilt (6, 7) and lower identification with the in-group (8, 9), suggesting that in-group advantage is more self-relevant than is out-group disadvantage. Conversely, women and Black and Latino individuals, as compared to White individuals and men, disassociate their self-esteem from potentially biased outcomes when inequalities are framed as the subordinate group's disadvantage, as compared to the dominant group's advantage (10), in this case, suggesting that in-group disadvantage is more self-relevant than out-group advantage.

Inequality frames are also powerful because they impact how individuals prefer to address inequality. For example, Lowery et al. and others (6, 9) have found that exposure to the White advantage frame (as opposed to the minority disadvantage frame) decreases White individuals' opposition to redistributive policies that are explicitly understood to reduce their position but does not affect White individuals' opposition to the same policies when they are framed as helping minority Americans' positions. This is because reducing the dominant group's position restores justice to an unequal system involving dominant-group advantage, whereas reducing the dominant group's position is not effective at restoring justice to an unequal system involving subordinate-group disadvantage (2, 9). Other work similarly documents that inequality frames can

## Significance

How social inequality is described—as advantage or disadvantage—critically shapes individuals' responses to it. As such, it is important to document how people, in fact, choose to describe inequality. Using multiple methods and research contexts, we find that race and gender inequalities are chronically described as subordinate groups' disadvantages, whereas wealth inequality is chronically described using no frame or as the dominant group's advantage. Moreover, these differences in chronic frames are related to the perceived legitimacy of the inequality domain. The presence of such chronic frames and their association with perceived legitimacy may be mechanisms underlying the systematic inattention to White individuals' and men's advantages, and the disadvantages of the working class.

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impact individuals' preferences for addressing inequality. For example, political conservatives are more supportive of tax policies targeting the wealthy after reading about the rich making more than the poor, as compared to the poor making less than the rich (11). Finally, when people read about gender inequality in leadership framed as women's underrepresentation (as opposed to men's overrepresentation), they are more likely to focus on the shortcomings of women to explain gender inequality and are more likely to suggest interventions targeting women over interventions that target systemic changes (12). Taken together, research has shown that inequalities of advantage and disadvantage are not psychological equivalents, and that people likewise distinguish between advantaging and disadvantaging processes.

Such powerful effects of inequality frames highlight the importance of documenting whether social inequalities are chronically framed in a particular way. When present, chronic frames of inequality have a substantial ability to impact people's understanding of and relationship to inequality, as well as their designs and support for redistributive policies. Thus, in the current work, we investigate how inequalities are depicted in two contexts: reporting in popular media [which is likely a major medium through which people are exposed to information about inequality (13, 14)] and in layperson descriptions of inequality. We specifically examine whether three different forms of inequality—race, gender, and wealth inequality—are chronically described using different frames, and whether such differences in chronic frame use are related to the degree to which each form of inequality is perceived to be more or less legitimate [i.e., “appropriate, proper, and just” (ref. 15, p. 376)].

## Differences in the Perceived Legitimacy of Race, Gender, and Wealth Inequality

There are both theoretical reasons and empirical evidence that suggest race and gender inequalities are perceived as less legitimate than wealth inequality. Despite their obvious similarities—discrepancies in access to valued resources across different social categories—individuals perceive race, gender, and wealth inequalities differently (15, 16). Racial and gender boundaries are perceived to be less permeable than social class boundaries (17), and race and gender identities are believed to be more visible (18–20) and are essentialized more than identities based on one's wealth or income (21–23). Consistent with these beliefs, sociologists often treat race and gender as ascribed characteristics—characteristics over which individuals have little to no control—whereas wealth is often seen as achieved or based on elements that individuals can control (24, 25). Moreover, perceptions of controllability have been linked to the belief that wealth inequality stems from fair systems (15). Indeed, reflecting this belief in greater control over wealth, Americans overestimate economic upward mobility (26, 27), which is associated with greater tolerance for inequality (28).

Taken together, these findings are consistent with our contention that race and gender inequalities are perceived as less legitimate compared to wealth inequality.

## Perceived Legitimacy and Frame Use

We predict that people's perceptions of inequality legitimacy, in turn, impact their descriptions of inequality, such that the less legitimate an inequality is perceived to be, the more likely it will be described with the disadvantage frame (compared to the advantage frame). Notably, this may be the case for both

dominant- and subordinate-group members, albeit due to different psychological processes.

For dominant-group members, understanding illegitimate social inequality as disadvantage allows them to maintain psychological distance from the inequality (5, 9, 29, 30). It also implies that the appropriate remedy for inequality is to increase the position of the subordinate group rather than to decrease the position of the dominant group (2, 9). Thus, dominant-group members should prefer the disadvantage frame the more inequalities are perceived to be illegitimate, as it better serves their psychological and material interests.

For subordinate groups, the picture is more complicated. While illegitimate inequalities framed as disadvantage may invoke group-esteem costs, they can also work to preserve members' self-esteem. For example, the perception that inequality is due to subordinate groups' illegitimate disadvantages can better enable these members to attribute negative feedback to their group's unfair disadvantages, thereby protecting their self-esteem (31, 32). The disadvantage frame also raises the possibility of gaining material benefits, as the appropriate remedy for disadvantage is to bolster the position of the subordinate group. Because both dominant- and subordinate-group members are better served by the use of the disadvantage frame than the advantage frame when depicting more illegitimate inequalities, we predict that the more people believe social inequality to be illegitimate, the more they will use disadvantage frame.

The same should not be true for inequalities perceived as relatively more legitimate. Here, self-serving motives should drive both dominant and subordinate groups to converge on the chronic use of the advantage frame. For dominant-group members, legitimate dominance enables a sense of positive esteem through association with a successful group (8, 33, 34). Subordinate-group members may similarly prefer the advantage frame in legitimate hierarchies, because the disadvantage frame highlights subordinate-group members' inferiority and emphasizes features that contribute to their lower status position (10). Thus, we expect that the more people believe a given social inequality to be legitimate, the more likely it is that they will use the advantage frame.

Taken together with our expectation that race and gender inequalities are perceived as less legitimate than wealth inequality, we predict that race and gender inequalities are more likely to be described using the disadvantage frame than the advantage frame, whereas wealth inequality is more likely to be described using the advantage frame than the disadvantage frame.

We tested these predictions across four studies. In study 1, we used a topic modeling approach on a large corpus of mainstream news articles. Complementing this approach, study 2 utilized hand-coded mainstream news media publications to assess the extent to which race, gender, and wealth inequality were described using different inequality frames. Studies 1 and 2 also examined the role of perceived legitimacy on frame use in lexicon-based text analyses. To increase our control in study design, studies 3 and 4 examined the association with (study 3) and impact of (study 4) perceived legitimacy on how lay individuals describe race, gender, and wealth inequality using different inequality frames, in preregistered experiments. Studies 3 and 4 were approved by the University of Texas at Dallas's Institutional Review Board, and all participants provided their informed consent before participating in the studies.

In all direct tests predicting a count variable, we conducted a Poisson regression unless we found evidence of underdispersion or overdispersion. In such cases, we conducted a negative binomial regression (see *SI Appendix* for dispersion tests).



**Table 1. Relative prominence of words representing dominant and subordinate groups in study 1**

Topic	Top word for subordinate group			Top word for dominant group			<i>t</i> test for difference in mean weight ( <i>P</i> value)
	Rank (SE)	Weight (SE)	Rank (SE)	Weight (SE)			
Racial inequality	Black	1 (0.00)	1.90 (0.00)	White	29.55 (0.48)	0.20 (0.02)	107.19 (0.000)
Gender inequality	Women	1 (0.00)	2.53 (0.00)	Men	2 (0.00)	1.48 (0.00)	693.28 (0.000)
Wealth inequality	Poor	15.13 (0.18)	0.40 (0.00)	Rich	25.16 (0.62)	0.38 (0.01)	2.34 (0.020)

Word weights are assigned by the nonnegative matrix factorization algorithm and reflect how strongly a word is associated with and contributes to a particular topic. Rank and weight data represent the averages across 200 runs of the algorithm with different random seeds.

**Study 2: Coding Frame Use in Mainstream Media.** Study 1 provided initial support for our predictions in a large corpus of newspaper articles. Although the relative prevalence of words representing dominant-group and subordinate-group members is highly suggestive of the advantage and disadvantage frame use, respectively, we were unable to directly assess frame use in study 1. Study 2 tested our hypotheses more directly by hand-coding mainstream news media publications. Specifically, we randomly selected 764 news publications that report on racial, gender, and wealth inequality published by eight highly trusted news media outlets [ABC News, CBS News, CNN, Fox News, MSNBC, *The New York Times*, *USA Today*, and *The Washington Post* (37)] between 2014 and 2018. Two independent raters, blind to our hypotheses, counted the number of times a news publication used the advantage, disadvantage, or no frame to describe race, gender, and wealth inequality (*SI Appendix* offers details on our sample selection, coding procedure, and interrater reliabilities).

**Frame use across all three inequality domains.** To examine the relative prevalence of inequality frames in articles across all three inequality domains, we conducted a mixed negative binomial regression analysis regressing frame count on frame type (i.e., advantage, disadvantage, or no frame) as a fixed effect factor, including a random effect factor for news publication. This analysis showed that the disadvantage frame ( $b = 0.81$ ,  $SE = 0.06$ ,  $z = 13.32$ ,  $Exp(b) = 2.24$ ,  $P < 0.001$ , 95% CI {0.69, 0.93}) and no frame ( $b = 0.75$ ,  $SE = 0.06$ ,  $z = 12.37$ ,  $Exp(b) = 2.12$ ,  $P < 0.001$ , 95% CI {0.63, 0.87}) were used significantly more than the advantage frame to describe social inequality. The use of the disadvantage frame and no frame did not significantly differ:  $b = 0.06$ ,  $SE = 0.05$ ,  $z = 1.04$ ,  $Exp(b) = 1.06$ ,  $P = 0.298$ , 95% CI {−0.05, 0.16}.

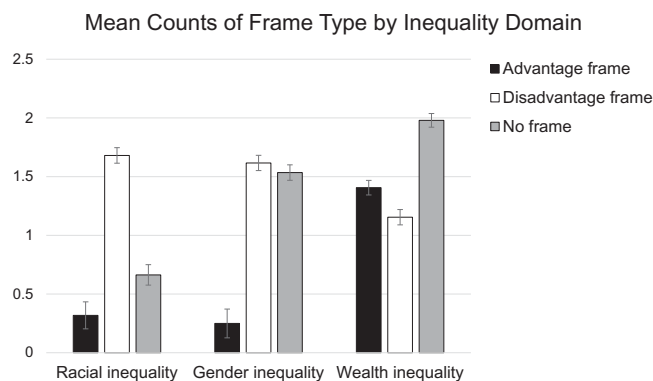
**Frame use by inequality domain.** Means and SDs of raw counts of frame use by inequality domain are presented in *SI Appendix*, Table S2. To examine how frame use systematically differed by inequality domain, we conducted a mixed negative binomial regression analysis regressing frame count on frame type, inequality domain (i.e., gender, race, or wealth), and their interaction term as fixed effect factors, including a random effect factor for news article. This analysis showed a significant main effect of frame type ( $\chi^2(2) = 289.98$ ,  $P < 0.001$ ) and a significant main effect of inequality domain on frame use ( $\chi^2(2) = 93.12$ ,  $P < 0.001$ ). Importantly, there was also a significant frame type  $\times$  inequality domain interaction effect ( $\chi^2(4) = 317.53$ ,  $P < 0.001$ ), indicating that the use of frame type systematically differed by inequality domain (Fig. 2).

Decomposing this interaction, we found that news publications used the disadvantage frame ( $b = 1.66$ ,  $SE = 0.12$ ,  $z = 13.40$ ,  $Exp(b) = 5.28$ ,  $P < 0.001$ , 95% CI {1.42, 1.91}) and no frame ( $b = 0.73$ ,  $SE = 0.14$ ,  $z = 5.38$ ,  $Exp(b) = 2.08$ ,  $P < 0.001$ , 95% CI {0.47, 1.00}) significantly more than the

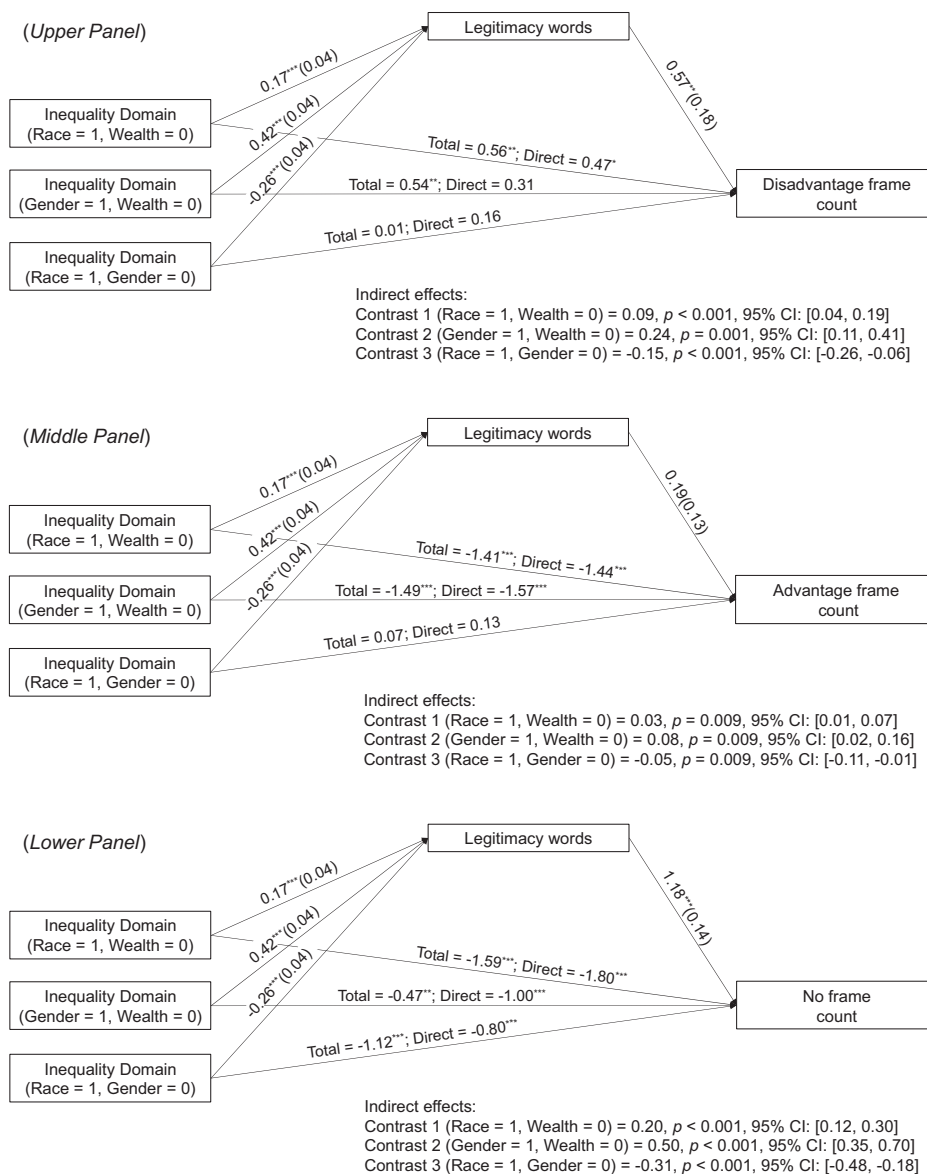
advantage frame to describe racial inequality. Furthermore, when describing racial inequality, the disadvantage frame was used more than no frame:  $b = 0.93$ ,  $SE = 0.10$ ,  $z = 9.41$ ,  $Exp(b) = 2.53$ ,  $P < 0.001$ , 95% CI {0.74, 1.12}. Similarly, when describing gender inequality, news publications also used both the disadvantage ( $b = 1.87$ ,  $SE = 0.13$ ,  $z = 14.22$ ,  $Exp(b) = 6.48$ ,  $P < 0.001$ , 95% CI {1.61, 2.13}) and no frame ( $b = 1.82$ ,  $SE = 0.13$ ,  $z = 13.78$ ,  $Exp(b) = 6.15$ ,  $P < 0.001$ , 95% CI {1.56, 2.07}) significantly more than the advantage frame; however, there were no differences in the usage of the disadvantage and no frame ( $b = 0.05$ ,  $SE = 0.08$ ,  $z = 0.65$ ,  $Exp(b) = 1.05$ ,  $P = 0.517$ , 95% CI {−0.11, 0.21}).

However, frames used to describe wealth inequality were markedly different: No frame was used significantly more than the advantage frame ( $b = 0.34$ ,  $SE = 0.08$ ,  $z = 4.48$ ,  $Exp(b) = 1.41$ ,  $P < 0.001$ , 95% CI {0.19, 0.49}) and the disadvantage frame ( $b = 0.54$ ,  $SE = 0.08$ ,  $z = 6.80$ ,  $Exp(b) = 1.71$ ,  $P < 0.001$ , 95% CI {0.38, 0.69}). Additionally, consistent with our expectations, wealth inequality was described using the advantage frame more than the disadvantage frame:  $b = 0.20$ ,  $SE = 0.08$ ,  $z = 2.39$ ,  $Exp(b) = 1.22$ ,  $P = 0.017$ , 95% CI {0.04, 0.36}.

**The role of perceived legitimacy.** To test whether mainstream news media's systematic differences in describing racial, gender, and wealth inequality are driven by differences in perceived legitimacy of the inequalities, we supplemented our raters' coding of frames with lexicon-based text analyses capturing the extent to which each article referenced the idea of legitimacy, using the same dictionary used in study 1 (36). Given that, in general, people presume the state of fairness and justice (38), we interpreted the greater frequency of legitimacy-related words as a greater concern regarding legitimacy and therefore greater perceptions of illegitimacy.



**Fig. 2.** Frame use by inequality domain in study 2 predicted by mixed negative binomial regression. Error bars represent SEs.



**Fig. 3.** Mediation analyses in study 2. Numbers in brackets represent SEs. \* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ .

An ANOVA predicting legitimacy concerns with inequality domain revealed that news publications about gender inequality ( $M = 0.58$ ,  $SD = 0.70$ ) contained more words relating to legitimacy than publications about racial inequality ( $M = 0.32$ ,  $SD = 0.42$ ;  $F(1, 746) = 35.16$ ,  $P < 0.001$ ), which, in turn, contained more legitimacy-related words than publications about wealth inequality ( $M = 0.16$ ,  $SD = 0.19$ ;  $F(1, 746) = 15.14$ ,  $P < 0.001$ ). That is, consistent with study 1 findings, news publications about both gender and race inequalities were more concerned with the idea of legitimacy, compared to publications about wealth inequality.

Next, we conducted three separate bias-corrected mediation analyses (5,000 iterations) predicting each type of frame use (i.e., disadvantage, advantage, and no frame) with inequality domain via legitimacy-related words.\* Consistent with our predictions, we found that, compared to publications about wealth inequality, publications about race and gender inequalities were more likely to use legitimacy-related words, which were, in

turn, associated with a greater use of the disadvantage frame (Fig. 3, *Upper*).

Although we found significant indirect effects predicting the use of advantage frame (Fig. 3, *Middle*), these indirect effects suggest statistical suppression that we did not anticipate.<sup>†</sup> We also, unexpectedly, found that gender inequality was more likely to be described using no frame compared to race inequality, partly because of greater concerns with legitimacy (Fig. 3, *Lower*). Here, too, we found unexpected indirect effects predicting the use of no frame, which suggested statistical suppression.

**Study 3: Frame Use in Lay Definitions of Inequality.** Although understanding how mainstream media depicts inequality is important per se, it is possible that journalists have systematically different perceptions of inequality than laypersons. Moreover, the editorial process could impose artificial constraints on descriptions of inequality. To demonstrate the generalizability of studies 1 and 2 findings and increase control in study design,

\*All mediation analyses reported in the main text treat the dependent variable as a continuous variable. Supplementary mediation analyses treating dependent variables as count variables are reported in *SI Appendix*.

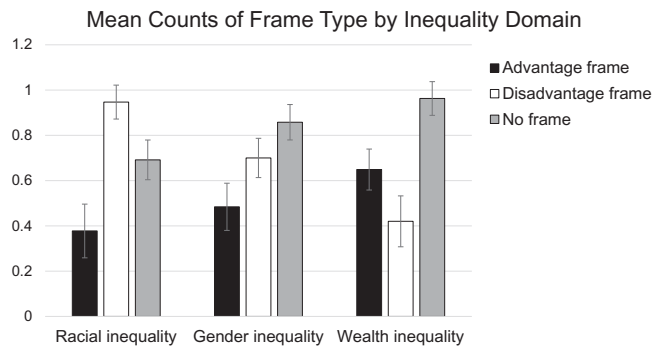
<sup>†</sup>In such cases, we found that the association between inequality domain and frame use becomes stronger after taking into account the variance in frame use attributable to perceptions of legitimacy.

study 3 used a preregistered experiment (<https://aspredicted.org/6cr5k.pdf>) in which randomly assigned participants were asked to describe racial, gender, or wealth inequality in an open-ended question. Specifically, participants were asked, “What does [racial/gender/wealth] inequality mean to you? In a few sentences, please describe what [racial/gender/wealth] inequality is, as you would describe it to a person who does not know anything about it.” Two independent raters, blind to our hypotheses, counted the number of times a participant used advantage, disadvantage, and no frames to describe the inequality they were asked about (see *SI Appendix, Materials and Methods* for interrater reliabilities). Study 3 also directly measured participants’ perceived legitimacy of the assigned domain of inequality (i.e., “To the extent that it exists, how fair or unfair is [racial/gender/wealth] inequality?”; “To the extent that it exists, to what extent is [racial/gender/wealth] inequality justified, in your opinion?”).

**Frame use across all three inequality domains.** Replicating study 2 findings, a Poisson regression analysis revealed that participants used both the disadvantage ( $b = 0.31$ ,  $SE = 0.08$ ,  $z = 4.03$ ,  $\text{Exp}(b) = 1.37$ ,  $P < 0.001$ , 95% CI {0.16, 0.47}) and no frame ( $b = 0.51$ ,  $SE = 0.07$ ,  $z = 6.79$ ,  $\text{Exp}(b) = 1.66$ ,  $P < 0.001$ , 95% CI {0.36, 0.66}) more than the advantage frame to describe social inequality.<sup>‡</sup> However, in contrast to study 2 results, participants used no frame more than the disadvantage frame,  $b = 0.20$ ,  $SE = 0.07$ ,  $z = 2.85$ ,  $\text{Exp}(b) = 1.22$ ,  $P = 0.004$ , 95% CI {0.06, 0.33}.

**Frame use by inequality domain.** Means and SDs of raw counts of frame use by inequality domain are presented in *SI Appendix, Table S3*. To examine whether there are systematic differences in participants’ frames used to describe racial, gender, and wealth inequality, we fit a Poisson regression model regressing frame count on frame type, inequality domain, and their interaction term. This analysis revealed a significant main effect of frame type ( $\chi^2(2) = 48.82$ ,  $P < 0.001$ ) and a nonsignificant main effect of inequality domain on frame use ( $\chi^2(2) = 0.52$ ,  $P = 0.770$ ). Importantly, as in study 2, there was also a significant frame type  $\times$  inequality domain interaction effect ( $\chi^2(4) = 61.55$ ,  $P < 0.001$ ), indicating that participants’ use of frame type systematically differed by inequality domain (Fig. 4).

Decomposing this interaction term revealed that participants described racial inequality using the disadvantage ( $b = 0.92$ ,  $SE = 0.14$ ,  $z = 6.55$ ,  $\text{Exp}(b) = 2.51$ ,  $P < 0.001$ , 95% CI {0.65, 1.20}) and no frame ( $b = 0.60$ ,  $SE = 0.15$ ,  $z = 4.10$ ,  $\text{Exp}(b) = 1.83$ ,  $P < 0.001$ , 95% CI {0.32, 0.90}) significantly more than the advantage frame; further, participants described racial inequality using the disadvantage frame more than no frame:  $b = 0.31$ ,  $SE = 0.12$ ,  $z = 2.72$ ,  $\text{Exp}(b) = 1.37$ ,  $P = 0.006$ , 95% CI {0.09, 0.54}. Similarly, participants described gender inequality using the disadvantage ( $b = 0.37$ ,  $SE = 0.14$ ,  $z = 2.72$ ,  $\text{Exp}(b) = 1.45$ ,  $P = 0.007$ , 95% CI {0.10, 0.64}) and no frame ( $b = 0.57$ ,  $SE = 0.13$ ,  $z = 4.39$ ,  $\text{Exp}(b) = 1.77$ ,  $P < 0.001$ , 95% CI {0.32, 0.83}) significantly more than the advantage frame, but the disadvantage frame was used marginally less than no frame ( $b = -0.20$ ,  $SE = 0.12$ ,  $z = -1.74$ ,  $\text{Exp}(b) = 0.82$ ,  $P = 0.082$ , 95% CI {-0.43, 0.02}). Finally, in contrast to racial and gender inequalities, participants described wealth inequality using no frame significantly more than the advantage ( $b = 0.39$ ,  $SE = 0.12$ ,  $z = 3.37$ ,  $\text{Exp}(b) = 1.48$ ,  $P = 0.001$ , 95% CI {0.17, 0.63}) and the disadvantage frame ( $b = 0.83$ ,  $SE = 0.13$ ,  $z =$



**Fig. 4.** Frame use by inequality domain in study 3 predicted in Poisson regression. Error bars represent SEs.

6.15,  $\text{Exp}(b) = 2.29$ ,  $P < 0.001$ , 95% CI {0.57, 1.10}). Additionally, consistent with our prediction, participants described wealth inequality with the advantage frame significantly more than the disadvantage frame:  $b = 0.43$ ,  $SE = 0.14$ ,  $z = 3.01$ ,  $\text{Exp}(b) = 1.54$ ,  $P = 0.003$ , 95% CI {0.15, 0.72}.

**The role of perceived legitimacy on frame use.** An ANOVA predicting legitimacy perceptions with inequality domain showed that both race inequality ( $M = 1.74$ ,  $SD = 1.14$ ;  $F(1, 562) = 62.65$ ,  $P < 0.001$ ) and gender inequality ( $M = 2.03$ ,  $SD = 1.28$ ;  $F(1, 562) = 34.39$ ,  $P < 0.001$ ) were perceived to be less legitimate than wealth inequality ( $M = 2.82$ ,  $SD = 1.52$ ).<sup>§</sup> Participants also perceived racial inequality to be less legitimate than gender inequality,  $F(1, 562) = 4.31$ ,  $P = 0.039$ , in line with study 1 and in contrast to study 2 findings.

We conducted three separate bias-corrected mediation analyses (5,000 iterations) predicting each type of frame use from inequality domain with legitimacy perceptions as the mediator. Replicating study 2 findings, compared to wealth inequality, race and gender inequalities were more likely to be described using the disadvantage frame, as they were perceived to be less legitimate (Fig. 5, *Upper*). We also found that, compared to gender inequality, race inequality was more likely to be described using the disadvantage frame, as participants perceived racial inequality to be less legitimate than gender inequality.

Replicating study 2 findings, the mediation model predicting advantage frame use suggested suppression effects that we did not anticipate (Fig. 5, *Middle*). No mediation or suppression effects were observed in the model predicting no frame use (Fig. 5, *Lower*).

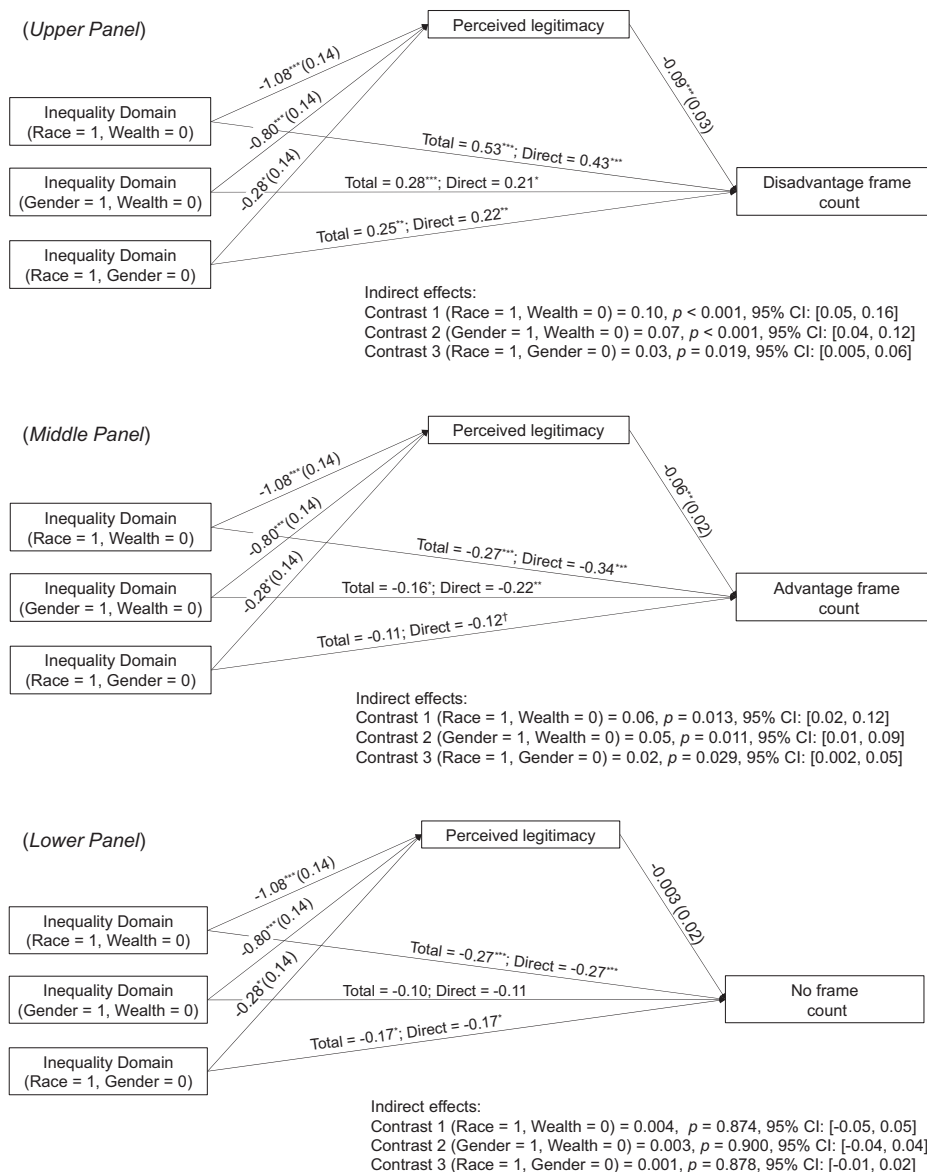
#### Study 4: Examining the Causation of Inequality Legitimacy.

Study 4 was designed to test for the causal relationship between perceived legitimacy of inequality and frame use. To this end, study 4 used a two (legitimacy: legitimate vs. illegitimate) by three (inequality domain: race, gender, wealth) between-subjects design. Although we randomly assigned participants to describe race, gender, or wealth inequality, we were primarily interested in the effects of the legitimacy condition. That is, regardless of inequality domain, our expectation was that participants in the illegitimate inequality condition would be more likely to use the disadvantage frame than those in the legitimate inequality condition.

The design and procedures of study 4 were nearly identical to those of study 3, with the exception of asking participants to describe inequality taking the perspective of someone who

<sup>‡</sup>We initially conducted a mixed Poisson regression analysis regressing frame count on frame type as a fixed effect factor and participants as a random effects factor, as preregistered. However, this model suggested little to no variance in participants (the random effect factor). Following the advice of Barr et al. (39), we opted for a more parsimonious model without the random effect factor for all subsequent Poisson and logistic regression analyses for study 3.

<sup>§</sup>Mean perception of the legitimacy of wealth inequality was significantly lower than the midpoint of the scale ( $t(186) = -10.60$ ,  $p < .001$ ), suggesting that participants generally perceived wealth inequality to be illegitimate.



**Fig. 5.** Mediation analyses in study 3. Numbers in brackets represent SEs. † $P < 0.10$ , \* $P < 0.05$ , \*\* $P < 0.01$ , \*\*\* $P < 0.001$ .

thinks that the inequality is either legitimate or illegitimate in study 4. We opted for this manipulation of legitimacy because we anticipated difficulty in changing participants' deep-seated beliefs about the legitimacy of societal race, gender, and wealth inequalities. Study 4 was preregistered (<https://aspredicted.org/6jh5a.pdf>).

**Frame use by legitimacy condition across all three inequality domains.** A Poisson regression analysis revealed that participants in the illegitimate inequality condition were more likely to describe inequality using the disadvantage frame compared to participants in the legitimate inequality condition ( $b = 0.29$ ,  $SE = 0.09$ ,  $z = 3.12$ ,  $\text{Exp}(b) = 1.34$ ,  $P = 0.002$ , 95% CI {0.11, 0.48}), consistent with our predictions (*SI Appendix, Fig. S1, Left*). A negative binomial regression analysis showed that the use of the advantage frame did not differ by legitimacy condition:  $b = -0.04$ ,  $SE = 0.11$ ,  $z = -0.40$ ,  $\text{Exp}(b) = 0.96$ ,  $P = 0.688$ , 95% CI {-0.26, 0.17} (*SI Appendix, Fig. S1, Middle*). Finally, a Poisson regression analysis showed that the use of no frame did not differ by legitimacy condition:  $b = -0.03$ ,  $SE = 0.09$ ,  $z = -0.37$ ,  $\text{Exp}(b) = 0.96$ ,  $P = 0.712$ , 95% CI {-0.21, 0.14} (*SI Appendix, Fig. S1, Right*).

## Discussion

Using computational topic modeling, manual coding of archival data, and experimental approaches, we find that race and gender inequalities are more likely to be described using the disadvantage frame (versus the advantage frame), whereas wealth inequality is more likely to be described using no frame and the advantage frame (versus the disadvantage frame). We find that these chronic frame differences are related to perceptions of inequality legitimacy such that inequalities perceived to be more illegitimate are particularly likely to be described using the disadvantage frame.

We see the present findings as an important illustration of how the chronic framing of social inequality by the mainstream media may inadvertently perpetuate specific cultural models of social inequity within the public. Chronic use of the disadvantage frame when describing race and gender inequalities likely reinforces the perception that these inequalities are driven more by processes of discrimination, hate, denigration, and animus toward racial minority individuals and women than processes of advantage, privilege, favoritism, and help toward White

individuals and men. By contrast, the comparatively more prevalent use of the advantage frame to describe wealth inequality likely fosters the perception that wealth inequality is driven more by processes that boost wealthy individuals than by processes that block the advancement and deteriorate the standing of the poor. These cultural models of social inequity are important to consider because they are faulty: Accumulating research demonstrates that intergroup inequality is caused by both advantaging and disadvantaging processes (40, 41).

Such faulty assumptions about the causes of inequality may also mislead policy makers' intervention designs. To the extent that a given social inequality is routinely described using the disadvantage frame (or the advantage frame), interventions aimed to reduce social inequality are likely to overwhelmingly address disadvantaging (or advantaging) mechanisms, rather than fully correcting for both mechanisms that bolster inequality. Our results suggest that mechanisms that drive White individuals' and men's advantages and the working class's disadvantages are likely to be particular blind spots to which more attention should be paid (42).

The current work empirically documents differences in the perceived legitimacy of race, gender, and wealth inequalities. Although past research has examined race and gender inequalities concurrently (e.g., refs. 43–46), we are unaware of research that has directly compared individuals' perceptions of legitimacy of race, gender, and wealth inequalities concurrently. The results of studies 1 through 3 provide empirical evidence for the proposition that race and gender inequalities are perceived to be substantively less legitimate than wealth inequality, although all three forms of inequality are perceived to be illegitimate to some degree. In documenting these differences, our work highlights the utility of assessing descriptive norms of how individuals discuss inequality, as this decision itself reveals information about individuals' beliefs regarding the underlying causes and legitimacy of the inequality.

**Limitations and Directions for Future Research.** Although we highlight perceived legitimacy as one antecedent to the chronic framing of race, gender, and wealth inequalities, it is likely that there are other factors that impact how individuals choose to frame inequalities. For example, the unanticipated suppression effects on the use of advantage and no frames in studies 2 and 3 suggest that other factors may play a role in how individuals choose to use such frames. The lack of effects of our legitimacy manipulation on the uses of advantage and no frames in study 4 are likewise consistent with this possibility.

The phenomenon and prevalence of no frame use are also noteworthy. Prior work on inequality frames has not explored the impact of no frame compared to that of advantage and disadvantage frames. Thus, it is unknown what might drive people to avoid using either the advantage or disadvantage frame. Does this avoidance indicate an ambivalence or discomfort regarding the causes of inequality? Or does it indicate that individuals see inequality as a natural consequence of "how things are," rather than as being driven by active processes? In the cases of both advantage and no frames use, our findings raise

intriguing and important questions, particularly given the significant impact of inequality frames on individuals' policy preferences (6, 9, 11, 12).

Future work might also utilize specific inequality domains and/or periods of study to further explore how inequality domains might differ on fundamental dimensions. For example, in studies 1 and 3, race inequality is seen as less legitimate than gender inequality, whereas, in study 2, the opposite is true. These differences may be due to when the studies were conducted (study 1 encompasses years 2000 through 2019; study 2 is between 2014 and 2018, which included the US presidential campaign and subsequent election loss of the first female candidate; and study 3 was conducted in June 2020, during the peak of the Black Lives Matter protests). Thus, the rise and fall of inequality frames may serve as a way to explore how the public understands the nature of a given inequality. Another promising avenue for future work would be to use different preferences for frames to identify other key ways in which forms of inequality diverge. Consider, as an example, if wealth and income inequality are described using different chronic frames. The relative difference in mutability in income group, as compared to wealth group, could be informative for our understanding of individuals' perceptions of legitimacy and their responses to monetary inequality.

Finally, we recognize that people's understanding of legitimacy does not occur in a vacuum. A long line of work has contended that beliefs about the (il)legitimacy of inequality are molded by dominant-group members through their control over societal forces and institutions as a way to buttress their position (46, 47). Although the current work does not empirically investigate the causes underlying perceptions of the legitimacy of inequality, such perceptions are impacted by how prominent social institutions (e.g., media, education, and political parties) define merit. Our findings here indicate that those perceptions of legitimacy then impact how inequality is described, which, in turn, has been shown to impact how people interpret the mechanisms underlying inequality and their preferences for addressing it, many of which tend to be to the benefit of dominant groups (5–7). For example, the chronic framing of race and gender inequalities as disadvantages helps to conceal and protect the privileges enjoyed by White and male individuals. In this way, our work suggests that how we communicate differences matters, both as a reflection of and as a mechanism that perpetuates existing power dynamics in society.

**Data Availability.** Anonymized data and analysis scripts for all studies are deposited on the Open Science Framework (<https://osf.io/c893x/>) (48). The full text of news media publications analyzed in studies 1 and 2 are not included in the online repository because we do not own the copyrights.

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