



# Exposure to rising inequality shapes Americans' opportunity beliefs and policy support

Leslie McCall<sup>a,b,c,1</sup>, Derek Burk<sup>d</sup>, Marie Laperrière<sup>d</sup>, and Jennifer A. Richeson<sup>e,f,g,h,1</sup>

<sup>a</sup>Department of Sociology, City University of New York Graduate Center, New York, NY 10016; <sup>b</sup>Department of Political Science, City University of New York Graduate Center, New York, NY 10016; <sup>c</sup>Stone Center on Socio-Economic Inequality, City University of New York Graduate Center, New York, NY 10016; <sup>d</sup>Department of Sociology, Northwestern University, Evanston, IL 60208; <sup>e</sup>Department of Psychology, Yale University, New Haven, CT 06520; <sup>f</sup>Institution for Social and Policy Studies, Yale University, New Haven, CT 06520; <sup>g</sup>Department of Psychology, Northwestern University, Evanston, IL 60208; and <sup>h</sup>Institute for Policy Research, Northwestern University, Evanston, IL 60208

Contributed by Jennifer A. Richeson, August 1, 2017 (sent for review April 14, 2017; reviewed by Kentaro Fujita and Vincent Hutchings)

**Economic inequality has been on the rise in the United States since the 1980s and by some measures stands at levels not seen since before the Great Depression. Although the strikingly high and rising level of economic inequality in the nation has alarmed scholars, pundits, and elected officials alike, research across the social sciences repeatedly concludes that Americans are largely unconcerned about it. Considerable research has documented, for instance, the important role of psychological processes, such as system justification and American Dream ideology, in engendering Americans' relative insensitivity to economic inequality. The present work offers, and reports experimental tests of, a different perspective—the opportunity model of beliefs about economic inequality. Specifically, two convenience samples (study 1,  $n = 480$ ; and study 2,  $n = 1,305$ ) and one representative sample (study 3,  $n = 1,501$ ) of American adults were exposed to information about rising economic inequality in the United States (or control information) and then asked about their beliefs regarding the roles of structural (e.g., being born wealthy) and individual (e.g., hard work) factors in getting ahead in society (i.e., opportunity beliefs). They then responded to policy questions regarding the roles of business and government actors in reducing economic inequality. Rather than revealing insensitivity to rising inequality, the results suggest that rising economic inequality in contemporary society can spark skepticism about the existence of economic opportunity in society that, in turn, may motivate support for policies designed to redress economic inequality.**

conclude that Americans must not be particularly concerned about inequality (refs. 8 and 12; cf. ref. 13). The same conclusion is typically drawn from the trend over time in support for government redistribution, which has remained flat in the wake of inequality's historic rise (6).

We argue that the conflation of support for traditional redistributive government policies with concern about economic inequality (*i*) may mask individuals' actual level of concern and (*ii*) makes it difficult to discern the relations among rising economic inequality, support for policies designed to address it, and, importantly, the beliefs underlying such support. The primary aim of the present research is to decouple these questions to gain a better understanding of Americans' responses to rising economic inequality. Specifically, we examine whether exposure to straightforward, objective information about rising societal inequality affects beliefs about the opportunity structure in society—beliefs known to shape support for redistributive and other equity-enhancing policies (8, 10, 14).

Drawing on the rich literature on beliefs about economic inequality that predates its recent rise (14, 15), as well as recent survey-based studies that focus on views of inequality and opportunity rather than redistributive policy preferences (2, 16), we propose the opportunity model of beliefs about economic

economic inequality | opportunity beliefs | policy preferences | redistribution | system justification

**E**conomic inequality has been on the rise in the United States since the 1980s and by some measures stands at levels not seen since before the Great Depression (1). The topic has been of episodic concern in presidential campaigns going back to at least the 1990s (2) and was a central theme of the 2016 presidential campaign. Economic inequality continues to rise in importance among academic researchers as well. Despite this attention, research on the topic (in economics, political science, sociology, and psychology) has largely concluded that Americans are uninformed of the strikingly high levels of income inequality in the country and, even when informed, are at best ambivalent supporters of policies to reduce it (3–7). Some studies find that this is likely due to personal investments in American Dream ideology, at least as long as opportunities to get ahead are perceived to be relatively available (8–11).

Although this body of research has nicely revealed the complicated and sometimes contradictory psychological processes that unfold when Americans think about, or become aware of, economic inequality, one puzzling aspect of this work is the tendency to infer individuals' level of concern regarding inequality from their expressed support for traditional government redistributive policies (refs. 8–10; cf. ref. 5). For instance, because Americans on average are less supportive of government tax and transfer policies, compared with the public in many other countries with similar or even lower levels of economic inequality, scholars often

## Significance

**Although rising economic inequality in the United States has alarmed many, research across the social sciences repeatedly concludes that Americans are largely unconcerned about it. We argue that this conclusion may be premature. Here, we present the results of three experiments that test a different perspective—the opportunity model of beliefs about inequality. Tempering the conclusions of past work, the findings suggest that perceptions of rising economic inequality spark skepticism about the existence of economic opportunity in society that, in turn, may motivate support for equity-enhancing policies. Hence, this work calls for new theoretical and methodological approaches to the study of rising economic inequality, especially those that bridge disciplinary boundaries, as well as the largely separate experimental and correlational literatures.**

Author contributions: L.M. and J.A.R. designed research; L.M., D.B., M.L., and J.A.R. performed research; L.M., D.B., and M.L. analyzed data; and L.M. and J.A.R. wrote the paper.

Reviewers: K.F., The Ohio State University; and V.H., University of Michigan.

The authors declare no conflict of interest.

Freely available online through the PNAS open access option.

Data deposition: Study materials (including consent forms) and data from all studies can be found at the Open Science Framework (<https://osf.io/bukzpf>). Study materials and data from study 3 can also be found at the Time-sharing Experiments for the Social Sciences website ([tessexperiments.org/data/mccall723.html](https://tessexperiments.org/data/mccall723.html)).

<sup>1</sup>To whom correspondence may be addressed. Email: [lmccall@gc.cuny.edu](mailto:lmccall@gc.cuny.edu) or [jennifer.richeson@yale.edu](mailto:jennifer.richeson@yale.edu).

This article contains supporting information online at [www.pnas.org/lookup/suppl/doi:10.1073/pnas.1706253114/-DCSupplemental](http://www.pnas.org/lookup/suppl/doi:10.1073/pnas.1706253114/-DCSupplemental).

inequality. According to the model, perceptions of increasing economic inequality of the kind that characterizes contemporary society spark skepticism about the existence of economic opportunity. Consequently, rising inequality leads individuals to increase their support for actions that transparently enhance opportunities to advance in the labor market, such as policies that expand access to education and/or address inequities in the workplace (2, 17, 18), in addition to policies that redistribute income through progressive taxes and government transfer programs. Evidence in support of the opportunity model, then, would offer an alternative to the “exceptionalist” interpretation of Americans as largely unconcerned about, or at least insensitive to, large disparities in economic outcomes (9).

The opportunity model extends the current literature on responses to economic inequality in three main respects. First, the model reverses the causal arrow that has long connected issues of inequality and opportunity. That is, American Dream ideology is an important framework through which Americans respond to income inequality; adherence to Dream ideology predisposes Americans to view opportunities as widely available and, as a result, outcomes as fair. Indeed, a large body of research on American exceptionalism and system justification theory, and considerable public discourse, has focused on, and found compelling evidence for, this dynamic (8–11, 19–21). Almost no work, however, considers the possibility that the reverse may also be true: namely, that perceptions of rising economic inequality can weaken faith in the American Dream of upward mobility through hard work. In recent years, popular discourse has sometimes referred to this dynamic as the rise of a “rigged” game favoring the wealthy, and scholars have begun to revisit the question of intergenerational transmission of advantage (refs. 11 and 22–24; see also ref. 25 in the racial domain). That is, rather than (or in addition to) motivating people to work harder to reap ever greater rewards in higher stakes games, rising inequality may at times trigger concerns that opportunities to climb the socioeconomic ladder of American society are receding. The primary goal of the present work is to offer a causal test of this general claim.

The second way in which this work extends the extant literature is by focusing in greater detail on the opportunity-related beliefs that underlie responses to rising economic inequality. Prior studies have recognized the motivating importance of opportunity beliefs as a cause of inequality beliefs and policy preferences but measured them in a relatively limited way: namely, as perceptions of either intergenerational mobility or the role of individual effort in getting ahead (8, 26). To explore opportunity beliefs as a key outcome of rising economic inequality, the present work instead uses a wider set of indicators drawn from, and established in, the survey literature on beliefs about economic opportunity (14, 27). This measurement approach allows us to examine how structural factors (e.g., coming from a wealthy family) and individual factors (e.g., hard work) are each affected by information about rising inequality whereas prior research typically has employed a bipolar scale or a forced-choice, single-question format wherein participants must choose whether individual or structural factors are more important (16, 19, 26).

Last, the present research also broadens the extant literature in its consideration of potential policy solutions to economic inequality. In addition to considering support for government redistribution (i.e., policies designed to reduce posttax and transfer income disparities among Americans as a whole), we also examine support for equity-enhancing policies in the labor market: namely, policies that lift wages at the bottom and reduce them at the top for employees of major corporations. (Although this policy option may be antithetical to free market principles, our aim is to understand how Americans respond to economic inequality, even if some policy options may, at present, appear to be inefficient and/or infeasible.) Taken together, the aims of the present work are to examine whether exposure to information about rising economic inequality increases concerns about opportunity in America that,

in turn, affect support for efforts to reduce inequality by either government or business actors.

In sum, we present three experiments to test the main tenets of the opportunity model. We first consider whether American participants express greater concern about economic opportunity (or the lack thereof) in society after reading about rising economic inequality, compared with neutral information. We then examine whether exposure to information about rising inequality (compared with control information) also predicts support for policies designed to reduce inequity by either government or business actors and does so, perhaps in part, because of increased concerns about opportunity.

## Results

**Study 1.** We recruited a convenience sample of American adults from the Amazon Mechanical Turk (MTurk) marketplace in summer, 2014. Participants were randomly assigned to an inequality treatment condition ( $n = 244$ ) or to a comparable control condition ( $n = 236$ ). In the inequality condition, participants read a realistic, accurate, and nonpartisan article about the trend in rising economic inequality in the United States that was accompanied by a simple bar chart (see [Articles Used in Experimental Treatments](#) and [Fig. S1](#)). The article did not highlight any particular social group or mention any explanation or consequence of inequality or, importantly, reference the issue of opportunity, given that opportunity beliefs are the primary dependent variable. Participants in the control condition read an article of similar length, format, and numerical content; however, the content pertained to baseball (see [Articles Used in Experimental Treatments](#) and [Fig. S2](#)).

After reading the article, participants responded to questions that measure the importance of structural and individual factors in “getting ahead,” the phrase used in the battery of questions about economic opportunity repeated in various years since 1987 in the General Social Survey (GSS). Two items (rated from 1 to 5, with 1 being “not at all important” and 5 being “essential”) unambiguously assessed perceived importance of structural factors related to class background (“coming from a wealthy family,” “having well-educated parents,”  $\alpha = 0.62$ ); similarly, two items assessed the perceived importance of purely individual factors (“hard work,” “ambition,”  $\alpha = 0.78$ ). We predicted that, relative to control participants, participants exposed to the inequality treatment would rate structural factors as more important and individual factors as less important in getting ahead—reflecting greater concern about opportunity in society.

All additional information about the stimuli, sample selection criteria, randomization of survey questions and responses, pilot conditions, additional questions in the survey instrument, control variables included in all reported regression results below (income, education, race, gender, age, and partisanship), weights, and additional analyses, for instance by partisanship, is provided in [Methods](#) or [Supporting Information](#) for all studies.

Unadjusted means and SDs of the opportunity beliefs items for each experimental condition are presented in Table 1. Regressions revealed that participants in the inequality treatment condition rated structural factors as more important to getting ahead, and individual factors as less important, than did participants in the control condition [ $\beta = 0.353$ ,  $SE = 0.076$ ,  $P < 0.001$ , root-mean-squared error (RMSE) = 0.828 for structural factors;  $\beta = -0.290$ ,  $SE = 0.072$ ,  $P < 0.001$ , RMSE = 0.783 for individual factors]. Thus, these results offer preliminary evidence in support of the opportunity model: Namely, exposure to information about rising economic inequality in the United States can lead to greater skepticism regarding the extent to which opportunity to advance in America still exists.

**Study 2.** The primary purpose of study 2 was to replicate study 1’s finding that exposure to rising economic inequality increases concern about opportunity, compared with control information.

Recall that the opportunity model contends that rising economic inequality erodes belief in the American Dream—that is, people can advance socioeconomically if they work hard. If this is indeed the case, then we should be able to “turn off” this effect of information about rising economic inequality by assuaging concerns regarding the efficacy of individual effort (14, 19, 28). The second aim of study 2 was to investigate this possibility.

We again recruited a sample of adult residents of the United States from MTurk in spring, 2015. Participants were randomly assigned to one of three experimental conditions in which they read two articles that served to manipulate the presence or absence of information about inequality (condition 1 and 2 vs. condition 3) and the presence or absence of information bolstering the efficacy of the American Dream (condition 2 vs. conditions 1 and 3). In the inequality condition ( $n = 431$ ), participants read the same article about rising economic inequality used in study 1, followed by an unrelated human-interest story on cooking (see *Articles Used in Experimental Treatments* and Fig. S3). Like those in the inequality condition, participants in the American Dream condition ( $n = 433$ ) first read the article about rising economic inequality (from study 1), followed by a second article that portrayed a classic “rags-to-riches” story of one individual’s upward mobility (see *Articles Used in Experimental Treatments* and Fig. S4) and that, thus, was expected to assuage concerns about the possibility of individual upward mobility—i.e., opportunity—triggered by the inequality article.

The responses of participants in the inequality condition were compared with those in the American Dream condition, as well as to those of participants ( $n = 441$ ) who were randomly assigned to a control condition in which they first read the baseball article from study 1 followed by the cooking article described previously. After reading the articles that corresponded with their experimental condition, participants again rated the perceived importance of structural and individual factors in getting ahead in society (i.e., opportunity beliefs), as described in study 1.

Unadjusted means and SDs of the opportunity belief scales for each condition are presented in Table 1. We first examined whether we conceptually replicated the primary findings of study 1 by comparing responses of participants in the inequality condition to those of participants in the baseline control condition. As predicted, participants in the inequality condition rated structural factors as more important to getting ahead, compared with participants in

the control condition ( $\beta = 0.226$ ;  $SE = 0.054$ ;  $P < 0.001$ ;  $RMSE = 0.795$ ;  $n = 872$ ). Interestingly, however, the inequality information, compared with control, did not significantly reduce beliefs about the importance of individual factors although the direction of the effect is in the predicted direction ( $\beta = -0.081$ ;  $SE = 0.053$ ;  $P = 0.124$ ;  $RMSE = 0.778$ ;  $n = 872$ ).

The second aim of study 2 was to consider whether the effect of exposure to information about rising inequality on opportunity beliefs would be observed when it is coupled with information suggesting the viability of economic mobility through individual effort (i.e., compare the inequality condition to the American Dream condition). Consistent with predictions, regression analyses revealed that participants in the inequality condition rated individual factors as less important in getting ahead than did participants in the American Dream condition ( $\beta = -0.225$ ,  $SE = 0.050$ ,  $P < 0.001$ ,  $RMSE = 0.729$ ,  $n = 864$ ). The American Dream article did not, however, reduce concerns about the role of structural factors, relative to the inequality treatment ( $\beta = -0.017$ ,  $SE = 0.056$ ,  $P = 0.767$ ,  $RMSE = 0.822$ ,  $n = 864$ ). Indeed, although not a focal a priori comparison, analyses revealed that participants in the American Dream condition rated structural factors as significantly more important for getting ahead ( $P < 0.001$ ) than did control condition participants (Table 1), suggesting the residual effects of exposure to the inequality article.

Taken together, the results of study 2 offer additional evidence that exposure to information about rising economic inequality increases perceptions that there are meaningful structural barriers to getting ahead in America. By contrast, the effects of exposure to information about rising economic inequality on individualistic beliefs appear less robust. This divergence in the results for individual and structural factors related to opportunity is notable for at least two reasons: (i) It counters the widespread understanding that Americans are reticent to think about economic inequality in “structuralist” terms (28); and (ii) it, along with the generally high mean levels of support expressed for individual factors, reveals how committed Americans are to the role of individual effort in getting ahead. [It is important to note, however, that respondents in comparable countries (e.g., France and the United Kingdom) also tend to rate these individual factors as more important than the structural factors; on average, Americans are at least as inclined as those in these countries to rate structural factors as important to getting ahead; and Americans’ beliefs about the positive role of hard work in getting ahead have been declining with rising inequality (29).] Similarly, it is possible that beliefs in the importance of individual factors in shaping economic outcomes are more robust to quite minimal interventions. Perhaps simply the passage of time after the inequality article, or even distraction by the second article, was sufficient to undo any initial effects of reading about rising economic inequality on perceptions of the role of individual factors. It is less surprising, of course, that beliefs about the role of individual factors in success rebounded among participants in the American Dream condition, given that they read about one individual’s story of upward mobility (with no mention of structural support/barriers).

Nevertheless, coupled with the findings of study 1, the results of the present study offer compelling support for the hypothesis that one outcome of exposure to information about rising economic inequality is the increased perception that the opportunity structure of American society may be less open than previously assumed.

**Study 3.** Study 3 sought to replicate the primary findings of the prior two studies in a nationally representative sample, as well as to extend our examination of the effects of exposure to rising societal inequality to support for equity-enhancing policies. Given the documented differences between MTurk and nationally representative samples of American adults (e.g., age, partisanship, home-ownership, etc.) (30), many of which are likely to shape opinions regarding tax and corporate pay-setting policies,

**Table 1. Mean differences (SDs in parentheses) between conditions for opportunity variables for each study**

Opportunity scales	Inequality condition	Control condition	American dream condition
<b>Study 1</b>			
Structural	3.49 <sup>a</sup> (0.83)	3.15 <sup>b</sup> (0.84)	—
Individual	4.09 <sup>a</sup> (0.89)	4.33 <sup>b</sup> (0.71)	—
	$n = 244$	$n = 236$	
<b>Study 2</b>			
Structural	3.30 <sup>a</sup> (0.83)	3.07 <sup>b</sup> (0.80)	3.33 <sup>a</sup> (0.85)
Individual	4.22 <sup>a</sup> (0.80)	4.30 <sup>a</sup> (0.79)	4.44 <sup>b</sup> (0.69)
	$n = 431$	$n = 441$	$n = 433$
<b>Study 3</b>			
Structural	3.45 <sup>a</sup> (0.85)	3.17 <sup>b</sup> (0.81)	—
Individual	4.25 <sup>a</sup> (0.80)	4.44 <sup>b</sup> (0.60)	—
	$n = 714$	$n = 787$	

Unadjusted means for the structural and individual factors related to success for each experimental condition and each study. All opportunity items were assessed on a 1 to 5 scale (with 1 being “not at all important” and 5 being “essential”). Means within a study, but across conditions (i.e., within rows), that have different superscripts (a/b) differ significantly from one another (all  $P$ s < 0.01). The  $n$  for each condition for each study is presented after the means (and SDs). Dashes indicate that no data were collected for that condition.



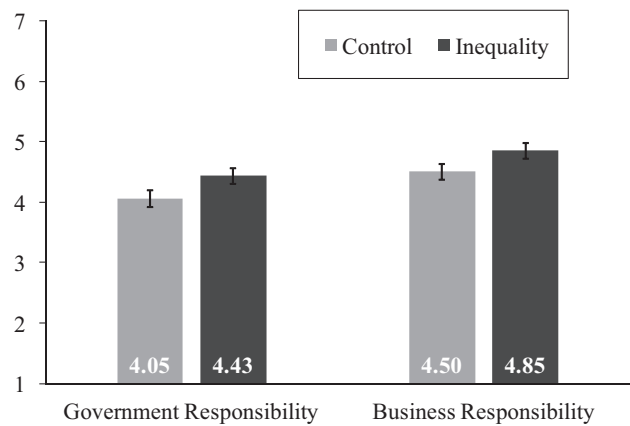
we recruited a representative sample of the US adult population to test these questions. Specifically, in late 2015, participants ( $n = 1,501$ ) were randomly assigned to read the same articles as in study 1, either about rising economic inequality (inequality condition,  $n = 714$ ) or about baseball (control condition,  $n = 787$ ). Immediately following the article manipulation, participants completed the same focal questions assessing their economic opportunity beliefs described in study 1.

Participants next responded to two questions designed to solicit support for policies to combat economic inequality, but through different means (the order of the two questions was randomized across participants within conditions). The first item, drawn from the core module of the GSS and the standard measure in the survey literature on views of government redistribution (5, 6), asks about government responsibility to reduce income differences between the rich and poor on a seven-point scale (see *Methods* for exact wording). We created an item assessing business responsibility to reduce income inequity in the workplace that mirrored the government responsibility item as closely as possible. We strategically modified the wording of the government question by substituting references to “government” with “major companies,” references to “income differences” with “pay differences,” and references to the “rich” and “poor” with “executives” and “unskilled workers” (see *Methods* and *Survey Characteristics* for details).

Participants also responded to a third question that we designed—always following the government and business responsibility items—that forced them to choose the one group that has the most responsibility to reduce income inequality (hereafter referred to as the forced-choice question). The response options were as follows: low-income individuals themselves, charities, high-income individuals themselves, government, and major companies (presented in random order across participants within conditions). A final response option indicating that no reduction in inequality is necessary was always provided last. Taken together, these policy questions allowed us to examine views about the responsibility of business actors to reduce pay disparities between workers at the top and bottom of the pay scale and the responsibility of the government to reduce income differences between the rich and poor, as well as the responsibility of individuals themselves to reduce inequality. In addition to our predictions regarding the effects of exposure to rising inequality on opportunity beliefs, we also expected participants in the inequality condition to express greater support for the idea that both government and business actors have a responsibility to reduce inequality, relative to participants in the control condition.

**Opportunity beliefs.** Unadjusted means and SDs of the opportunity beliefs scales for each condition are presented in the third panel of Table 1. Regression analyses again revealed the predicted effect of the inequality treatment. Replicating study 1, participants who read about rising economic inequality rated structural factors as more important ( $\beta = 0.266$ ,  $SE = 0.046$ ,  $P < 0.001$ ,  $RMSE = 0.815$ ) and individual factors as less important ( $\beta = -0.191$ ,  $SE = 0.039$ ,  $P < 0.001$ ,  $RMSE = 0.689$ ), compared with participants in the control condition.

**Policy preferences.** Regressions also revealed significant treatment effects for both the government and business responsibility items. As depicted in Fig. 1, participants in the inequality condition were significantly more inclined to hold both major companies and government responsible for reducing inequality ( $\beta = 0.349$ ,  $SE = 0.095$ ,  $P < 0.001$ ,  $RMSE = 1.716$  for major companies;  $\beta = 0.376$ ,  $SE = 0.098$ ,  $P < 0.001$ ,  $RMSE = 1.770$  for government), compared with participants in the control condition. Similarly, logistic regressions of participants’ views regarding the one group they considered most responsible for reducing inequality (i.e., the forced-choice question) revealed that those in the inequality condition were more likely to select major companies, relative to all other options (log odds  $\beta = 0.234$ ,  $SE = 0.117$ ,  $P = 0.046$ ), or to select government, relative to all other options (log odds  $\beta = 0.290$ ,  $SE = 0.141$ ,  $P = 0.039$ ), compared with those in the control



**Fig. 1.** Adjusted predicted effects of inequality treatment on support for business and government actors to enact policies to reduce inequality [based on ordinary least squares (OLS) regressions with controls for age, income, education, gender, race, and partisanship, evaluated at their means; bars indicate 95% confidence interval]. Support indicated on one to seven scales; higher values reflect greater support.

condition. All unadjusted mean differences between control and treatment for these outcomes are also significant at  $P < 0.01$ . [Unadjusted means (SDs) for the treatment and control conditions, respectively, for each policy outcome were as follows: mean ( $M$ ) = 4.41 ( $SD = 2.18$ ) and  $M = 3.86$  ( $SD = 2.17$ ) for government responsibility;  $M = 4.90$  ( $SD = 1.84$ ) and  $M = 4.42$  ( $SD = 1.93$ ) for business responsibility; 0.27 and 0.21 for the forced-choice government option; and 0.39 and 0.33 for the forced-choice business option.] Finally, participants in the inequality condition, relative to control participants, were also less likely to say that low-income individuals themselves are most responsible ( $P = 0.017$ ), and marginally less likely to say that inequality “does not need to be reduced” ( $P = 0.084$ ). (See *Additional Results* for analyses of partisanship differences.) Taken together, these policy preference results suggest that heightened awareness of rising inequality triggers support for both of the two major institutions in society (business and government) to address the problem of economic inequality.

**Mediation analyses.** Recall that the opportunity model of economic inequality argues that rising inequality increases concerns about opportunity to advance in society, and it is these concerns that increase support for efforts (by business and government actors) to reduce inequality. As an initial inquiry into this proposed pathway, we examined whether increased concerns about opportunity—as indicated by increased endorsement of structural factors and reduced endorsement of individual factors—may mediate the effect of the inequality treatment on support for the policy outcomes. For three of the four outcomes (business responsibility, government responsibility, and the forced-choice government option), the treatment effects were significantly mediated by opportunity beliefs. Using a bootstrapping approach with 5,000 resamples (31), the combined indirect effect stemming from structural and individual factors (which were also individually significant) was as follows:  $\beta = 0.137$ ,  $SE = 0.027$ , 95% confidence interval (CI) = [0.090, 0.195] for business responsibility;  $\beta = 0.136$ ,  $SE = 0.026$ , 95% CI = [0.091, 0.192] for government responsibility;  $\beta = 0.089$ ,  $SE = 0.030$ , 95% CI = [0.036, 0.154] for the forced-choice government option; and,  $\beta = 0.020$ ,  $SE = 0.024$ , 95% CI = [-0.026, 0.069] for the forced-choice business option. The direct effects of the inequality treatment for the business and government responsibility outcomes also remained significant ( $P < 0.01$ ).

## Discussion

Three studies exposed American adults to a relatively mild intervention—realistic, impersonal, veridical information regarding rising economic inequality in the United States—and then assessed their beliefs about opportunity to advance in society and support for policies that government and/or the business sector could enact to reduce economic inequality. Our studies offered consistent evidence to support the primary tenet of our theoretical model—the opportunity model of beliefs about economic inequality—that rising economic inequality increases skepticism regarding the opportunity structure in society. Exposure to rising economic inequality, rather than control, information reliably increased beliefs about the importance of structural factors in getting ahead in all three studies. In addition, the representative sample of American adults examined in study 3 revealed that the inequality treatment information also increased support for government redistribution, as well as for business actors (i.e., major companies) to enhance economic opportunities in the labor market (i.e., by reducing pay inequality between executives and unskilled workers)—outcomes that were statistically mediated by opportunity beliefs. Consistent with the opportunity model, this finding suggests that beliefs about the opportunity structure in society may play an important role in shaping Americans' evaluations of equity-enhancing policies in the wake of rising economic inequality.

We know of no other research that has explored the causal impact of exposure to information about rising societal economic inequality on perceptions of opportunity and support for multiple types of equity-enhancing policies. Further, the present work investigated these processes using measures that have been established in the survey literature and, thus, can be benchmarked against national statistics and trends. In so doing, this work underscores the benefit of conducting interdisciplinary research that bridges the largely separate psychological and other social scientific literatures on, as well as experimental and correlational approaches to, the study of Americans' reactions to rising economic inequality.

Indeed, some methodological and perhaps also theoretical reorientation is needed for research regarding beliefs about economic inequality. Most notably, our findings, especially those observed in study 2, signal the need to integrate a multidimensional perspective on opportunity beliefs and perceptions, including independent assessment of beliefs about the roles of individual and structural factors. Future research would also benefit from assessing concern about rising or even current levels of societal inequality directly (5, 6), rather than inferring concern from patterns of policy support or ideological orientation. Further, although the results of study 3 were largely consistent for policy outcomes that implicate government and business actors, examining support for a broader set of equity-enhancing policies, perhaps especially those most closely related to common understandings of economic opportunity (17, 32), is also likely to increase understanding of the relationships among rising inequality, concerns about opportunity, and policy support.

Nevertheless, we want to emphasize the fact that we do not consider either the opportunity model or the present findings as necessarily inconsistent with the well-established role of American Dream ideology and/or system justification (14, 20, 21, 28) in shaping responses to economic or other forms of societal inequality. Indeed, as mentioned previously, the influence of Dream ideology on opportunity beliefs in the present work is clearly evident in participants' higher ratings of individual, relative to structural, factors in getting ahead across all three of our experiments, even after exposure to the inequality treatment. But, consistent with the opportunity model, the gap between ratings of individual and structural factors was consistently smaller in the inequality, compared with control, condition, suggesting some erosion of faith in the American Dream. Indeed, our findings highlight the utility of reversing the causal arrow from examinations

regarding how ideologies such as the American Dream shape perceptions of, and concerns regarding, inequality to investigations of faith in the American Dream and related opportunity beliefs as outcomes of rising inequality.

In closing, the present work offered clear and consistent evidence regarding the causal relationship between exposure to information about rising inequality and beliefs about opportunity—beliefs that may subsequently shape support for equity-enhancing policies. We believe this work calls for, and opens the door to, new lines of research that examine the conditions under which rising economic inequality engenders these outcomes. For instance, it is possible that materials used to expose individuals to economic inequality that focus on current levels of economic inequality rather than current trends (as in the present work) may yield different results, as might materials that focus on the economic experiences or outcomes of particular individuals (e.g., exposure to poor individuals) (33) or societal groups (e.g., the “middle” class). Indeed, research suggests that the patterns of results found here are especially likely to be moderated by perceptions that the economic system is (or is not) changeable (24, 34) and perceptions of current societal race-based and/or gender-based dynamics (35, 36). Future research should consider how these and other psychological as well as structural factors may alter, suppress, and even amplify the dynamics uncovered here.

## Methods

**Human Subjects Approval.** This research was reviewed and approved by the Institutional Review Board at Northwestern University (where L.M. and J.A.R. were previously employed during the tenure of data collection and analysis) and conducted ethically. Informed consent was obtained from all participants.

**Opportunity Beliefs.** Following are the OPWLTH, OPPARED, OPAMBIT, and OPHRDWRK variables in the GSS/International Social Survey Programme (ISSP): “We have some questions about opportunities for getting ahead. Please indicate how important each of the following is in terms of getting ahead on the scale provided. How important is ... coming from a wealthy family? Having well-educated parents? Having ambition? Hard work?” Response category order on a five-point scale from “not at all important” to “essential” was reversed for a random half of participants.

**Government and Business Responsibility.** Following is the EQWLTH variable in the GSS, with bracketed text denoting a substitution to generate the parallel business responsibility item: “Some people think that the government [major companies] ought to reduce the income [pay] differences between the rich and the poor [employees with high pay and those with low pay], perhaps by raising the taxes of wealthy families [reducing the pay of executives] or by giving income assistance to the poor [increasing the pay of unskilled workers]. Others think the government [major companies] should not concern itself [themselves] with reducing this income [pay] difference between the rich and the poor [employees with high pay and those with low pay]. Think of a score of 1 meaning that the government [major companies] should not concern itself [themselves] with reducing income [pay] differences, and a score of 7 as meaning that the government [major companies] ought to reduce the income [pay] differences between rich and poor [employees with high pay and those with low pay]. What score between 1 and 7 comes closest to the way you feel?” Again, response category order and scale anchors were reversed for a random half of participants.

**Forced-Choice Policy Question.** The forced-choice question was as follows: “Which of the following groups do you think has the greatest responsibility for reducing differences in income between those with high incomes and those with low incomes?” The randomized choices were as follows: “low income individuals themselves,” “private charities,” “high income individuals themselves,” “major companies,” and “government.” A final option, “income differences do not need to be reduced,” was always presented last.

**Sample Characteristics.** Descriptive statistics for demographic characteristics, dependent measures, and partisan identification are provided in Tables S1 and S2. We also provide descriptive statistics from the 2014 GSS to compare the representativeness of our samples with the US population.

Study 1 participants were recruited through MTurk in 2014, with a final sample of  $n = 1,014$  (including two additional conditions described in

**Additional Conditions** and a target sample of  $n \approx 1,000$ , not including workers with non-US Internet protocol (IP) addresses, or workers with ratings below 99, who were screened out of the task. For consistency across studies, the analysis sample was further restricted to participants who completed the questions on perceptions of opportunity, policy preferences, partisan identification, and key demographic characteristics (income, age, education, gender, and race), included as control variables in all regression analyses reported in the main text, and correctly answered an attention check question. (All control variables were balanced across conditions in all studies.) Participants were paid \$1.00 for completed surveys that lasted an average of approximated 10 min.

The final sample, then, consisted of 480 participants, who on average were significantly more likely ( $P < 0.05$ ) to be White, older, and of lower income, and marginally more likely ( $P < 0.10$ ) to be in the control condition and lean Democratic, compared with participants who were dropped due to the above restrictions ( $n = 18$ ); there were no differences by gender or education. Robustness checks using multiple imputation (20 sets) on a sample of  $n = 498$  (i.e., including the 18 dropped cases), however, confirmed all results reported in the main text.

Study 2 participants were recruited through MTurk in 2015. Most participants were paid \$1.50 for completed surveys that lasted an average of approximated 15 min although some in the initial fielding of the survey received \$1.00. The sample of  $n = 1,786$  (including one additional condition described in **Additional Conditions** and a target sample of  $n \approx 2,000$ ) was achieved based on the same screening criteria as for study 1. The analysis sample (those in the inequality, American Dream, and control conditions) consisted of 1,305 participants, who on average were significantly more likely ( $P < 0.05$ ) to be White, more educated, and lean Democratic than participants who were dropped due to the above restrictions ( $n = 32$ ); there were no differences by gender, age, education, or manipulation condition. Robustness checks using multiple imputation (20 sets) on a sample of  $n = 1,337$  (i.e., including the 32 dropped cases), however, confirmed all results reported in the text.

Study 3 participants were recruited during December 2015, as part of the GfK panel maintained by the Time-sharing Experiments in the Social Sciences

(TESS). Our target sample of  $n = 2,150$  was reached after 3,581 surveys were fielded, for a completion rate of 60%; the average survey was completed in 7 min. GfK uses probability-based sampling to achieve a representative sample of the US population, but all analyses (except the mediation analyses) were conducted with weights provide by GfK to ensure that the sample is commensurate with March Current Population Survey distributions of key demographic characteristics. Table 1 and **Tables S1** and **S2** include these weights.

We conducted analyses on a sample of  $n = 1,501$  after the restrictions described for studies 1 and 2 were imposed. Most of the substantial decline in participants ( $2,150 - 1,501 = 649$ ) qualifying for the analysis was a consequence of failures to correctly answer the attention and manipulation check questions. This is perhaps not surprising given the numerical content of the treatment and control articles, combined with the fact that the survey was administered to a more representative sample of the public compared with the more highly educated MTurk participants. Accordingly, we found that the TESS analysis sample, compared with the entire sample, had significantly ( $P < 0.05$ ) higher income and education, was older, and more White, but we did not find differences in partisan identification or gender. Robustness checks using participants with failed attention checks and multiple imputation of missing data (20 sets), however, confirmed all results reported in the text, with the exception of the “business” response to the forced-choice question, in which  $P = 0.12$  without controls and  $P = 0.10$  with controls.

**ACKNOWLEDGMENTS.** We thank James Druckman and Michelle Rheinschmidt-Same for superb assistance throughout the production of this work; Michael Kraus and the reviewers for their extremely helpful comments; and participants of department colloquia and conferences where this work was presented, especially Rachel Best and members of the Interdisciplinary Approaches to Inequality and Mobility Workshop (Duke University). This research was supported by the Russell Sage Foundation, Time-sharing Experiments in the Social Sciences, and the Institute for Policy Research (Northwestern University).

1. Piketty T, Saez E (2014) Inequality in the long run. *Science* 344:838–843.
2. McCall L (2013) *The Undeserving Rich: American Beliefs About Inequality, Opportunity, and Redistribution* (Cambridge Univ Press, Cambridge, UK).
3. Norton MI, Ariely D (2011) Building a better America - One wealth quintile at a time. *Perspect Psychol Sci* 6:9–12.
4. Bartels L (2008) *Unequal Democracy: The Political Economy of the New Gilded Age* (Princeton Univ Press, Princeton).
5. Wright G (2017) The political implications of American concerns about economic inequality. *Polit Behav*, 10.1007/s11109-017-9399-3.
6. Kuziemko I, Norton MI, Saez E, Stantcheva S (2015) How elastic are preferences for redistribution? Evidence from randomized survey experiments. *Am Econ Rev* 105: 1478–1508.
7. Brown-Iannuzzi JL, Lundberg KB, Kay AC, Payne BK (2015) Subjective status shapes political preferences. *Psychol Sci* 26:15–26.
8. Alesina A, Glaeser EL (2004) *Fighting Poverty in the US and Europe: A World of Difference* (Oxford Univ Press, Oxford).
9. Lipset SM (1996) *American Exceptionalism: A Double Edged Sword* (W. W. Norton, New York).
10. Bénabou R, Tirole J (2006) Belief in a just world and redistributive politics. *Q J Econ* 121:699–746.
11. Shariff AF, Wiwad D, Aknin LB (2016) Income mobility breeds tolerance for income inequality: Cross-national and experimental evidence. *Perspect Psychol Sci* 11:373–380.
12. Brooks C, Manza J (2007) *Why Welfare States Persist: The Importance of Public Opinion in Democracies* (University of Chicago Press, Chicago).
13. Svallfors S (2006) *The Moral Economy of Class: Class and Attitudes in Comparative Perspective* (Stanford Univ Press, Palo Alto, CA).
14. Kluegel J, Smith ER (1986) *Beliefs About Inequality: Americans' Views of What Is and What Ought to Be* (Aldine de Gruyter, New York).
15. Hochschild J (1981) *What's Fair? American Beliefs About Distributive Justice* (Harvard Univ Press, Cambridge, MA).
16. Solt F, Hu Y, Hudson K, Song J, Yu D (2016) Economic inequality and belief in meritocracy in the United States. *Res Polit* 3:1–7.
17. McCall L, Kenworthy L (2009) Americans' social policy preferences in the era of rising inequality. *Perspect Polit* 7:459–484.
18. Franko WW (2016) Political context, government redistribution, and the public's response to growing economic inequality. *J Polit* 78:957–973.
19. Savani K, Rattan A (2012) A choice mind-set increases the acceptance and maintenance of wealth inequality. *Psychol Sci* 23:796–804.
20. Jost JT, Hunyady G (2005) Antecedents and consequences of system-justifying ideologies. *Curr Dir Psychol Sci* 14:260–265.
21. McCoy SK, Major B (2007) Priming meritocracy and the psychological justification of inequality. *J Exp Soc Psychol* 43:341–351.
22. Corak M (2013) Income inequality, equality of opportunity, and intergenerational mobility. *J Econ Perspect* 27:79–102.
23. Kraus MW, Tan JXX (2015) Americans overestimate social class mobility. *J Exp Soc Psychol* 58:101–111.
24. Day MV, Fiske ST (2016) Movin' on up? How perceptions of social mobility affect our willingness to defend the system. *Soc Psychol Personal Sci* 8:267–274.
25. Lowery BS, Chow RM, Knowles ED, Unzueta MM (2012) Paying for positive group esteem: How inequality frames affect whites' responses to redistributive policies. *J Pers Soc Psychol* 102:323–336.
26. Fong C (2001) Social preferences, self-interest, and the demand for redistribution. *J Public Econ* 82:225–246.
27. Hunt MO (2007) African American, hispanic, and white beliefs about black/white inequality, 1977–2004. *Am Sociol Rev* 72:390–415.
28. Hochschild JL (1995) *Facing up to the American Dream: Race, Class, and the Soul of the Nation* (Princeton Univ Press, Princeton).
29. McCall L (2016) Political and policy responses to problems of inequality and opportunity: Past, present, and future. *The Dynamics of Opportunity in America: Evidence and Perspectives*, eds Kirsch I, Braun H (Springer, New York), pp 415–442.
30. Levay KE, Freese J, Druckman JN (2016) The demographic and political composition of Mechanical Turk samples. *SAGE Open* 6:1–17.
31. Hayes AF (2013) *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach* (The Guilford Press, New York).
32. Jencks C, Tach L (2006) Would equal opportunity mean more mobility? *Mobility and Inequality: Frontiers of Research in Sociology and Economics*, eds Morgan SL, Grusky DB, Fields GS (Stanford Univ Press, Stanford, CA), pp 23–58.
33. Sands ML (2017) Exposure to inequality affects support for redistribution. *Proc Natl Acad Sci USA* 114:663–668.
34. Johnson IR, Fujita K (2012) Change we can believe in: Using perceptions of changeability to promote system-change motives over system-justification motives in information search. *Psychol Sci* 23:133–140.
35. Hooker J, Tillery AB, Jr, eds (2016) *The Double Bind: The Politics of Racial and Class Inequalities in the Americas* (American Political Science Association, Washington, DC).
36. Craig MA, Richeson JA (2014) On the precipice of a “majority-minority” America: Perceived status threat from the racial demographic shift affects White Americans' political ideology. *Psychol Sci* 25:1189–1197.
37. Congressional Budget Office (2011) *Trend in the Distribution of Household Income Between 1979 and 2007* (The Congress of the United States, Washington, DC).