

Journal of Experimental Social Psychology
Personal Harm from the Covid-19 Pandemic Predicts Advocacy for Equality
 --Manuscript Draft--

Manuscript Number:	JESP-D-22-00257R1
Article Type:	Full Length Article
Keywords:	COVID-19; Inequality; personal harm; attributions
Corresponding Author:	Hannah Birnbaum, PhD Washington University in St Louis St. Louis, MO UNITED STATES
First Author:	Hannah Birnbaum, PhD
Order of Authors:	Hannah Birnbaum, PhD Andrea Dittmann, PhD Nicole Stephens, PhD Ellen Reinhart Rebecca Carey, PhD Hazel Markus, PhD
Abstract:	The Covid-19 pandemic has laid bare the vast amount of economic inequality in the U.S. Yet, has it influenced Americans' attitudes and behaviors toward equality? With a three-wave longitudinal survey, the current research provides evidence that experiencing personal harm (e.g., contracting Covid-19, losing jobs, or psychological distress) from the pandemic predicts an increase in people's attitudinal and behavioral advocacy for equality. Specifically, we find that experiencing greater personal harm in the early stages of the pandemic (i.e., May 2020) is associated with increased advocacy for equality one year later (i.e., May 2021; e.g., contacting a public official to express support for reducing inequality). Furthermore, we find that this increase in advocacy for equality is explained, in part, by people's greater endorsement of how external factors (e.g., bad luck, discrimination, etc.) contribute to inequality. Our work provides evidence that the extent to which people experience harm from the Covid-19 pandemic can predict both their increased understanding of external sources of inequality, as well as their efforts to combat this inequality (e.g., by seeking to advocate for policies that combat structural contributors to inequality).
Suggested Reviewers:	Michael Kraus michael.kraus@yale.edu Professor Kraus reconsidered his decision on our manuscript. He told us to "request me as action editor" for our resubmission.
Response to Reviewers:	See attached. Thank you!



Hannah J. Birnbaum, PhD
Assistant Professor, Organizational Behavior
Washington University in St. Louis
Olin Business School
1 Snow Way Dr.
St. Louis, MO 63130

August 15, 2022

Dear Dr. Kraus,

We are resubmitting the original research article, “**Personal Harm from the Covid-19 Pandemic Predicts Advocacy for Equality**” and its accompanying Supplemental Materials for reconsideration at the *Journal of Experimental Social Psychology*.

We believe our manuscript has significantly improved since its last submission. We have added additional analyses and substantially revised the General Discussion.

This work is original, has not been previously published, and is not currently under consideration for publication elsewhere. Data was collected in a manner consistent with ethical standards for the treatment of human subjects. Supplemental materials including measures and scales, and analyses are also being submitted.

We thank you again for your consideration of our manuscript.

Sincerely,

Hannah J. Birnbaum, hannahb@washu.edu
Andrea G. Dittmann, andrea.dittmann@emory.edu
Nicole M. Stephens, n-stephens@kellogg.northwestern.edu
Ellen C. Reinhart, ereinhar@stanford.edu
Rebecca M. Carey, Rebecca.carey@kellogg.northwestern.edu
Hazel R. Markus, hmarkus@stanford.edu

Personal Harm from the Covid-19 Pandemic Predicts Advocacy for Equality

Hannah J. Birnbaum¹, Andrea G. Dittmann², Nicole M. Stephens³, Ellen C. Reinhart⁴, Rebecca M. Carey⁵, and Hazel Rose Markus⁴

¹Organizational Behavior Area, Olin Business School, Washington University in St. Louis

²Organization and Management, Goizueta Business School, Emory University

³Management and Organizations, Kellogg School of Management, Northwestern University

⁴Department of Psychology, Stanford University

⁵Department of Psychology, Princeton University

Corresponding Author:

Hannah J. Birnbaum, Olin Business School, Washington University in St. Louis, 1 Snow Way Drive, St Louis, MO, 63130 E-mail: hannahb@wustl.edu

Abstract

The Covid-19 pandemic has laid bare the vast amount of economic inequality in the U.S. Yet, has it influenced Americans' attitudes and behaviors toward equality? With a three-wave longitudinal survey, the current research provides evidence that experiencing personal harm (e.g., contracting Covid-19, losing jobs, or psychological distress) from the pandemic predicts an increase in people's attitudinal and behavioral advocacy for equality. Specifically, we find that experiencing greater personal harm in the early stages of the pandemic (i.e., May 2020) is associated with increased advocacy for equality one year later (i.e., May 2021; e.g., contacting a public official to express support for reducing inequality). Furthermore, we find that this increase in advocacy for equality is explained, in part, by people's greater endorsement of how external factors (e.g., bad luck, discrimination, etc.) contribute to inequality. Our work provides evidence that the extent to which people experience harm from the Covid-19 pandemic can predict both their increased understanding of external sources of inequality, as well as their efforts to combat this inequality (e.g., by seeking to advocate for policies that combat structural contributors to inequality).

Keywords: Covid-19, inequality, personal harm, attributions

Personal Harm from the Covid-19 Pandemic Predicts Advocacy for Equality

At the start of the pandemic, many believed that Covid-19 would be a “great equalizer” (NYGovCuomo, 2020; Owoseje, 2020). It seemed that regardless of socioeconomic status, everyone was likely to face great uncertainty and interruptions to daily routines. Nevertheless, it quickly became clear that the pandemic was not an equalizer. Throughout the pandemic, lower- (vs. higher-) income populations have experienced greater health risks, more joblessness, and greater declines in psychological well-being (Brown & Ravallion, 2020; Perry et al., 2021). At the same time, the wealth of America’s billionaires has grown (Collins, 2021).

While the pandemic was not the great equalizer it was predicted to be, might it have still influenced Americans’ attitudes and behaviors toward equality? For perhaps the first time on a broad scale, many people who were healthy and financially secure had trouble paying their bills or lost their job, had their working hours reduced, got sick, or experienced psychological distress due to a force that was clearly beyond their control—the Covid-19 pandemic. In other words, many experienced firsthand the sometimes-devastating results of an external and uncontrollable force constraining their lives. On the other hand, some continued to go about their day-to-day lives as normal and managed to remain relatively unharmed by the ravages of the pandemic.

The current work examines how experiencing personal harm from Covid-19 pandemic relates to people’s advocacy for equality. By *personal harm*, we mean experiencing firsthand physical, financial, and/or psychological adversity that can be attributed to the Covid-19 pandemic. We theorize that the Covid-19 pandemic will influence Americans’ attitudes and behaviors towards equality insofar as people were personally harmed by the pandemic. Specifically, we anticipate that the more people experience personal harm due to an external force outside of their control, the more this personal experience will make salient how forces

outside of people's control (i.e., external factors) can fuel inequality. For example, if an individual had their hours cut due to the economic fallout of the pandemic (an external force outside of one's control), this experience should make it harder to deny that external forces outside of people's control can shape and constrain behaviors and financial outcomes. When people better recognize how these external constraints shape people's behavior and outcomes, we anticipate that they will do more to advocate for equality (i.e., support policies, like universal healthcare or basic income, that target the structural sources of inequality). In contrast, we anticipate that if people have *not* been harmed personally by a clearly external and uncontrollable force, they will not be more likely to advocate for equality.

Attributions and Advocacy for Equality

Psychologists have grappled with the question of why Americans generally support the substantial levels of existing inequality in U.S. society and take little action to advocate for greater equality (Bartels, 2005; Davidai, 2018; Norton & Ariely, 2011; Putnam, 2015). One pervasive psychological process that shapes advocacy for equality is the extent to which people see the source of inequality as a product of individuals (e.g., differences in work ethic) or as a product of larger structural, external, and uncontrollable factors (e.g., different educational opportunities).

Americans tend to explain people's life outcomes as free from the constraints of history, other people, and social systems. Instead, life outcomes are seen as a product of individuals' personal preferences, choices, or enduring characteristics (Gilbert & Malone, 1995; Markus, 2017; Markus & Kitayama, 2010). Therefore, important life outcomes, such as poverty or wealth, are often explained in terms of *internal* attributions (Adeola, 2005; Bénabou & Tirole, 2006; Cozzarelli et al., 2001; Gudrais, 2008; Kluegel & Smith, 1986; Stephens et al., 2013;

Stephens & Levine, 2011; Stuber, 2006). For instance, inequality is frequently seen as the “natural,” controllable, and deserved result of differences in individuals’ merit or ambition.

Although the dominant ideology in the U.S emphasizes individual control over outcomes like wealth or poverty, previous research finds that it is possible for Americans to better recognize how *external* factors (e.g., societal opportunity) shape inequality. For instance, increasing exposure to inequality (e.g., via a poverty simulation, working in under-served schools, or reading objective information about inequality) can increase people’s endorsement of external attributions for inequality (Conn et al., 2021; McCall et al., 2017; Piff et al., 2020; Shedd, 2015; Wiwad et al., 2020). Firsthand exposure to inequality confronts people with information contrary to the dominant narrative; it demonstrates how forces beyond individuals’ control can shape people’s opportunities.

Recognizing how inequality can arise from external factors is important because those who endorse these external attributions are more likely to see inequality as undeserved and in need of structural intervention (Kluegel & Smith, 1986; McCall, 2013; Mo & Conn, 2018; Piff et al., 2020; Wiwad et al., 2020). That is, by understanding how features in the environment—history, other people, and social systems—shape and constrain individuals’ outcomes, people are more likely to recognize the need for structural policies that promote equality (Kluegel & Smith, 1986). Together, previous research suggests that one critical way to increase people’s advocacy for equality is by encouraging people to better recognize the external factors that fuel inequality.

Personal Harm and Advocacy for Equality

Given the important relationship between endorsement of external attributions and advocacy for equality, what types of experiences during the pandemic might increase people’s endorsement of external attributions for inequality? Previous research has already examined one

important factor—i.e., the extent to which the pandemic increases awareness of *other* people's poverty (Wiwad et al., 2020). Here, we focus on a distinct and novel factor that we theorize will also be associated with increased endorsement of external attributions – people's *own* firsthand experiences of personal harm due to a force outside of their control—i.e., the pandemic. We hypothesize that the degree of personal harm people experience due to the Covid-19 pandemic will be associated with an increase in their advocacy for equality over time. We also hypothesize that the relationship between personal harm and increased advocacy for equality will be explained, in part, by people's greater endorsement of external attributions for inequality.

Consistent with these hypotheses, research in cultural psychology and sociology demonstrates that historically lower-power groups (e.g., people in lower social class contexts, racial/ethnic minorities) are more likely to endorse external attributions for inequality and support structural policies that promote equality compared to historically higher-power groups (e.g., people in higher social class contexts, White people; Bob & Kluegel, 1997; Kluegel & Smith, 1986; Kraus et al., 2009; Newman et al., 2015; Schlesinger & Heldman, 2001). For example, ethnographic research documents that repeatedly experiencing stratification in society (e.g., living in a city with high levels of income inequality) relates to young people's recognition of how external factors constrain their lives (Shedd, 2015).

Researchers have theorized, but not tested, the idea that one reason for these group differences is that people in lower-power (vs. higher-power) positions have greater firsthand, chronic experiences of adversity or harm, in which they have limited choice, influence, and control (e.g., lack of access to healthcare). These constraints make salient the external forces that constrain people's experiences and outcomes more broadly (Kluegel & Smith, 1986). And, as noted above, when people better recognize how external factors constrain outcomes in life, they

are more likely support structural policies that promote equality. Building on and extending this prior work, the current research exploits the variation in personal harm due to the onset of the Covid-19 pandemic to examine the theoretical proposition that harm predicts an increase in external attributions for inequality and, in turn, greater advocacy for equality.

The Current Research

In our three-wave longitudinal study, we test the theory that experiencing greater personal harm from the COVID-19 pandemic will be associated with greater endorsement of external attributions for inequality, and in turn, greater advocacy for equality. We also make two additional theoretical contributions. First, we extend prior research by providing evidence for a novel antecedent of external attributions for inequality: degree of personal harm from an external, uncontrollable force. Second, we test whether the effect of personal harm on advocacy for equality shapes attitudes over time (i.e., over a full year). We investigate the following three key hypotheses:

1. Experiencing greater amounts of personal harm from the pandemic will be associated with increased advocacy for equality.
2. Experiencing greater amounts of personal harm from the pandemic will be associated with greater endorsement of external attributions for inequality.
3. External attributions for inequality will serve as a mechanism linking personal harm from the pandemic to advocacy for equality.

Our specific hypotheses and analyses were exploratory. However, while we did not pre-register the specific hypotheses we test here, we did pre-register general research questions of interest related to the current investigation, our data collection plan, our exclusion criteria, and the survey questions. The data we draw upon for this research were collected as part of a broader

investigation on the effects of the Covid-19 pandemic over time. In the main text of this article, we reference the pre-registration when applicable and report all measures and exclusions relevant to the current research project. We also report the full list of measures in the broader study as well as our transparency checklist on OSF (Aczel et al., 2019; <https://bit.ly/3hcWRMr>).

Methods

Participants

In May 2020 (Time 1), we recruited participants via Prolific Academic, an online survey platform, to participate in a 25-minute study in exchange for \$3.50. In October 2020 (Time 2), we invited all the participants from the Time 1 survey who indicated interest in future studies to complete a second 25-minute study in exchange for \$4.50. In May 2021 (Time 3), we invited all the participants from the Time 1 survey who indicated interest in taking future studies to complete another 40-minute study in exchange for \$6.

These three surveys were part of a larger study of the effects of the Covid-19 pandemic over time. We recruited U.S. citizens between the ages of 18-70 who were not currently students. Furthermore, we recruited a balanced sample in terms of gender and education level (i.e., those with less than a four-year college degree vs. those with a four-year degree or more). We recruited a sample that was balanced by gender and education level for purposes of other studies that were part of this broader investigation of the pandemic over time. Per our pre-registration, in our final dataset, we excluded participants who, at any point in the three surveys were not U.S. citizens, were students, and/or were inattentive responders.

Applying this pre-registered exclusion criteria, at Time 1 (T1), our usable sample was $N = 1395$. At Time 2 (T2), our usable sample was $N = 987$ (71% retention of T1). At Time 3 (T3), our usable sample was $N = 751$ (54% retention of T1). Our longitudinal analyses utilized data

from all three survey waves. As such, when looking at complete responses for participants who completed all three waves of our study and met all pre-registered inclusion criteria, we were left with a usable sample of $N = 687$ (i.e., 49% of the T1 sample). Due to the high degree of missingness in the complete, usable dataset, we next examined attrition rates and best practices for handling missing data.

Attrition and Missing Data

Participants who completed all three waves of the survey (vs. those who did not) differed significantly in terms of personal harm, as well as in terms of income, age, gender, and race. Specifically, participants who completed all three waves of the survey reported lower levels of personal harm ($M = 1.92$, $SD = 1.96$) than those who did not complete all three waves ($M = 2.26$, $SD = 2.32$). Those who completed all three waves were more likely to have lower personal incomes, be older, be women, and be White (see Supplemental Materials Section XI).

Given that our missing data were conditionally dependent on our observed variables, our data was best characterized as *missing completely at random conditional on observed covariates* (MCAR|X), also called *missing at random* (MAR; Cheema, 2014; Gomila & Clark, 2020; Nissen, Donatello & Van Dusen, 2019). This missingness can unduly bias results because the data is skewed in representation toward, for example, those who experienced less personal harm, as is the case in our data. This skew increases the likelihood of bias in our analyses and as such, best practices currently recommend imputation of the missing data to debias results (Nissen, Donatello & Van Dusen, 2019). Therefore, we imputed our missing data using multiple imputation with the *mice* package in R, following current best practices (van Buuren, 2021). However, results are largely equivalent with the smaller, non-imputed sample. In two instances,

though the patterns were in the same direction as the results presented in the main text, analyses did not reach conventional levels of significance (see Supplemental Materials Section III).

The final imputed sample consisted of 688 women, 704 men, and three gender non-conforming individuals ($M_{\text{age}} = 38.40$ years, $SD = 12.70$). People with less than a 4-year college degree comprised 51% of the sample. The sample was 8% Black, 8% Asian, 4% Latinx, 71% White, <1% Native, <1% Arab, 1% unspecified racial identity and 7% multiracial. The Institutional Review Board reviewed and approved the study before data collection (protocol: 53892). A post-hoc sensitivity analysis indicated we were 90% powered to detect a small effect of $f^2 = .015$. The data are available at <https://bit.ly/3hcWRMr>.

Measures

A full list of items for each measure in all waves of the survey can be found in the Supplemental Materials Section I.

Personal Harm from Covid-19

We asked participants whether they experienced several indicators of personal harm resulting from the Covid-19 pandemic. Drawing on previous psychological methods used to study adverse life experiences (Croft et al., 2014; Felitti et al., 1998; Seery et al., 2010), these items were designed to capture a range of forms of personal harm that people may have experienced during the pandemic. Also consistent with previous research on adversity, we assessed personal harm indicators via retrospective yes/no questions (Breslau et al., 2012; Bromet et al., 2017; McLaughlin et al., 2010). At T1, we asked participants to reflect on whether they experienced any of 14 indicators of personal harm since the Covid-19 pandemic began. Sample items include: “I contracted Covid-19”, “I experienced an episode of poor mental health or mental illness” and “I experienced significant financial difficulties.” Consistent with previous

research (Seery et al., 2010), we summed the number of items for which respondents answered “yes” at each time point to represent the overall degree of personal harm people experienced from the Covid-19 pandemic. At T1, 70.2% of the sample reported experiencing at least one form of personal harm since the pandemic began. To contextualize which indicators of personal harm were most common in our sample, we present the prevalence of each item of the personal harm checklist at T1 in Figure 1 (i.e., % of sample that checked “yes” for each indicator).

These results reveal that at least some participants in our sample experienced physical, financial, and psychological indicators of harm. As such, following previous research on life adversity which has documented that one form of adversity often has spillover effects on other types of adversity (Green et al., 2010; McMahon, 2015), here, we focused on the overall personal harm (i.e., physical, financial, and psychological) people experienced. Experiencing each of these forms of harm can make salient the way that forces beyond one’s control can shape life outcomes. Summed responses to this checklist best enable us to capture each participant’s global personal harm from the Covid-19 pandemic.

Advocacy for Equality

Across the three waves, we included both attitudinal and behavioral measures of advocacy for equality. The measure of attitudinal advocacy for equality was included in all three waves of the survey. However, the behavioral measure of advocacy for equality was added in the second wave. In our analyses, we conducted separate regression models: one with attitudinal advocacy for equality as the dependent measure, and the other with behavioral advocacy for equality as the dependent measure. Doing so enabled us to determine whether personal harm predicts these two distinct forms of advocacy for equality.

In addition to these two measures, all three waves of the survey included other attitudinal measures related to advocacy for equality (e.g., preference for a more equal distribution of wealth, increased salary for low wage workers, awareness of inequality etc.). Though these measures showed largely equivalent patterns of results to the advocacy measures reported in the main text, to reduce redundancy, we report these measures and results in the Supplemental Materials Section II.

Advocacy for Equality: Attitudes. To assess participants' attitudinal advocacy for equality, we asked participants to respond to items adapted from previous research (Piff et al., 2020) on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). At T1, participants responded to the following three items: "The minimum wage in the US should be increased"; "There should be universal basic income"; and "There should be universal healthcare" ($M = 5.54$, $SD = 1.64$; $\alpha = .89$).

At T2 and T3, participants responded to the exact same items from T1 and an additional four items to capture a broader range of their attitudes toward advocacy for equality: "The government should provide stimulus checks to help people meet their basic needs"; "The government should provide support for peoples' welfare during hard times"; "Covid-19 testing should be available at no cost to anyone who wants to get tested" and "Covid-19 treatment should be free." The seven-item measure was highly reliable (T2: $M = 5.85$, $SD = 1.21$; $\alpha = .91$; T3: $M = 5.83$, $SD = 1.22$; $\alpha = .91$).¹

Advocacy for Equality: Behavior. To assess participants' behavioral advocacy for equality, we asked participants at T2 and T3 to reflect on whether they had engaged in any of the following behaviors: "Contacted a public official to express support for reducing social or

¹ When only including the three original T1 items, the pattern of results is in the same direction, but does not reach statistical significance (see Supplemental Materials Section V).

economic inequality”; “Contributed money to a group or organization that focuses on reducing social or economic inequality”; or “Posted or shared content on social networking sites related to reducing social or economic inequality.” We counted each item participants marked as 1 and each unmarked item as 0. We totaled the number of items marked to represent the amount of action they took to advocate for greater equality (T2: $M = 0.61$, $SD = 0.75$; T3: $M = 0.39$, $SD = 0.66$).

External Attributions for Inequality

To assess attributions for inequality, in all three waves of the survey, we asked participants “How much do you think that economic inequality is due to the following factors?” (Cozzarelli et al., 2001; Kraus et al., 2009; Piff et al., 2020). Participants were asked to read a list of possible factors and indicate to what extent these factors played a role in inequality using a scale from 1 (*not at all*) to 5 (*a great deal*). To capture participants’ *external attributions for inequality*—our hypothesized mediator—we averaged the following two items, which reflect a shortened scale adapted from previous research examining attributions for inequality (e.g., Cozzarelli et al., 2001; Kraus et al., 2009; Piff et al., 2020). One item reflected the locus dimension of external attributions (Piff et al., 2020): “situational and environmental factors (e.g., quality of schools, job opportunities).” The second item reflected the control dimension of external attributions (Piff et al., 2020): “discrimination (e.g., prejudice and bias),” (T1: $M = 3.61$, $SD = 0.99$, $r = .53$; T2: $M = 3.69$, $SD = 0.92$; T3: $M = 3.70$, $SD = 0.93$, $r = .50$). Both attributions place the blame (and responsibility) for inequality on external, situational factors (Piff et al., 2020).

Our attribution measure also included two items that represent participants’ *internal attributions for inequality*. One item reflected the locus dimension of internal attributions (Piff et

al., 2020): “genetics and biology (e.g., innate differences in intelligence).” The second item reflected the control dimension of internal attributions (Piff et al., 2020): “differences in individual work ethic” (T1: $M = 2.51$, $SD = 1.02$; T2: $M = 2.41$, $SD = 1.02$; T3: $M = 2.37$, $SD = 0.96$). These attributions place the blame (and responsibility) for inequality on internal, individual-level factors (Piff et al., 2020). Analyses showed that personal harm did not influence internal attributions. As such, for the sake of concision, we do not discuss this variable further and report results only in the supplemental material (see Supplemental Materials Section IX).

Control Variables

In all three waves, we collected several control variables, including those that help us control for more chronic harm not directly due to the Covid-19 pandemic (i.e., age, gender, race/ethnicity, personal income, education level; Acker, 2016; Adler & Rehkopf, 2008; Crear-Perry et al., 2021; Gharehgozli & Atal, 2020; Oishi et al., 2011; Shah et al., 2012; Zavala et al., 2020) as well as participants’ political orientation, which has been previously shown to relate to attitudes toward equality (Wiwad et al., 2020). In the Analytic Approach section below, we explain in greater depth our rationale for why these control variables can help us isolate the effect of harm due to the pandemic over and above other types of chronic harm and political orientation.

Age

Participants indicated their age in years ($M = 38.4$, $SD = 12.70$).

Gender

Participants indicated their gender identity as female, male, or non-binary/other. Given that the non-binary sample was too small ($n = 2$) to control for as a separate category, we only controlled for whether participants’ gender was male or female.

Race/Ethnicity

Participants checked all races and ethnicities that applied to them from the following list: African American or Black, Asian/Asian American, Hispanic/Latino, White/Caucasian, Native American, Arab/Middle Eastern, and Other. Participants who only selected one race or ethnicity were coded with the single race or ethnicity they checked, and participants who selected more than one race or ethnicity were coded as multiracial. Consistent with previous research (Fairlie, 2020; Kantamneni, 2020; Tessler et al., 2020; Webb Hopper et al., 2020) on how the Covid-19 pandemic has differentially affected racial/ethnic minorities (e.g., disproportionate losses among racial/ethnic minority-owned businesses compared to White-owned businesses) we controlled for participant race using a binary White (i.e., monoracial White individuals, coded 0; 71.3%) vs. racial/ethnic minorities (i.e., all non-White, including multiracial, individuals coded 1; 28.7%) measure.

Political Orientation

Participants indicated their political orientation on a scale from 1 (*very liberal*) to 7 (*very conservative*; $M = 3.23$, $SD = 1.63$).

Personal Income

Participants reported their current annual personal income on an 8-point scale: 1 = \$9,999 or less; 2 = \$10,000-\$19,999; 3 = \$20,00-\$29,999; 4 = \$30,00-\$49,900; 5 = \$50,000-\$74,999; 6 = \$75,000-\$99,999; 7 = \$100,000-\$200,000; or 8 = greater than \$200,000 ($M = 3.48$, $SD = 1.86$). If recently unemployed due to the pandemic, participants reported their personal income prior to unemployment. This variable was meant to capture participants' typical level of resources before the pandemic, and in the case of the unemployed, was used as a substitute for the current personal income variable.

We used this variable as a substitute for the current personal income variable for two reasons. First, methodologically, we did not want participants who recently became unemployed due to the pandemic (i.e., who had recently dropped to zero income) to skew the income variable. Second, theoretically, we did not want to include a control variable that captured financial harm during the pandemic (i.e., a current income of zero due to job loss), because our measure of personal harm captures participants' experiences of financial harm during the pandemic (e.g., losing a job).

Education Level

Participants reported the highest level of education they had completed on a 6-point scale: 1 = Some high school or less, 2 = High school diploma, 3 = Some college (1 year to less than 4 years), 4 = Two-year college degree (A.A.), 5 = Four-year college degree (B.A. or B.S.), 6 = MA/PhD, MD, MBA, Law Degree. Education was used as a continuous variable in our analyses ($M = 4.08$, $SD = 1.37$).

Analytic Approach

We conducted two separate sets of analyses to test our hypotheses: lagged and cross-lagged. First, we conducted lagged analyses to test our theorized temporal ordering of the process by which personal harm predicts advocacy for equality through external attributions. Second, we conducted cross-lagged analyses to test more precisely whether personal harm *causally* influenced people's attitudes, rather than the reverse causal ordering (Selig & Little, 2012). In both sets of analyses, we included our standard set of control variables.

Lagged Analyses

By conducting lagged analyses, we were able to examine the temporal ordering of our measures and theorizing about the process through which personal harm affects advocacy for

equality (i.e., our hypothesized mediation model). To do so, we drew our predictor (i.e., personal harm) from T1 (May 2020), our mediator variable (i.e., external attributions) from T2 (October 2020), and our outcome variables (i.e., advocacy for equality) from T3 (May 2021). Figure 2 provides a conceptual illustration of the timeline of our study and the period at which each of our key variables were measured.

In these analyses, we include two key sets of control variables. First, we control for demographic differences that serve as proxies for chronic harm (i.e., life adversity in general that is not specific to the Covid-19 pandemic). That is, to ensure that our analyses capture effects of personal harm from the Covid-19 pandemic above and beyond chronic harm due to demographic differences, we control for the following proxies of chronic harm: personal income, education, age, race/ethnicity, and gender.² All of these have previously been shown to be associated with experiencing greater personal hardship in general (Acker, 2006; Oishi, Kesebir & Diener, 2011; Shah, Mullainathan & Shafir, 2012; Soss, Fording & Schram, 2011; Volpe, Dawson, Rahal, Wiley & Vesslee, 2019).³ We also control for political orientation, which has been previously shown to relate to attitudes toward equality (Wiwad et al., 2020). Throughout our analyses, we refer to these as our “standard set of control variables.”

Second, we control for participants’ “baseline” attitudes measured at Time 1 such as external attributions for inequality and advocacy for equality. By controlling for these baseline

² We also examined whether these demographic differences predicted our outcomes of interest. We found that income, race/ethnicity, education, and age predicted participants’ advocacy for equality and external attributions for inequality in some cases but not in others (see Supplemental Materials Section XII).

³ In the Supplemental Materials Section VIII we examine whether our results are moderated by any of these individual differences that are associated with experiencing general harm or life adversity (e.g., Haney-López, 2014; Hochschild, 2018; Lamont et al., 2017). Though a large body of research documents social group differences in attributions and advocacy for equality, there was no evidence of moderation by demographic group in our data. It is possible we did not find moderation by social group membership because people experienced personal harm from an entirely new external factor (i.e., the Covid-19 pandemic). This novel personal experience with a clearly external force may crowd out other group-based factors that have previously been shown to predict advocacy for equality.

beliefs and thereby conducting this lagged analysis, we can better demonstrate that personal harm predicts a *change* in attitudes over time (Emery & Finkel, 2022; Schonfeld, Brailovskaia et al., 2018).⁴ We included these controls in our analyses to ensure that our results were robust to their inclusion. However, results without these control variables showed similar but stronger patterns (see the Supplemental Materials Section IV).

To test our first hypothesis (H1) that experiencing greater amounts of personal harm from the pandemic in its earliest months will be associated with increased advocacy for equality one year later, we conducted two separate lagged regressions. First, we regressed attitudinal advocacy for equality (measured at T3) on personal harm (measured at T1). In this analysis, we included our standard set of control variables (described above) as well as T1 attitudinal advocacy for equality to better represent the causal consequences of personal harm on advocacy for equality. Second, we regressed behavioral advocacy for equality (measured at T3) on personal harm (measured at T1). In this analysis we included our standard set of control variables (described above). We could not control for T1 behavioral advocacy for equality because we did not include this measure in the survey at T1.

To test our second hypothesis (H2) that experiencing greater amounts of personal harm will be associated with greater endorsement of external attributions for inequality, we regressed external attributions for inequality (measured at T2) on personal harm (measured at T1). We again included the standard set of controls as well as T1 external attributions for inequality to represent the causal effect of personal harm.

Finally, to test our third hypothesis (H3) that greater amounts of personal harm will predict greater advocacy for equality via increased external attributions for inequality, we

⁴ We also report how harm at each time point predicts advocacy for equality at the corresponding time point (see Supplemental Materials Section VI and VII). Results are significant for all of these analyses.

conducted two separate mediation analyses with 10,000 bootstrapped samples: one on *attitudinal* and one on *behavioral* advocacy for equality. We utilized participants' external attributions for inequality (measured at T2) as the mediator linking personal harm from the Covid-19 pandemic (measured at T1) to attitudinal and behavioral advocacy for equality outcome variables (measured at T3) and included our standard set of controls. When examining attitudinal advocacy for equality, we controlled for T1 attitudinal advocacy for equality, T1 external attributions for inequality, and our standard set of control variables. When examining behavioral advocacy for equality, we could not control for T1 behavioral advocacy for equality because we did not include this measure in the survey at T1. However, we controlled for T1 external attributions for inequality and our standard set of control variables.

Cross-Lagged Analyses

With cross-lagged structural equation models (CLPM; Selig & Little, 2012), we examined whether personal harm from the Covid-19 pandemic was a cause rather than an effect of advocacy for equality and external attributions for inequality over the year. We used the *lavaan* package in R (Rosseel, 2012). CLPM models also allow for the inclusion of time-invariant person characteristics (i.e., our standard set of covariates which do not vary from timepoint to timepoint).

We were only able to conduct cross-lagged analyses on attitudinal advocacy for equality because attitudinal advocacy was the only downstream measure of advocacy for equality included at all three timepoints. First, we examined the relationship between personal harm (T1 and T3) and attitudinal advocacy for equality (T1 and T3), as both possible causes and effects of one another, over the one-year period. Second, we examined the relationship between personal harm (T1 and T2) and external attributions for inequality (T1 and T2), as both possible causes

and effects of one another, over a five-month period. Finally, we combine this into an overall cross-lagged mediation model testing our full theorized model from personal harm (T1) to external attributions (T2) to attitudinal advocacy for equality (T3). These cross-lagged analyses allow for substantially greater confidence in drawing causal conclusions (Mulder & Hamaker, 2021).

Results

Lagged Analyses

Advocacy for Equality

Supporting Hypothesis 1 and as shown in Table 1, we found that experiencing greater personal harm from the pandemic was associated with increased advocacy for equality one year later. Specifically, personal harm at T1 predicted an increase in attitudinal advocacy for equality at T3. Personal harm at T1 also predicted behavioral advocacy for equality at T3.

External Attributions for Inequality

Supporting Hypothesis 2 and as detailed in Table 1, we found that experiencing greater personal harm at T1 was associated with greater endorsement of external attributions for inequality five months later (i.e., at T2).

Mediation

Supporting Hypothesis 3 and as shown in Figure 3, we found that external attributions for inequality at T2 mediated the relationship between personal harm at T1 and advocacy for equality for both attitudinal and behavioral measures at T3: attitudinal advocacy for equality ($B = 0.004$, 95% CI = [0.001, 0.009] and behavioral advocacy for equality ($B = 0.002$, $SE = 0.009$, 95% CI = [0.003, 0.004]. The 95% CIs did not include zero, suggesting that the indirect effects of personal harm on advocacy for equality through external attributions were significant. Even

considering the limitations of correlational indirect effects analyses (Fiedler et al., 2018), these results suggest that personal harm from the Covid-19 pandemic was associated with increased advocacy for equality one year later, in part, because personal harm was associated with greater endorsement of external attributions for inequality five months later. Moreover, the longitudinal nature of these measures provides fairly strong evidence of the causal ordering of these indirect effects.

Cross-Lagged Analyses

Attitudinal Advocacy for Equality

Our cross-lagged analysis of the relationship between personal harm from the Covid-19 pandemic and attitudinal advocacy for equality gave a reasonably good fit to the empirical data (CFI = 0.99, RMSEA = 0.053, SRMR = 0.018). As shown in Figure 4a, personal harm from the Covid-19 pandemic at Time 1 predicted attitudinal advocacy for equality at Time 3 ($\gamma_{21} = 0.02, p = 0.032$). In contrast, the reciprocal pathway from attitudinal advocacy for equality at Time 1 to personal harm at Time 3 was not statistically significant ($\gamma_{12} = 0.05, p = 0.153$).

External Attributions for Inequality

Our cross-lagged analysis of the relationship between personal harm from the Covid-19 pandemic and external attributions for inequality also gave a good fit to the empirical data (CFI = 0.99, RMSEA = 0.037, SRMR = 0.017). As shown in Figure 4b, personal harm from the Covid-19 pandemic at Time 1 predicted external attributions for inequality at Time 2 ($\gamma_{21} = 0.02, p = 0.034$). The reciprocal pathway from external attributions at Time 1 to personal harm at Time 2 was not statistically significant ($\gamma_{12} = -0.06, p = 0.156$).

Mediation

Our cross-lagged analysis of the mediation model linking personal harm from the Covid-19 pandemic to attitudinal advocacy for equality via external attributions for inequality also gave a reasonably good fit to the empirical data (CFI = 0.97, RMSEA = 0.085, SRMR = 0.032). First, there was a trending but nonsignificant effect of personal harm from the Covid-19 pandemic at Time 1 on external attributions for inequality at Time 2 ($\gamma_{21} = 0.02, p = 0.050$). The reciprocal pathway from external attributions at Time 1 to personal harm at Time 2 was not statistically significant ($\gamma_{12} = 0.004, p = 0.931$). Next, external attributions at Time 2 predicted attitudinal advocacy for equality at Time 3 ($\gamma_{32} = 0.07, p < 0.001$). The reciprocal pathway from attitudinal advocacy for equality at Time 2 to external attributions at Time 3 was also statistically significant ($\gamma_{23} = 0.30, p < 0.001$). This suggests that there may be reciprocal effects between external attributions and advocacy for equality. Indeed, we also found that personal harm from the Covid-19 pandemic at Time 1 significantly predicted attitudinal advocacy for equality at Time 2 ($\gamma_{22} = 0.02, p = 0.039$; see Figure 5 for details).

These results suggest that personal harm from the Covid-19 pandemic was associated with greater endorsement of external attributions for inequality five months later. External attributions, in turn, were associated with greater attitudinal advocacy for equality one year later. However, we also obtained evidence that personal harm was associated with greater attitudinal advocacy for equality five months later, which in turn, was associated with greater endorsement of external attributions for inequality one year later. The cross-lagged nature of these measures provides fairly strong evidence of the causal effect of personal harm at the beginning of the pandemic on subsequent attitudes towards inequality. However, the path through which harm changes attitudes is less clear. External attributions and advocacy for equality are highly

interrelated constructs, and may have been shifting simultaneously (as opposed to in succession, as we theorized initially).

Discussion

Though the Covid-19 pandemic was not the “great equalizer” it was predicted to be, might it nonetheless have influenced Americans’ attitudes and behaviors towards equality? While many have had firsthand experiences with personal harm resulting from the pandemic, this has not been the case for all Americans. Some have continued to go about day-to-day life as normal and remained relatively unharmed. Here, we examined whether personal harm from the pandemic related to people’s attitudes and behaviors towards equality. The results of our three-wave longitudinal study suggest that experiences of personal harm in the earliest days of the pandemic were associated with increased attitudinal and behavioral advocacy for equality one year later. Moreover, five months after experiencing personal harm, Americans’ greater endorsement of the external drivers of inequality served as a mechanism helping to explain the link between personal harm and increased advocacy for equality one year later.

Our research makes several important theoretical contributions. First, our research provides empirical evidence for a novel antecedent to both Americans’ understanding of the sources of inequality and their willingness to advocate for equality: personal harm from an external force—in this case, the Covid-19 pandemic. Documenting this novel antecedent helps reconcile previous disparate findings on whether those who experience adversity will be more or less likely to advocate for greater equality. On the one hand, previous research suggests that lower- (vs. higher-) power groups should be more likely to advocate for inequality because they are exposed to more chronic harm and therefore are especially likely to endorse external attributions (Kraus et al., 2009). On the other hand, previous research has also found that lower-

(vs. higher-) power groups are often motivated to justify and maintain the current system (e.g., to reduce uncertainty and threat), rather than advocating for greater equality (Cramer, 2016; Godfrey & Wolf, 2016; Haney-López, 2014; Hochschild, 2018; Jost, 2017; Jost & Hunyady, 2016; Lamont et al., 2017; McCall, 2013).

We are able to help reconcile these disparate findings by empirically demonstrating that gaining firsthand experience with a *new* social, economic, or health arrangement does not increase people's justification with their current experiences as fair and legitimate. Instead, it predicts people's endorsement of external attributions and relates to their advocate for greater equality. The work we present here documents that firsthand harm from an external source reflects a situation where people may be more likely to advocate for equality, rather than justifying the current system.

Second, our work demonstrates that personal harm affects people's attitudes and behavior long after the initial harm was experienced – i.e., for a span of at least one year. Specifically, in the first months of the pandemic, experiencing more personal harm predicted people's attitudes toward and advocacy for equality one year later. This suggests that the effects of an external large-scale shock may be relatively long-lasting, laying the groundwork for future larger-scale efforts to promote equality in the U.S.

Finally, our research delineates one specific pathway – *degree* of personal harm – through which large-scale negative events can predict attitudes towards and advocacy for equality. Indeed, our research suggests that merely observing the pandemic from afar is not sufficient to increase people's advocacy for equality; people must be personally impacted. Indeed, 30% of our sample did not report experiencing *any* type of personal harm arising from the pandemic prior to the Time 1 survey (May 2020), and as such, did not meaningfully predict

an increase in their attitudes towards and advocacy for equality. This underlines the importance of intervening to help people make connections between exogenous events like the pandemic and how external forces contribute to inequality—regardless of whether they have been personally impacted. Our findings also help shed light on one key reason why other large-scale negative events (e.g., natural disasters) may not influence people’s attitudes or produce broad culture change – if they feel personally unaffected by them (Bergquist et al., 2019; Ray et al., 2017).

Despite these important contributions, we note several limitations and outstanding questions for future research. First, we only surveyed individuals after the pandemic began. Therefore, we cannot definitively demonstrate whether there was a shift in participants’ attitudes from *prior* to the pandemic to *during* the pandemic. However, our lagged analyses begin to demonstrate change by controlling for participants’ baseline attitudes at Time 1. Indeed, we find that we can control for people’s “baseline” attitudes at the start of the pandemic and find significant effects of personal harm on attitudes a year later. Nevertheless, these lagged analyses are limited because they cannot definitively demonstrate causality—they only support the temporal ordering of associations between variables.

We also attempted to better test for causality by conducting cross-lagged analyses, which provide greater confidence that people’s attitudes were *driven* by their experiences with personal harm (rather than the reverse). These analyses generally provided support for our predicted causal pathways, such that personal harm from Covid-19 at Time 1 predicted external attributions for equality at Time 2 and attitudinal advocacy for equality at Time 3 (and the reverse pathways were not significant; see Figures 4a-b). However, in a cross-lagged mediation analysis, there were reciprocal relationships between external attributions and attitudinal advocacy for equality at Times 2 and 3. Therefore, while we have more evidence for the link

between personal harm at Time 1 and attitudes towards inequality (i.e., both external attributions and attitudinal advocacy for equality) we cannot definitively claim that external attributions exclusively lead to advocacy for equality, but not vice versa.

Thus, while our cross-lagged analyses generally provide support for the influence of personal harm on advocacy for equality over time, they also reveal that there may be reciprocal effects between people's external attributions and their attitudinal advocacy for equality. Taken together, our analyses suggest that the causal effects of personal harm from the Covid-19 pandemic on people's attitudes toward equality are consistent with our theorizing but not definitive. Future research should seek to replicate these findings to more systematically understand the process through which people's attitudes towards inequality change. For example, though following prior work, we theorized that external attributions would be the process through which people came to be more supportive of policies advocating for greater equality, our cross-lagged results suggest these two attitudes may have been changing simultaneously and exerting reciprocal influence on each other. In light of these findings, future interventions might consider whether to focus more on changing people's support for policies that advocate for greater equality directly without first seeking to change their general attributions for inequality.

Second, while we have some evidence that initial harm from the Covid-19 pandemic predicted attitudes a year later, the pandemic was still ongoing when we collected the Time 3 survey in June 2021. It remains unclear whether the effects will endure when the personal harms endured due to the pandemic have lessened. To better understand the endurance of our effects, future research should examine even longer-term effects and whether they will persist beyond the pandemic itself.

Finally, our work examined attitudes about inequality with a relatively large sample of over 1000 U.S. participants. Despite this large sample, there are at least three limitations. First, this sample was only conducted with U.S. participants and therefore we cannot comment on the experience of the Covid-19 pandemic on populations beyond the U.S. It may be that personal harm does not predict advocacy for equality when people live in cultures that are already more likely to endorse external attributions for outcomes in life (e.g., in East Asia). Furthermore, it is likely that what counts as personal harm will be quite different in countries with less access to resources. Along with other research questions, it is important to consider how our findings may be different in various parts of the world.

Second, we used an online convenience sample that differed from the U.S. population. Specifically, we had a slightly higher representation of racial/ethnic minorities (e.g., 29% of our sample were racial/ethnic minorities compared to 23.7% of population), a higher representation of college educated participants (e.g., 49% of our sample were college education compared to 33% of population), and more liberal participants (56% identified on the liberal side of our scale, 24% were at the midpoint and 21% were on the conservative side of our scale. According to Gallup polls, 25% of Americans described their political views as liberal, 37% of Americans as moderate, and 36% as conservative). Future research should aim to collect a more representative sample to understand the relationship between Covid-19 and attitudes toward equality in the U.S. population as a whole.

Finally, given the challenges of conducting a three-wave longitudinal study during a pandemic, our sample was significantly reduced when we limited our sample to only those participants who finished all three waves and were eligible for the study. To address this data loss, we chose to impute data. As such, these results reflect our best approximation of

participants' responses rather than actual self-reported data. Nevertheless, when we conduct analyses with the small sample of only those who completed all three waves, results are equivalent, but weaker. Future research could attempt to recontact a random sampling of participants to reduce attrition and minimize the need for imputation (Gomila & Clark, 2020).

Overall, our research provides one possible silver lining of the Covid-19 pandemic for those who hope to broadly increase advocacy for equality in the U.S. Enduring an large-scale negative event like the pandemic has the potential to meaningfully shift people's attitudes towards and advocacy for equality—as long as people experience firsthand harm resulting from this external force. Indeed, the large number of people experiencing personal harm from the pandemic may serve as a critical first step toward building a more equitable U.S. society.

Open practices

In this article, we utilized the following open scientific practices: (a) provided open materials and (b) provided open data. Materials, data, and syntax for analyses are available on the Open Science Framework at the following OSF link: <https://bit.ly/3hcWRMr>. Links to the preregistration of sampling procedure, survey questions, and methodology are available at the following OSF links:

[Time 1: https://osf.io/amgcq?view_only=b3e8fd0631a34da49d97b0ff4e1ff733;

Time 2: https://osf.io/nv7w8?view_only=523ab3af3e2146139d72f5c329fc42a3;

Time 3: https://osf.io/jvzn9/?view_only=d16c905e9732491bbc2f11360e6478db]

References

- Acker, J. (2016). Inequality Regimes: Gender, Class, and Race in Organizations. *Http://Dx.Doi.Org/10.1177/0891243206289499*, 20(4), 441–464. <https://doi.org/10.1177/0891243206289499>
- Adeola, F. O. (2005). Racial and Class Divergence in Public Attitudes and Perceptions About Poverty in USA: An Empirical Study. *Race, Gender & Class*, 12(2), 53–66, 68–73, 75–80.
- Adler, N. E., & Rehkopf, D. H. (2008). U.S. Disparities in Health: Descriptions, Causes, and Mechanisms. *Http://Dx.Doi.Org/10.1146/Annurev.Publhealth.29.020907.090852*, 29, 235–252. <https://doi.org/10.1146/ANNUREV.PUBLHEALTH.29.020907.090852>
- Bartels, L. M. (2005). Homer Gets a Tax Cut: Inequality and Public Policy in the American Mind. In *Perspectives on Politics* (Vol. 3, Issue 1).
- Bénabou, R., & Tirole, J. (2006). Belief in a just world and redistributive politics. *Quarterly Journal of Economics*, 121(2), 699–746. <https://doi.org/10.1162/qjec.2006.121.2.699>
- Bergquist, M., Nilsson, A., & Schultz, P. W. (2019). Experiencing a Severe Weather Event Increases Concern About Climate Change. *Frontiers in Psychology*, 10, 220. <https://doi.org/10.3389/fpsyg.2019.00220>
- Breslau, N., Troost, J. P., Bohnert, K., & Luo, Z. (2012). Influence of predispositions on post-traumatic stress disorder: does it vary by trauma severity? *Psychol Medicine*, 43(2), 381–390. <https://doi.org/10.1017/S0033291712001195>
- Bromet, E. J., Atwoli, L., Kawakami, N., Navarro-Mateu, F., Piotrowski, P., Salmerón, D., Takeshima, T., Kessler, R. C., Psychiatric, U., Sanitari, P., Joan, S., & Author, P. M. (2017). Post-traumatic stress disorder associated with natural and human-made disasters in the World Mental Health Surveys HHS Public Access Author manuscript. *J. Posada-Villa*, 16(2), 227–241. <https://doi.org/10.1017/S0033291716002026>
- Brown, C. S., & Ravallion, M. (2020). *Inequality and the coronavirus: Socioeconomic covariates of behavioral responses and viral outcomes across US counties* (No. 27549). <https://doi.org/10.3386/w27549>
- Collins, C. (2021). *Updates: Billionaire Wealth, U.S. Job Losses and Pandemic Profiteers*. Inequality.Org. [https://inequality.org/great-divide/updates-billionaire-pandemic/#:~:text=February 24%2C 2021 Update%3A US, trillion Since Mid-March 2020.&text=After 11 months of pandemic,an increase of 44 percent](https://inequality.org/great-divide/updates-billionaire-pandemic/#:~:text=February%202021%20Update%3A%20US, trillion Since Mid-March 2020.&text=After 11 months of pandemic,an increase of 44 percent).
- Conn, K. M., Lovison, V. S., & Mo, C. H. (2021). *The Effect of Teaching in Underserved Schools on Beliefs About Education Inequality and Reform: Evidence from Teach For America*. 6696.
- Cozzarelli, C., Wilkinson, A. V., & Tagler, M. J. (2001). Attitudes toward the poor and attributions for poverty. *Journal of Social Issues*, 57(2), 207–227. <https://doi.org/10.1111/0022-4537.00209>
- Cramer, K. J. (2016). *The politics of resentment: Rural consciousness in Wisconsin and the rise of Scott Walker*. University of Chicago Press.
- Crear-Perry, J., Correa-De-Araujo, R., Lewis Johnson, T., Mclemore, M. R., Neilson, E., & Wallace, M. (2021). Social and Structural Determinants of Health Inequities in Maternal Health. *Journal of Women's Health*, 30(2), 230–235. https://doi.org/10.1089/JWH.2020.8882/ASSET/IMAGES/LARGE/JWH.2020.8882_FIGURE1.JPEG
- Croft, A., Dunn, E. W., & Quidbach, J. (2014). From Tribulations to Appreciation: Experiencing Adversity in the Past Predicts Greater Savoring in the Present. *Social*

- Psychological and Personality Science*, 5(5), 511–516.
<https://doi.org/10.1177/1948550613512510>
- Davidai, S. (2018). Why do Americans believe in economic mobility? Economic inequality, external attributions of wealth and poverty, and the belief in economic mobility. *Journal of Experimental Social Psychology*, 79, 138–148. <https://doi.org/10.1016/j.jesp.2018.07.012>
- Fairlie, R. (2020). *The Impact of COVID-19 on Small Business Owners: Continued Losses and the Partial Rebound in May 2020*.
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventive Medicine*, 14(4), 245–258.
[https://doi.org/10.1016/S0749-3797\(98\)00017-8](https://doi.org/10.1016/S0749-3797(98)00017-8)
- Fiedler, K., Harris, C., & Schott, M. (2018). Unwarranted inferences from statistical mediation tests – An analysis of articles published in 2015. *Journal of Experimental Social Psychology*, 75, 95–102. <https://doi.org/10.1016/j.jesp.2017.11.008>
- Gharehgozli, O., & Atal, V. (2020). Revisiting the gender wage gap in the United States. *Economic Analysis and Policy*, 66, 207–216. <https://doi.org/10.1016/J.EAP.2020.04.008>
- Gilbert, D. T., & Malone, P. S. (1995). The correspondence bias. *Psychological Bulletin*, 117(1), 21–38. <https://doi.org/10.1037/0033-2909.117.1.21>
- Godfrey, E. B., & Wolf, S. (2016). Developing critical consciousness or justifying the system? A qualitative analysis of attributions for poverty and wealth among low-income racial/ethnic minority and immigrant women. *Cultural Diversity and Ethnic Minority Psychology*, 22(1), 93–103. <https://doi.org/10.1037/cdp0000048>
- Green, J. G., McLaughlin, K. A., Berglund, P. A., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2010). Childhood adversities and adult psychiatric disorders in the national comorbidity survey replication I: Associations with first onset of DSM-IV disorders. *Archives of General Psychiatry*, 67(2), 113–123.
<https://doi.org/10.1001/archgenpsychiatry.2009.186>
- Gudrais, E. (2008). Unequal America. *Harvard Magazine*.
- Haney-López, I. (2014). *Dog whistle politics: How coded racial appeals have reinvented racism and wrecked the middle class*. Oxford University Press.
- Hochschild, A. R. (2018). *Strangers in their own land: Anger and mourning on the American right*. The New Press.
- Jost, J. T. (2017). Working class conservatism: a system justification perspective. *Current Opinion in Psychology*, 18, 73–78. <https://doi.org/10.1016/j.copsy.2017.08.020>
- Jost, J. T., & Hunyady, O. (2016). Antecedents and Consequences of System-Justifying Ideologies: <https://doi.org/10.1111/j.0963-7214.2005.00377.x>, 14(5), 260–265. <https://doi.org/10.1111/J.0963-7214.2005.00377.X>
- Kantamneni, N. (2020). The impact of the COVID-19 pandemic on marginalized populations in the United States: A research agenda. In *Journal of Vocational Behavior* (Vol. 119, p. 103439). Academic Press Inc. <https://doi.org/10.1016/j.jvb.2020.103439>
- Kluegel, J. R., & Smith, E. R. (1986). *Beliefs about Inequality: Americans' Views of what is and what ought to be*. Routledge.
- Kraus, M. W., Piff, P. K., & Keltner, D. (2009). Social class, sense of control, and social explanation. *Journal of Personality and Social Psychology*, 97, 992–1004.
<https://doi.org/10.1037/a0016357>

- Lamont, M., Park, B. Y., & Ayala-Hurtado, E. (2017). Trump's electoral speeches and his appeal to the American white working class. *The British Journal of Sociology*, 68, S153–S180. <https://doi.org/10.1111/1468-4446.12315>
- Markus, H. R. (2017). American = Independent? *Perspectives on Psychological Science*, 12(5), 855–866. <https://doi.org/10.1177/1745691617718799>
- Markus, H. R., & Kitayama, S. (2010). Cultures and selves: A cycle of mutual constitution. *Perspectives on Psychological Science*, 5(4), 420–430. <https://doi.org/10.1177/1745691610375557>
- McCall, L. (2013). *The undeserving rich: American beliefs about inequality, opportunity, and redistribution*. Cambridge University Press.
- McCall, L., Burk, D., Laperrière, M., & Richeson, J. A. (2017). Exposure to rising inequality shapes Americans' opportunity beliefs and policy support. *Proceedings of the National Academy of Sciences*, 114(36), 9593–9598. <https://doi.org/10.1073/pnas.1706253114>
- McLaughlin, K. A., Conron, K. J., Koenen, K. C., & Gilman, S. E. (2010). Childhood Adversity, Adult Stressful Life Events, and Risk of Past-Year Psychiatric Disorder: A Test of the Stress Sensitization Hypothesis in a Population-based Sample of Adults. *Psychol Medicine*, 40(10), 1647–1658. <https://doi.org/10.1017/S0033291709992121>
- McMahon, J. (2015). Behavioral economics as neoliberalism: Producing and governing homo economicus. *Contemporary Political Theory*, 14(2), 137–158. <https://doi.org/10.1057/cpt.2014.14>
- Mo, C. H., & Conn, K. M. (2018). When Do the Advantaged See the Disadvantages of Others? A Quasi-Experimental Study of National Service. *American Political Science Review*, 112(4), 1016–1035. <https://doi.org/10.1017/S0003055418000412>
- Newman, B. J., Johnston, C. D., & Lown, P. L. (2015). False Consciousness or Class Awareness? Local Income Inequality, Personal Economic Position, and Belief in American Meritocracy. *American Journal of Political Science*, 59(2), 326–340. <https://doi.org/10.1111/ajps.12153>
- Norton, M. I., & Ariely, D. (2011). Building a better America—one wealth quintile at a time. *Perspectives on Psychological Science*. <https://doi.org/10.1177/1745691610393524>
- NYGovCuomo. (2020). *Archive: Governor Andrew Cuomo Tweet*. Twitter. <https://twitter.com/NYGovCuomo/status/1245021319646904320?s=20>
- Oishi, S., Kesebir, S., & Diener, E. (2011). Income inequality and happiness. *Psychological Science*, 22(9), 1095–1100. <https://doi.org/10.1177/0956797611417262>
- Owoseje, T. (2020, March 23). *Coronavirus is “the great equalizer,” Madonna tells fans from her bathtub*. CNN. <https://www.cnn.com/2020/03/23/entertainment/madonna-coronavirus-video-intl-scli/index.html>
- Perry, B. L., Aronson, B., & Pescosolido, B. A. (2021). Pandemic precarity: COVID-19 is exposing and exacerbating inequalities in the American heartland. *Proceedings of the National Academy of Sciences of the United States of America*, 118(8), 1–6. <https://doi.org/10.1073/pnas.2020685118>
- Piff, P. K., Wiwad, D., Robinson, A. R., Aknin, L. B., Mercier, B., & Shariff, A. (2020). Shifting attributions for poverty motivates opposition to inequality and enhances egalitarianism. *Nature Human Behaviour*, 4(5), 496–505. <https://doi.org/10.1038/s41562-020-0835-8>
- Putnam, R. D. (2015). *Our Kids: The American Dream in Crisis*. Simon and Schuster.

- Ray, A., Hughes, L., Konisky, D. M., & Kaylor, C. (2017). Extreme weather exposure and support for climate change adaptation. *Global Environmental Change*, *46*, 104–113. <https://doi.org/10.1016/j.gloenvcha.2017.07.002>
- Rosseel, Y. (2012). lavaan: An R Package for Structural Equation Modeling. *Journal of Statistical Software*, *48*(2). <https://doi.org/10.18637/jss.v048.i02>
- Schlesinger, M., & Heldman, C. (2001). Gender Gap or Gender Gaps? New Perspectives on Support for Government Action and Policies. *The Journal of Politics*, *63*(1), 59–92. <https://doi.org/10.1111/0022-3816.00059>
- Seery, M. D., Holman, E. A., & Silver, R. C. (2010). Whatever Does Not Kill Us: Cumulative Lifetime Adversity, Vulnerability, and Resilience. *Journal of Personality and Social Psychology*, *99*(6), 1025–1041. <https://doi.org/10.1037/a0021344>
- Selig, J. P., & Little, T. D. (2012). Autoregressive and cross-lagged panel analysis for longitudinal data. In B. Laursen, T. D. Little, & N. A. Card (Eds.), *Handbook of Developmental Research Methods* (pp. 265–278). The Guilford Press.
- Shah, A. K., Mullainathan, S., & Shafir, E. (2012). Some consequences of having too little. *Science*, *338*(6107), 682–685. https://doi.org/10.1126/SCIENCE.1222426/SUPPL_FILE/SHAH.SM.PDF
- Shedd, C. (2015). *Unequal City: Race, Schools, and Perceptions of Injustice*. Russell Sage Foundation.
- Stephens, N. M., Fryberg, S. A., Markus, H. R., & Hamedani, M. Y. G. (2013). Who Explains Hurricane Katrina and the Chilean Earthquake as an Act of God? The Experience of Extreme Hardship Predicts Religious Meaning-Making. *Journal of Cross-Cultural Psychology*, *44*(4), 606–619. <https://doi.org/10.1177/0022022112454330>
- Stephens, N. M., & Levine, C. S. (2011). Opting out or denying discrimination? How the framework of free choice in American society influences perceptions of gender inequality. *Psychological Science*, *22*(10), 1231–1236. <https://doi.org/10.1177/0956797611417260>
- Stuber, J. M. (2006). *Talk of Class The Discursive Repertoires of White Working-and Upper-Middle-Class College Students*. <https://doi.org/10.1177/0891241605283569>
- Tessler, H., Choi, M., & Kao, G. (2020). The Anxiety of Being Asian American: Hate Crimes and Negative Biases During the COVID-19 Pandemic. *American Journal of Criminal Justice*, *45*(4), 636–646. <https://doi.org/10.1007/s12103-020-09541-5>
- Webb Hopper, M., Nápoles, A. M., & Pérez-Stable, E. (2020). COVID-19 and Racial/Ethnic Disparities. *JAMA*, *323*(24), 2466–2467. <https://doi.org/10.1001/jama.2020.8598>
- Wiwad, D., Mercier, B., Piff, P. K., Shariff, A., & Aknin, L. B. (2020). Recognizing the Impact of COVID-19 on the Poor Alters Attitudes Towards Poverty and Inequality. *Journal of Experimental Social Psychology*, *93*, 104083. <https://doi.org/10.1016/j.jesp.2020.104083>
- Zavala, V. A., Bracci, P. M., Carethers, J. M., Carvajal-Carmona, L., Coggins, N. B., Cruz-Correa, M. R., Davis, M., de Smith, A. J., Dutil, J., Figueiredo, J. C., Fox, R., Graves, K. D., Gomez, S. L., Llera, A., Neuhausen, S. L., Newman, L., Nguyen, T., Palmer, J. R., Palmer, N. R., ... Fejerman, L. (2020). Cancer health disparities in racial/ethnic minorities in the United States. *British Journal of Cancer* *2020 124:2*, *124*(2), 315–332. <https://doi.org/10.1038/s41416-020-01038-6>

Figure 1

Prevalence of Each Item of the Personal Harm Checklist at T1 (i.e., % of sample that checked “yes” for each indicator)

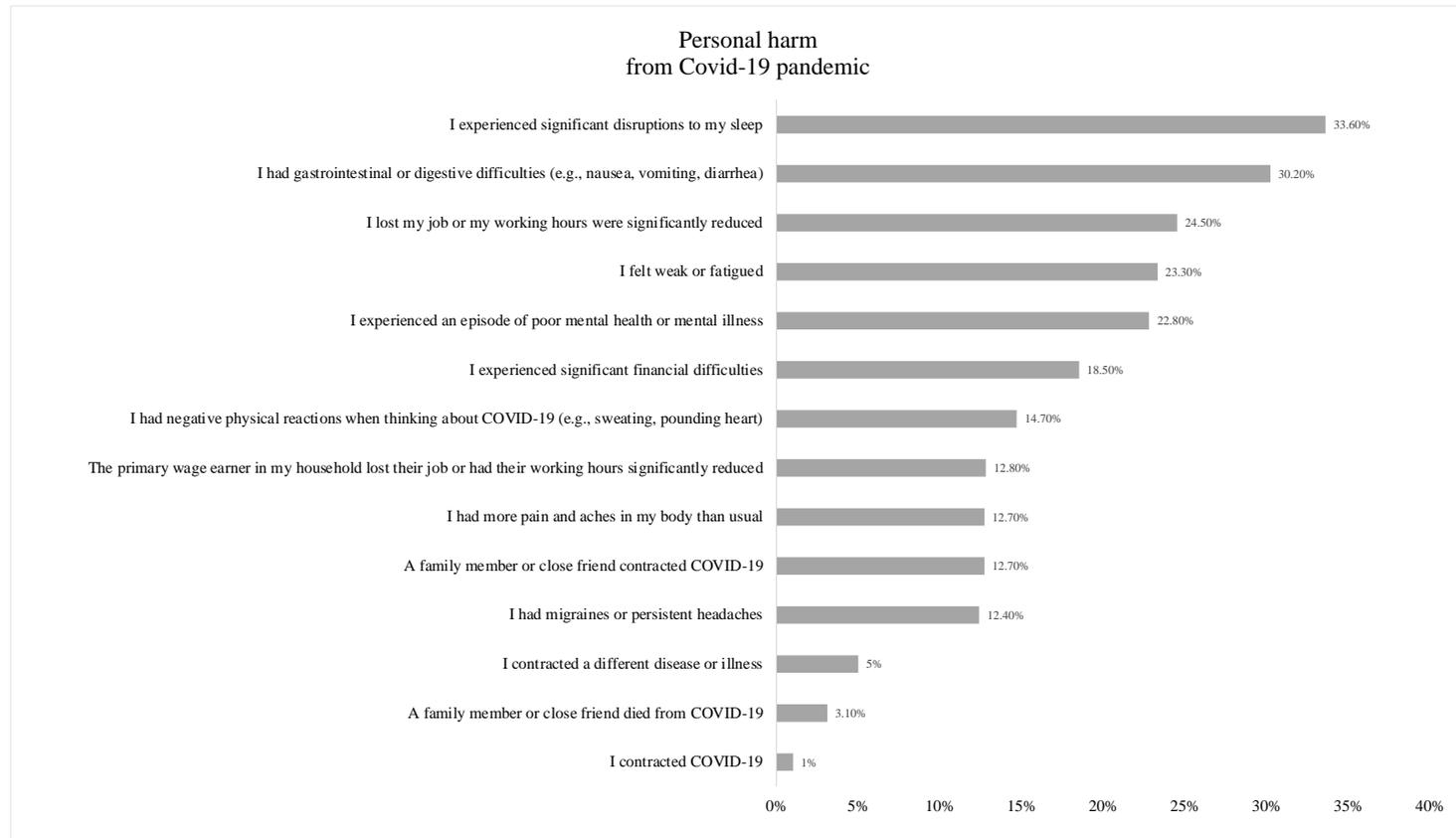


Figure 2

Timeline of Key Measures

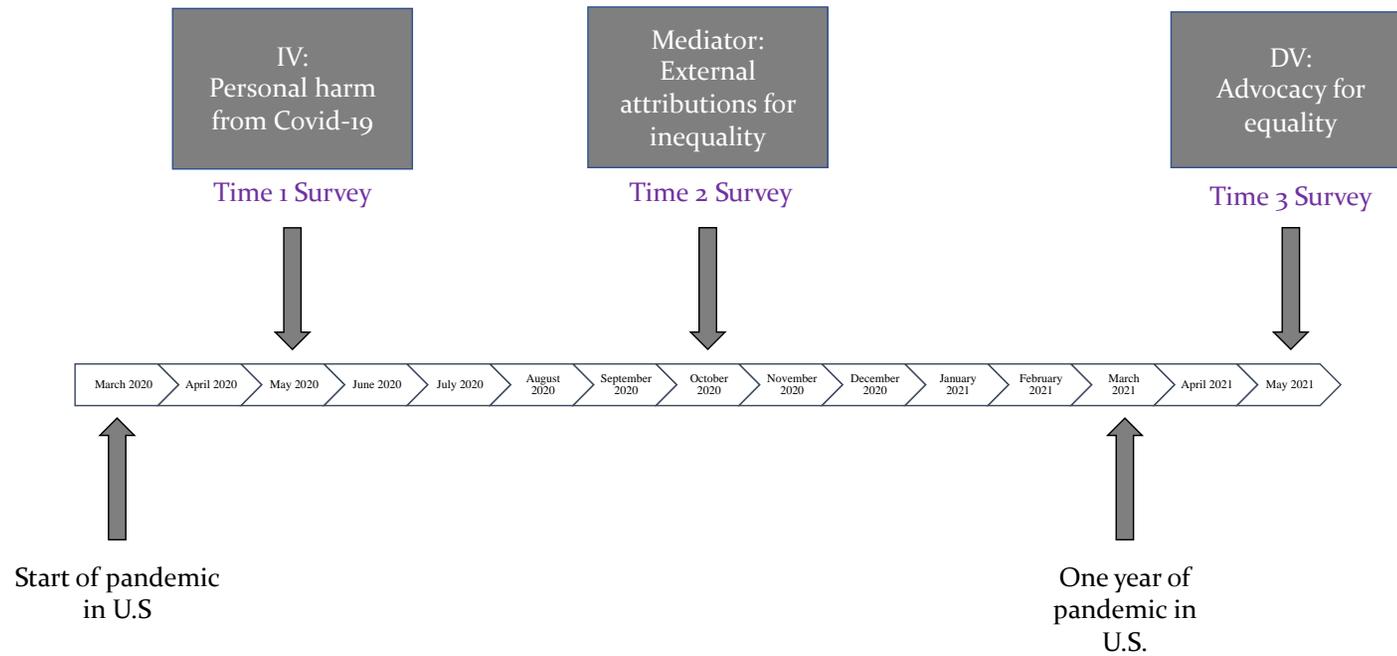
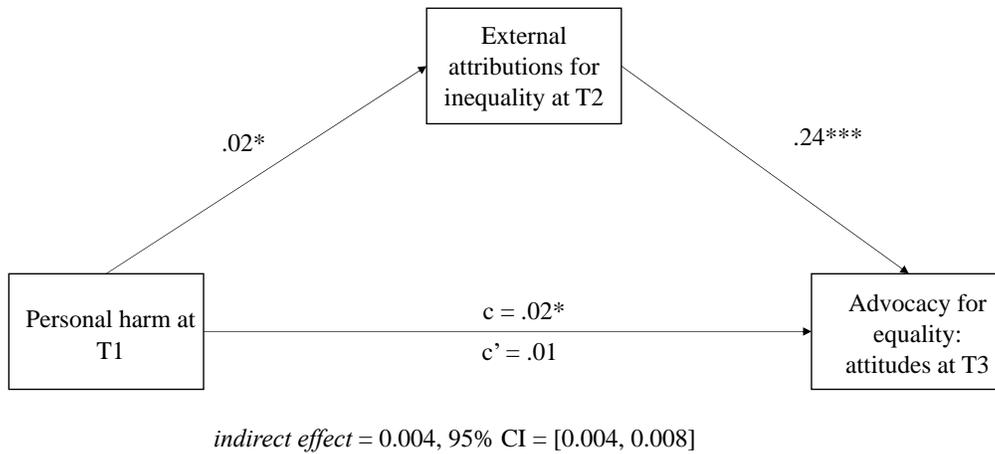


Figure 3a

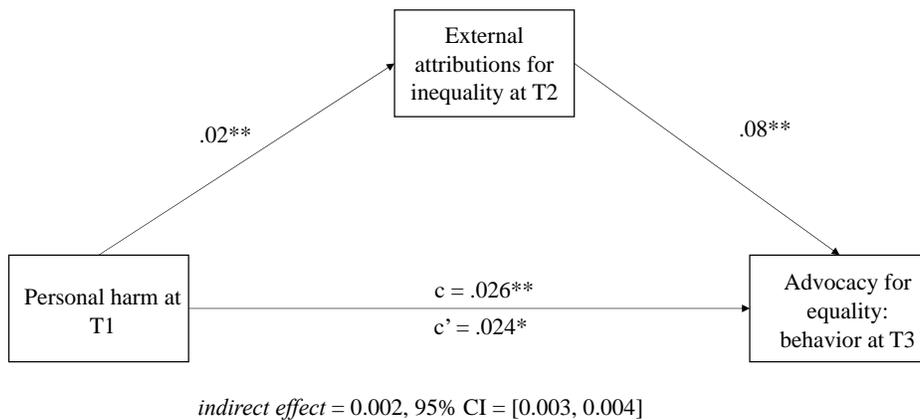
Mediation Model for Advocacy for Equality Attitudes at T3



Note. We used the PROCESS macro in SPSS (Hayes, 2017) to test our indirect effects model with 10,000 bootstrapped samples. This analysis control for individual differences (personal income, education, age, race/ethnicity, gender, and political orientation) as well as participants’ “baseline” level of external attributions for inequality and “baseline” level of attitudinal advocacy for equality.

Figure 3b

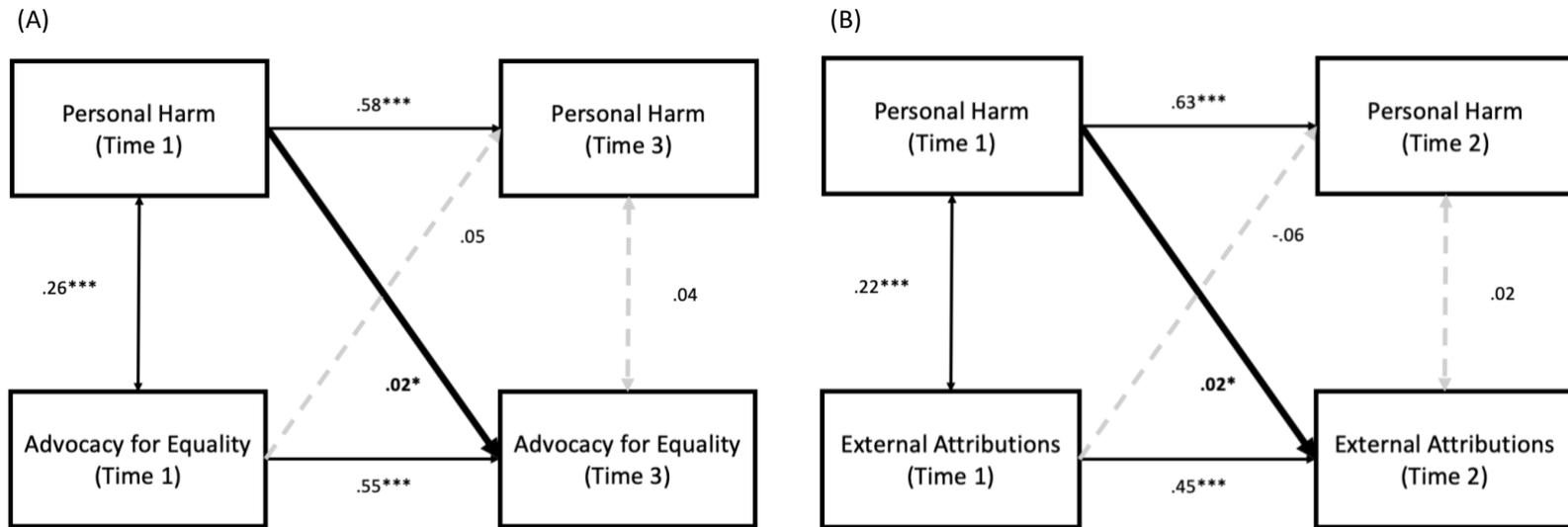
Mediation Model for Advocacy for Equality Behavior at T3



Note. We used the PROCESS macro in SPSS (Hayes, 2017) to test our indirect effects model with 10,000 bootstrapped samples. This analysis control for individual differences (personal income, education, age, race/ethnicity, gender, and political orientation) as well as participants’ “baseline” level of external attributions for inequality. We cannot control for participants’ “baseline” level of behavioral advocacy for equality because we did not measure it at Time 1.

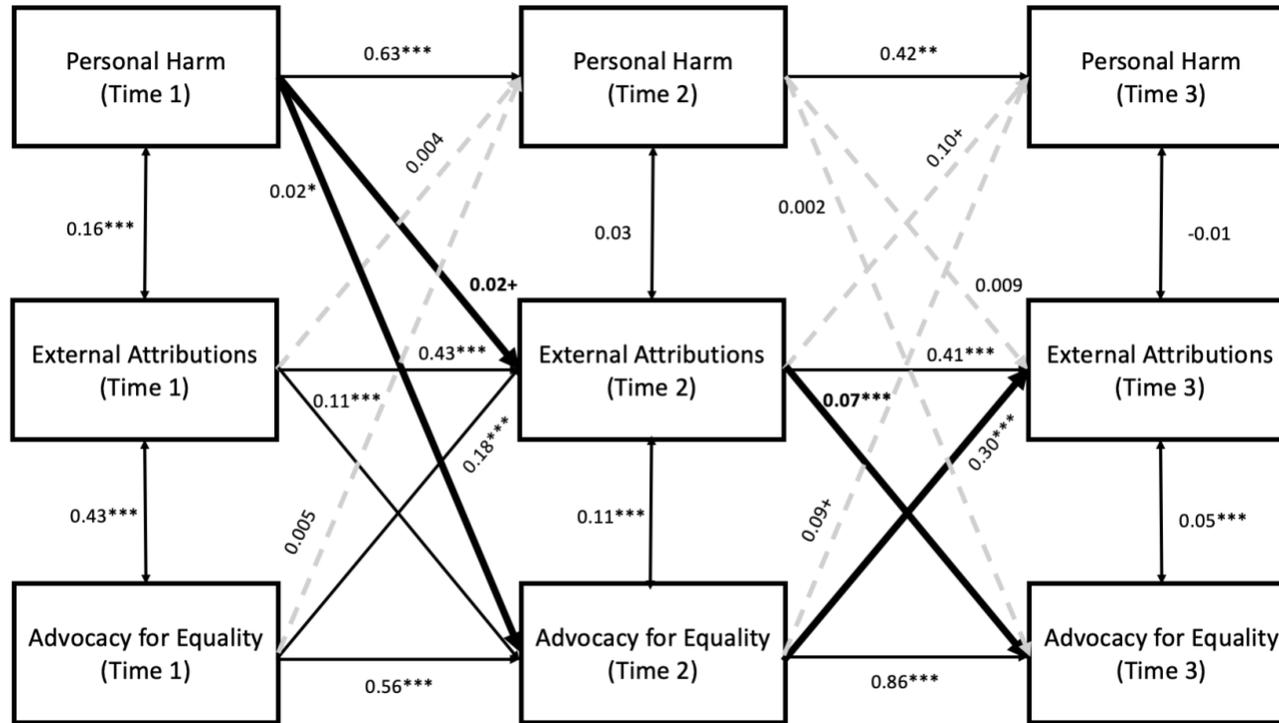
Figure 4a-b

(A) Cross-Lagged Model Linking Personal Harm at Time 1 to Advocacy for Equality at Time 3. (B) Cross-Lagged Model Linking Personal Harm at Time 1 to External Attributions at Time 2.



Note. Parentheses represent 95% confidence intervals. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Figure 5
Cross-Lagged Mediation Model.



Note. Parentheses represent 95% confidence intervals. + $p < .05$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 1

Regression results for attitudinal advocacy for equality, behavioral advocacy for equality and external attributions for inequality

	Attitudinal advocacy for equality at T3					Behavioral advocacy for equality at T3					External attributions for inequality at T2				
	<i>B</i>	<i>se</i>	<i>t</i>	<i>p</i>	95% CI	<i>B</i>	<i>se</i>	<i>t</i>	<i>p</i>	95% CI	<i>B</i>	<i>se</i>	<i>t</i>	<i>p</i>	95% CI
Personal harm at T1	.02	.01	2.29	.02	.00, .03	.03	.09	4.09	<.001	.02, .05	.02	.01	2.50	.01	.00, .04
Age	.00	.00	1.37	.17	-.00, .00	.00	.00	2.61	.01	.00, .01	.00	.00	2.57	.01	.00, .01
Gender	-.02	.03	-0.64	.52	-.09, .05	.01	.03	0.16	.87	-.06, .07	-.01	.04	-0.14	.89	-.08, .07
Race/Ethnicity	-.08	.04	-2.04	.04	-.15, -.00	-.02	.04	-0.49	.62	-.09, .05	-.14	.04	-3.66	<.001	-.22, -.07
Political orientation	-.12	.01	-9.21	<.001	-.15, -.10	-.16	.01	-15.65	<.001	-.18, -.14	-.18	.01	-14.99	<.001	-.21, -.16
Personal Income	-.03	.01	-2.65	.01	-.05, -.01	.01	.01	1.33	.19	-.01, .03	.00	.01	0.13	.90	-.02, .02
Education Level	-.02	.01	-1.42	0.16	-.04, -.01	.04	.01	2.72	.01	.01, .06	.02	.01	1.77	.07	-.00, .05
Baseline attitude at T1	.55	.01	42.21	<.001	.53, .58	--	--	--	--	--	.45	.02	22.31	<.001	.41, .49

Note. Baseline attitudes reflect the baseline attitude of the central dependent variable in each regression. Given that we did not measure behavioral advocacy for equality at T1, this regression does not include a baseline attitude.

Abstract

The Covid-19 pandemic has laid bare the vast amount of economic inequality in the U.S. Yet, has it influenced Americans' attitudes and behaviors toward equality? With a three-wave longitudinal survey, the current research provides evidence that experiencing personal harm (e.g., contracting Covid-19, losing jobs, or psychological distress) from the pandemic predicts an increase in people's attitudinal and behavioral advocacy for equality. Specifically, we find that experiencing greater personal harm in the early stages of the pandemic (i.e., May 2020) is associated with increased advocacy for equality one year later (i.e., May 2021; e.g., contacting a public official to express support for reducing inequality). Furthermore, we find that this increase in advocacy for equality is explained, in part, by people's greater endorsement of how external factors (e.g., bad luck, discrimination, etc.) contribute to inequality. Our work provides evidence that the extent to which people experience harm from the Covid-19 pandemic can predict both their increased understanding of external sources of inequality, as well as their efforts to combat this inequality (e.g., by seeking to advocate for policies that combat structural contributors to inequality).

Keywords: Covid-19, inequality, personal harm, attributions

Deleted: covid

Personal Harm from the Covid-19 Pandemic Predicts Advocacy for Equality

At the start of the pandemic, many believed that Covid-19 would be a “great equalizer” (NYGovCuomo, 2020; Owoseje, 2020). It seemed that regardless of socioeconomic status, everyone was likely to face great uncertainty and interruptions to daily routines. Nevertheless, it quickly became clear that the pandemic was not an equalizer. Throughout the pandemic, lower- (vs. higher-) income populations have experienced greater health risks, more joblessness, and greater declines in psychological well-being (Brown & Ravallion, 2020; Perry et al., 2021). At the same time, the wealth of America’s billionaires has grown (Collins, 2021).

While the pandemic was not the great equalizer it was predicted to be, might it have still influenced Americans’ attitudes and behaviors toward equality? For perhaps the first time on a broad scale, many people who were healthy and financially secure had trouble paying their bills or lost their job, had their working hours reduced, got sick, or experienced psychological distress due to a force that was clearly beyond their control—the Covid-19 pandemic. In other words, many experienced firsthand the sometimes-devastating results of an external and uncontrollable force constraining their lives. On the other hand, some continued to go about their day-to-day lives as normal and managed to remain relatively unharmed by the ravages of the pandemic.

The current work examines how experiencing personal harm from Covid-19 pandemic relates to people’s advocacy for equality. By *personal harm*, we mean experiencing firsthand physical, financial, and/or psychological adversity that can be attributed to the Covid-19 pandemic. We theorize that the Covid-19 pandemic will influence Americans’ attitudes and behaviors towards equality insofar as people were personally harmed by the pandemic. Specifically, we anticipate that the more people experience personal harm due to an external force outside of their control, the more this personal experience will make salient how forces

outside of people's control (i.e., external factors) can fuel inequality. For example, if an individual had their hours cut due to the economic fallout of the pandemic (an external force outside of one's control), this experience should make it harder to deny that external forces outside of people's control can shape and constrain behaviors and financial outcomes. When people better recognize how these external constraints shape people's behavior and outcomes, we anticipate that they will do more to advocate for equality (i.e., support policies, like universal healthcare or basic income, that target the structural sources of inequality). In contrast, we anticipate that if people have *not* been harmed personally by a clearly external and uncontrollable force, they will not be more likely to advocate for equality.

Attributions and Advocacy for Equality

Psychologists have grappled with the question of why Americans generally support the substantial levels of existing inequality in U.S. society and take little action to advocate for greater equality (Bartels, 2005; Davidai, 2018; Norton & Ariely, 2011; Putnam, 2015). One pervasive psychological process that shapes advocacy for equality is the extent to which people see the source of inequality as a product of individuals (e.g., differences in work ethic) or as a product of larger structural, external, and uncontrollable factors (e.g., different educational opportunities).

Americans tend to explain people's life outcomes as free from the constraints of history, other people, and social systems. Instead, life outcomes are seen as a product of individuals' personal preferences, choices, or enduring characteristics (Gilbert & Malone, 1995; Markus, 2017; Markus & Kitayama, 2010). Therefore, important life outcomes, such as poverty or wealth, are often explained in terms of *internal* attributions (Adeola, 2005; Bénabou & Tirole, 2006; Cozzarelli et al., 2001; Gudrais, 2008; Kluegel & Smith, 1986; Stephens et al., 2013;

Stephens & Levine, 2011; Stuber, 2006). For instance, inequality is frequently seen as the “natural,” controllable, and deserved result of differences in individuals’ merit or ambition.

Although the dominant ideology in the U.S emphasizes individual control over outcomes like wealth or poverty, previous research finds that it is possible for Americans to better recognize how *external* factors (e.g., societal opportunity) shape inequality. For instance, increasing exposure to inequality (e.g., via a poverty simulation, working in under-served schools, or reading objective information about inequality) can increase people’s endorsement of external attributions for inequality (Conn et al., 2021; McCall et al., 2017; Piff et al., 2020; Shedd, 2015; Wiwad et al., 2020). Firsthand exposure to inequality confronts people with information contrary to the dominant narrative; it demonstrates how forces beyond individuals’ control can shape people’s opportunities.

Recognizing how inequality can arise from external factors is important because those who endorse these external attributions are more likely to see inequality as undeserved and in need of structural intervention (Kluegel & Smith, 1986; McCall, 2013; Mo & Conn, 2018; Piff et al., 2020; Wiwad et al., 2020). That is, by understanding how features in the environment—history, other people, and social systems—shape and constrain individuals’ outcomes, people are more likely to recognize the need for structural policies that promote equality (Kluegel & Smith, 1986). Together, previous research suggests that one critical way to increase people’s advocacy for equality is by encouraging people to better recognize the external factors that fuel inequality.

Personal Harm and Advocacy for Equality

Given the important relationship between endorsement of external attributions and advocacy for equality, what types of experiences during the pandemic might increase people’s endorsement of external attributions for inequality? Previous research has already examined one

important factor—i.e., the extent to which the pandemic increases awareness of *other* people's poverty (Wiwad et al., 2020). Here, we focus on a distinct and novel factor that we theorize will also be associated with increased endorsement of external attributions – people's *own* firsthand experiences of personal harm due to a force outside of their control—i.e., the pandemic. We hypothesize that the degree of personal harm people experience due to the Covid-19 pandemic will be associated with an increase in their advocacy for equality over time. We also hypothesize that the relationship between personal harm and increased advocacy for equality will be explained, in part, by people's greater endorsement of external attributions for inequality.

Consistent with these hypotheses, research in cultural psychology and sociology demonstrates that historically lower-power groups (e.g., people in lower social class contexts, racial/ethnic minorities) are more likely to endorse external attributions for inequality and support structural policies that promote equality compared to historically higher-power groups (e.g., people in higher social class contexts, White people; Bob & Kluegel, 1997; Kluegel & Smith, 1986; Kraus et al., 2009; Newman et al., 2015; Schlesinger & Heldman, 2001). For example, ethnographic research documents that repeatedly experiencing stratification in society (e.g., living in a city with high levels of income inequality) relates to young people's recognition of how external factors constrain their lives (Shedd, 2015).

Researchers have theorized, but not tested, the idea that one reason for these group differences is that people in lower-power (vs. higher-power) positions have greater firsthand, chronic experiences of adversity or harm, in which they have limited choice, influence, and control (e.g., lack of access to healthcare). These constraints make salient the external forces that constrain people's experiences and outcomes more broadly (Kluegel & Smith, 1986). And, as noted above, when people better recognize how external factors constrain outcomes in life, they

Deleted: Kluegel

are more likely support structural policies that promote equality. Building on and extending this prior work, the current research exploits the variation in personal harm due to the onset of the Covid-19 pandemic to examine the theoretical proposition that harm predicts an increase in external attributions for inequality and, in turn, greater advocacy for equality.

The Current Research

In our three-wave longitudinal study, we test the theory that experiencing greater personal harm from the COVID-19 pandemic will be associated with greater endorsement of external attributions for inequality, and in turn, greater advocacy for equality. We also make two additional theoretical contributions. First, we extend prior research by providing evidence for a novel antecedent of external attributions for inequality: degree of personal harm from an external, uncontrollable force. Second, we test whether the effect of personal harm on advocacy for equality shapes attitudes over time (i.e., over a full year). We investigate the following three key hypotheses:

1. Experiencing greater amounts of personal harm from the pandemic will be associated with increased advocacy for equality.
2. Experiencing greater amounts of personal harm from the pandemic will be associated with greater endorsement of external attributions for inequality.
3. External attributions for inequality will serve as a mechanism linking personal harm from the pandemic to advocacy for equality.

Our specific hypotheses and analyses were exploratory. However, while we did not pre-register the specific hypotheses we test here, we did pre-register general research questions of interest related to the current investigation, our data collection plan, our exclusion criteria, and the survey questions. The data we draw upon for this research were collected as part of a broader

investigation on the effects of the Covid-19 pandemic over time. In the main text of this article, we reference the pre-registration when applicable and report all measures and exclusions relevant to the current research project. We also report the full list of measures in the broader study as well as our transparency checklist on OSF (Aczel et al., 2019; <https://bit.ly/3hcWRMr>).

Methods

Participants

In May 2020 (Time 1), we recruited participants via Prolific Academic, an online survey platform, to participate in a 25-minute study in exchange for \$3.50. In October 2020 (Time 2), we invited all the participants from the Time 1 survey who indicated interest in future studies to complete a second 25-minute study in exchange for \$4.50. In May 2021 (Time 3), we invited all the participants from the Time 1 survey who indicated interest in taking future studies to complete another 40-minute study in exchange for \$6.

These three surveys were part of a larger study of the effects of the Covid-19 pandemic over time. We recruited U.S. citizens between the ages of 18-70 who were not currently students. Furthermore, we recruited a balanced sample in terms of gender and education level (i.e., those with less than a four-year college degree vs. those with a four-year degree or more). We recruited a sample that was balanced by gender and education level for purposes of other studies that were part of this broader investigation of the pandemic over time. Per our pre-registration, in our final dataset, we excluded participants who, at any point in the three surveys were not U.S. citizens, were students, and/or were inattentive responders.

Applying this pre-registered exclusion criteria, at Time 1 (T1), our usable sample was $N = 1395$. At Time 2 (T2), our usable sample was $N = 987$ (71% retention of T1). At Time 3 (T3), our usable sample was $N = 751$ (54% retention of T1). Our longitudinal analyses utilized data

from all three survey waves. As such, when looking at complete responses for participants who completed all three waves of our study and met all pre-registered inclusion criteria, we were left with a usable sample of $N = 687$ (i.e., 49% of the T1 sample). Due to the high degree of missingness in the complete, usable dataset, we next examined attrition rates and best practices for handling missing data.

Attrition and Missing Data

Participants who completed all three waves of the survey (vs. those who did not) differed significantly in terms of personal harm, as well as in terms of income, age, gender, and race. Specifically, participants who completed all three waves of the survey reported lower levels of personal harm ($M = 1.92$, $SD = 1.96$) than those who did not complete all three waves ($M = 2.26$, $SD = 2.32$). Those who completed all three waves were more likely to have lower personal incomes, be older, be women, and be White (see Supplemental Materials Section [XI](#)).

Deleted: XII

Given that our missing data were conditionally dependent on our observed variables, our data was best characterized as *missing completely at random conditional on observed covariates* (MCAR|X), also called *missing at random* (MAR; Cheema, 2014; Gomila & Clark, 2020; Nissen, Donatello & Van Dusen, 2019). This missingness can unduly bias results because the data is skewed in representation toward, for example, those who experienced less personal harm, as is the case in our data. This skew increases the likelihood of bias in our analyses and as such, best practices currently recommend imputation of the missing data to debias results (Nissen, Donatello & Van Dusen, 2019). Therefore, we imputed our missing data using multiple imputation with the *mice* package in R, following current best practices (van Buuren, 2021). However, results are largely equivalent with the smaller, non-imputed sample. In two instances,

though the patterns were in the same direction as the results presented in the main text, analyses did not reach conventional levels of significance (see Supplemental Materials Section III).

The final imputed sample consisted of 688 women, 704 men, and three gender non-conforming individuals ($M_{\text{age}} = 38.40$ years, $SD = 12.70$). People with less than a 4-year college degree comprised 51% of the sample. The sample was 8% Black, 8% Asian, 4% Latinx, 71% White, <1% Native, <1% Arab, 1% unspecified racial identity and 7% multiracial. The Institutional Review Board reviewed and approved the study before data collection (protocol: 53892). A post-hoc sensitivity analysis indicated we were 90% powered to detect a small effect of $f^2 = .015$. The data are available at <https://bit.ly/3hcWRMr>.

Measures

A full list of items for each measure in all waves of the survey can be found in the Supplemental Materials Section I.

Personal Harm from Covid-19

We asked participants whether they experienced several indicators of personal harm resulting from the Covid-19 pandemic. Drawing on previous psychological methods used to study adverse life experiences (Croft et al., 2014; Felitti et al., 1998; Seery et al., 2010), these items were designed to capture a range of forms of personal harm that people may have experienced during the pandemic. Also consistent with previous research on adversity, we assessed personal harm indicators via retrospective yes/no questions (Breslau et al., 2012; Bromet et al., 2017; McLaughlin et al., 2010). At T1, we asked participants to reflect on whether they experienced any of 14 indicators of personal harm since the Covid-19 pandemic began. Sample items include: “I contracted Covid-19”, “I experienced an episode of poor mental health or mental illness” and “I experienced significant financial difficulties.” Consistent with previous

research (Seery et al., 2010), we summed the number of items for which respondents answered “yes” at each time point to represent the overall degree of personal harm people experienced from the Covid-19 pandemic. At T1, 70.2% of the sample reported experiencing at least one form of personal harm since the pandemic began. To contextualize which indicators of personal harm were most common in our sample, we present the prevalence of each item of the personal harm checklist at T1 in Figure 1 (i.e., % of sample that checked “yes” for each indicator).

These results reveal that at least some participants in our sample experienced physical, financial, and psychological indicators of harm. As such, following previous research on life adversity which has documented that one form of adversity often has spillover effects on other types of adversity (Green et al., 2010; McMahon, 2015), here, we focused on the overall personal harm (i.e., physical, financial, and psychological) people experienced. Experiencing each of these forms of harm can make salient the way that forces beyond one’s control can shape life outcomes. Summed responses to this checklist best enable us to capture each participant’s global personal harm from the Covid-19 pandemic.

Advocacy for Equality

Across the three waves, we included both attitudinal and behavioral measures of advocacy for equality. The measure of attitudinal advocacy for equality was included in all three waves of the survey. However, the behavioral measure of advocacy for equality was added in the second wave. In our analyses, we conducted separate regression models: one with attitudinal advocacy for equality as the dependent measure, and the other with behavioral advocacy for equality as the dependent measure. Doing so enabled us to determine whether personal harm predicts these two distinct forms of advocacy for equality.

In addition to these two measures, all three waves of the survey included other attitudinal measures related to advocacy for equality (e.g., preference for a more equal distribution of wealth, increased salary for low wage workers, awareness of inequality etc.). Though these measures showed largely equivalent patterns of results to the advocacy measures reported in the main text, to reduce redundancy, we report these measures and results in the Supplemental Materials Section II.

Advocacy for Equality: Attitudes. To assess participants' attitudinal advocacy for equality, we asked participants to respond to items adapted from previous research (Piff et al., 2020) on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). At T1, participants responded to the following three items: "The minimum wage in the US should be increased"; "There should be universal basic income"; and "There should be universal healthcare" ($M = 5.54$, $SD = 1.64$; $\alpha = .89$).

At T2 and T3, participants responded to the exact same items from T1 and an additional four items to capture a broader range of their attitudes toward advocacy for equality: "The government should provide stimulus checks to help people meet their basic needs"; "The government should provide support for peoples' welfare during hard times"; "Covid-19 testing should be available at no cost to anyone who wants to get tested" and "Covid-19 treatment should be free." The seven-item measure was highly reliable (T2: $M = 5.85$, $SD = 1.21$; $\alpha = .91$; T3: $M = 5.83$, $SD = 1.22$; $\alpha = .91$).¹

Advocacy for Equality: Behavior. To assess participants' behavioral advocacy for equality, we asked participants at T2 and T3 to reflect on whether they had engaged in any of the following behaviors: "Contacted a public official to express support for reducing social or

¹ When only including the three original T1 items, the pattern of results is in the same direction, but does not reach statistical significance (see Supplemental Materials Section V).

economic inequality”; “Contributed money to a group or organization that focuses on reducing social or economic inequality”; or “Posted or shared content on social networking sites related to reducing social or economic inequality.” We counted each item participants marked as 1 and each unmarked item as 0. We totaled the number of items marked to represent the amount of action they took to advocate for greater equality (T2: $M = 0.61$, $SD = 0.75$; T3: $M = 0.39$, $SD = 0.66$).

External Attributions for Inequality

To assess attributions for inequality, in all three waves of the survey, we asked participants “How much do you think that economic inequality is due to the following factors?” (Cozzarelli et al., 2001; Kraus et al., 2009; Piff et al., 2020). Participants were asked to read a list of possible factors and indicate to what extent these factors played a role in inequality using a scale from 1 (*not at all*) to 5 (*a great deal*). To capture participants’ *external attributions for inequality*—our hypothesized mediator—we averaged the following two items, which reflect a shortened scale adapted from previous research examining attributions for inequality (e.g., Cozzarelli et al., 2001; Kraus et al., 2009; Piff et al., 2020). One item reflected the locus dimension of external attributions (Piff et al., 2020): “situational and environmental factors (e.g., quality of schools, job opportunities).” The second item reflected the control dimension of external attributions (Piff et al., 2020): “discrimination (e.g., prejudice and bias),” (T1: $M = 3.61$, $SD = 0.99$, $r = .53$; T2: $M = 3.69$, $SD = 0.92$; T3: $M = 3.70$, $SD = 0.93$, $r = .50$). Both attributions place the blame (and responsibility) for inequality on external, situational factors (Piff et al., 2020).

Our attribution measure also included two items that represent participants’ internal attributions for inequality. One item reflected the locus dimension of internal attributions (Piff et

al., 2020): “genetics and biology (e.g., innate differences in intelligence).” The second item reflected the control dimension of internal attributions (Piff et al., 2020): “differences in individual work ethic” (T1: $M = 2.51$, $SD = 1.02$; T2: $M = 2.41$, $SD = 1.02$; T3: $M = 2.37$, $SD = 0.96$). These attributions place the blame (and responsibility) for inequality on internal, individual-level factors (Piff et al., 2020). Analyses showed that personal harm did not influence internal attributions. As such, for the sake of concision, we do not discuss this variable further and report results only in the supplemental material (see Supplemental Materials Section IX).

Control Variables

In all three waves, we collected several control variables, including those that help us control for more chronic harm not directly due to the Covid-19 pandemic (i.e., age, gender, race/ethnicity, personal income, education level; Acker, 2016; Adler & Rehkopf, 2008; Crear-Perry et al., 2021; Gharehgozli & Atal, 2020; Oishi et al., 2011; Shah et al., 2012; Zavala et al., 2020) as well as participants’ political orientation, which has been previously shown to relate to attitudes toward equality (Wiwad et al., 2020). In the Analytic Approach section below, we explain in greater depth our rationale for why these control variables can help us isolate the effect of harm due to the pandemic over and above other types of chronic harm and political orientation.

Age

Participants indicated their age in years ($M = 38.4$, $SD = 12.70$).

Gender

Participants indicated their gender identity as female, male, or non-binary/other. Given that the non-binary sample was too small ($n = 2$) to control for as a separate category, we only controlled for whether participants’ gender was male or female.

Race/Ethnicity

Participants checked all races and ethnicities that applied to them from the following list: African American or Black, Asian/Asian American, Hispanic/Latino, White/Caucasian, Native American, Arab/Middle Eastern, and Other. Participants who only selected one race or ethnicity were coded with the single race or ethnicity they checked, and participants who selected more than one race or ethnicity were coded as multiracial. Consistent with previous research (Fairlie, 2020; Kantamneni, 2020; Tessler et al., 2020; Webb Hopper et al., 2020) on how the Covid-19 pandemic has differentially affected racial/ethnic minorities (e.g., disproportionate losses among racial/ethnic minority-owned businesses compared to White-owned businesses) we controlled for participant race using a binary White (i.e., monoracial White individuals, coded 0; 71.3%) vs. racial/ethnic minorities (i.e., all non-White, including multiracial, individuals coded 1; 28.7%) measure.

Political Orientation

Participants indicated their political orientation on a scale from 1 (*very liberal*) to 7 (*very conservative*; $M = 3.23$, $SD = 1.63$).

Personal Income

Participants reported their current annual personal income on an 8-point scale: 1 = \$9,999 or less; 2 = \$10,000-\$19,999; 3 = \$20,00-\$29,999; 4 = \$30,00-\$49,900; 5 = \$50,000-\$74,999; 6 = \$75,000-\$99,999; 7 = \$100,000-\$200,000; or 8 = greater than \$200,000 ($M = 3.48$, $SD = 1.86$). If recently unemployed due to the pandemic, participants reported their personal income prior to unemployment. This variable was meant to capture participants' typical level of resources before the pandemic, and in the case of the unemployed, was used as a substitute for the current personal income variable.

Deleted:) (

We used this variable as a substitute for the current personal income variable for two reasons. First, methodologically, we did not want participants who recently became unemployed due to the pandemic (i.e., who had recently dropped to zero income) to skew the income variable. Second, theoretically, we did not want to include a control variable that captured financial harm during the pandemic (i.e., a current income of zero due to job loss), because our measure of personal harm captures participants' experiences of financial harm during the pandemic (e.g., losing a job).

Education Level

Participants reported the highest level of education they had completed on a 6-point scale: 1 = Some high school or less, 2 = High school diploma, 3 = Some college (1 year to less than 4 years), 4 = Two-year college degree (A.A.), 5 = Four-year college degree (B.A. or B.S.), 6 = MA/PhD, MD, MBA, Law Degree. Education was used as a continuous variable in our analyses ($M = 4.08$, $SD = 1.37$).

Analytic Approach

We conducted two separate sets of analyses to test our hypotheses: lagged and cross-lagged. First, we conducted lagged analyses to test our theorized temporal ordering of the process by which personal harm predicts advocacy for equality through external attributions. Second, we conducted cross-lagged analyses to test more precisely whether personal harm causally influenced people's attitudes, rather than the reverse causal ordering (Selig & Little, 2012). In both sets of analyses, we included our standard set of control variables.

Lagged Analyses

By conducting lagged analyses, we were able to examine the temporal ordering of our measures and theorizing about the process through which personal harm affects advocacy for

Deleted: → To best reflect

Formatted: Indent: First line: 0.5"

equality (i.e., our hypothesized mediation model). To do so, we drew our predictor (i.e., personal harm) from T1 (May 2020), our mediator variable (i.e., external attributions) from T2 (October 2020), and our outcome variables (i.e., advocacy for equality) from T3 (May 2021). Figure 2 provides a conceptual illustration of the timeline of our study and the period at which each of our key variables were measured.

In these analyses, we include two key sets of control variables. First, we control for demographic differences that serve as proxies for chronic harm (i.e., life adversity in general that is not specific to the Covid-19 pandemic). That is, to ensure that our analyses capture effects of personal harm from the Covid-19 pandemic above and beyond chronic harm due to demographic differences, we control for the following proxies of chronic harm: personal income, education, age, race/ethnicity, and gender.³ All of these have previously been shown to be associated with experiencing greater personal hardship in general (Acker, 2006; Oishi, Kesebir & Diener, 2011; Shah, Mullainathan & Shafir, 2012; Soss, Fording & Schram, 2011; Volpe, Dawson, Rahal, Wiley & Vesslee, 2019).⁴ We also control for political orientation, which has been previously shown to relate to attitudes toward equality (Wiwad et al., 2020). Throughout our analyses, we refer to these as our “standard set of control variables.”

Second, we control for participants’ “baseline” attitudes measured at Time 1 such as external attributions for inequality and advocacy for equality. By controlling for these baseline

³ We also examined whether these demographic differences predicted our outcomes of interest. We found that income, race/ethnicity, education, and age predicted participants’ advocacy for equality and external attributions for inequality in some cases but not in others (see Supplemental Materials Section XII).

⁴ In the Supplemental Materials Section VIII we examine whether our results are moderated by any of these individual differences that are associated with experiencing general harm or life adversity (e.g., Haney-López, 2014; Hochschild, 2018; Lamont et al., 2017). Though a large body of research documents social group differences in attributions and advocacy for equality, there was no evidence of moderation by demographic group in our data. It is possible we did not find moderation by social group membership because people experienced personal harm from an entirely new external factor (i.e., the Covid-19 pandemic). This novel personal experience with a clearly external force may crowd out other group-based factors that have previously been shown to predict advocacy for equality.

Deleted: ,

Deleted: ²

Deleted: our

Deleted: XIII

beliefs and thereby conducting this lagged analysis, we can better demonstrate that personal harm predicts a *change* in attitudes over time (Emery & Finkel, 2022; Schonfeld, Brailovskaia et al., 2018).⁵ We included these controls in our analyses to ensure that our results were robust to their inclusion. However, results without these control variables showed similar but stronger patterns (see the Supplemental Materials Section IV).

To test our first hypothesis (H1) that experiencing greater amounts of personal harm from the pandemic in its earliest months will be associated with increased advocacy for equality one year later, we conducted two separate lagged regressions. First, we regressed attitudinal advocacy for equality (measured at T3) on personal harm (measured at T1). In this analysis, we included our standard set of control variables (described above) as well as T1 attitudinal advocacy for equality to better represent the causal consequences of personal harm on advocacy for equality. Second, we regressed behavioral advocacy for equality (measured at T3) on personal harm (measured at T1). In this analysis we included our standard set of control variables (described above). We could not control for T1 behavioral advocacy for equality because we did not include this measure in the survey at T1.

To test our second hypothesis (H2) that experiencing greater amounts of personal harm will be associated with greater endorsement of external attributions for inequality, we regressed external attributions for inequality (measured at T2) on personal harm (measured at T1). We again included the standard set of controls as well as T1 external attributions for inequality to represent the causal effect of personal harm.

Finally, to test our third hypothesis (H3) that greater amounts of personal harm will predict greater advocacy for equality via increased external attributions for inequality, we

⁵ We also report how harm at each time point predicts advocacy for equality at the corresponding time point (see Supplemental Materials Section VI and VII). Results are significant for all of these analyses.

conducted two separate mediation analyses with 10,000 bootstrapped samples: one on *attitudinal* and one on *behavioral* advocacy for equality. We utilized participants' external attributions for inequality (measured at T2) as the mediator linking personal harm from the Covid-19 pandemic (measured at T1) to attitudinal and behavioral advocacy for equality outcome variables (measured at T3) and included our standard set of controls. When examining attitudinal advocacy for equality, we controlled for T1 attitudinal advocacy for equality, T1 external attributions for inequality, and our standard set of control variables. When examining behavioral advocacy for equality, we could not control for T1 behavioral advocacy for equality because we did not include this measure in the survey at T1. However, we controlled for T1 external attributions for inequality and our standard set of control variables.

Cross-Lagged Analyses

With cross-lagged structural equation models (CLPM; Selig & Little, 2012), we examined whether personal harm from the Covid-19 pandemic was a cause rather than an effect of advocacy for equality and external attributions for inequality over the year. We used the *lavaan* package in R (Rosseel, 2012). CLPM models also allow for the inclusion of time-invariant person characteristics (i.e., our standard set of covariates which do not vary from timepoint to timepoint).

We were only able to conduct cross-lagged analyses on attitudinal advocacy for equality because attitudinal advocacy was the only downstream measure of advocacy for equality included at all three timepoints. First, we examined the relationship between personal harm (T1 and T3) and attitudinal advocacy for equality (T1 and T3), as both possible causes and effects of one another, over the one-year period. Second, we examined the relationship between personal harm (T1 and T2) and external attributions for inequality (T1 and T2), as both possible causes

and effects of one another, over a five-month period. Finally, we combine this into an overall cross-lagged mediation model testing our full theorized model from personal harm (T1) to external attributions (T2) to attitudinal advocacy for equality (T3). These cross-lagged analyses allow for substantially greater confidence in drawing causal conclusions (Mulder & Hamaker, 2021).

Results

Lagged Analyses

Advocacy for Equality

Supporting Hypothesis 1 and as shown in Table 1, we found that experiencing greater personal harm from the pandemic was associated with increased advocacy for equality one year later. Specifically, personal harm at T1 predicted an increase in attitudinal advocacy for equality at T3. Personal harm at T1 also predicted behavioral advocacy for equality at T3.

Formatted: Font: Italic

External Attributions for Inequality

Supporting Hypothesis 2 and as detailed in Table 1, we found that experiencing greater personal harm at T1 was associated with greater endorsement of external attributions for inequality five months later (i.e., at T2).

Deleted: (B = 0.02, SE = 0.01, p = .02, 95% CI [0.00, 0.03])...

Deleted: (B = 0.03, SE = 0.01, p < .001, 95% CI [0.02, 0.05])...

Formatted: Font: Italic

Mediation

Supporting Hypothesis 3 and as shown in Figure 3, we found that external attributions for inequality at T2 mediated the relationship between personal harm at T1 and advocacy for equality for both attitudinal and behavioral measures at T3: attitudinal advocacy for equality (B = 0.004, 95% CI = [0.001, 0.009] and behavioral advocacy for equality (B = 0.002, SE = 0.009, 95% CI = [0.003, 0.004]. The 95% CIs did not include zero, suggesting that the indirect effects of personal harm on advocacy for equality through external attributions were significant. Even

Deleted: at T2; B = 0.02, SE = 0.01, p =.01, 95% CI [0.01, 0.04])...

Formatted: Font: Italic

considering the limitations of correlational indirect effects analyses (Fiedler et al., 2018), these results suggest that personal harm from the Covid-19 pandemic was associated with increased advocacy for equality one year later, in part, because personal harm was associated with greater endorsement of external attributions for inequality five months later. Moreover, the longitudinal nature of these measures provides fairly strong evidence of the causal ordering of these indirect effects.

Cross-Lagged Analyses

Attitudinal Advocacy for Equality

Our cross-lagged analysis of the relationship between personal harm from the Covid-19 pandemic and attitudinal advocacy for equality gave a reasonably good fit to the empirical data (CFI = 0.99, RMSEA = 0.053, SRMR = 0.018). As shown in Figure 4a, personal harm from the Covid-19 pandemic at Time 1 predicted attitudinal advocacy for equality at Time 3 ($\gamma_{21} = 0.02, p = 0.032$). In contrast, the reciprocal pathway from attitudinal advocacy for equality at Time 1 to personal harm at Time 3 was not statistically significant ($\gamma_{12} = 0.05, p = 0.153$).

External Attributions for Inequality

Our cross-lagged analysis of the relationship between personal harm from the Covid-19 pandemic and external attributions for inequality also gave a good fit to the empirical data (CFI = 0.99, RMSEA = 0.037, SRMR = 0.017). As shown in Figure 4b, personal harm from the Covid-19 pandemic at Time 1 predicted external attributions for inequality at Time 2 ($\gamma_{21} = 0.02, p = 0.034$). The reciprocal pathway from external attributions at Time 1 to personal harm at Time 2 was not statistically significant ($\gamma_{12} = -0.06, p = 0.156$).

Mediation

Our cross-lagged analysis of the mediation model linking personal harm from the Covid-19 pandemic to attitudinal advocacy for equality via external attributions for inequality also gave a reasonably good fit to the empirical data (CFI = 0.97, RMSEA = 0.085, SRMR = 0.032). First, there was a trending but nonsignificant effect of personal harm from the Covid-19 pandemic at Time 1 on external attributions for inequality at Time 2 ($\gamma_{21} = 0.02, p = 0.050$). The reciprocal pathway from external attributions at Time 1 to personal harm at Time 2 was not statistically significant ($\gamma_{12} = 0.004, p = 0.931$). Next, external attributions at Time 2 predicted attitudinal advocacy for equality at Time 3 ($\gamma_{32} = 0.07, p < 0.001$). The reciprocal pathway from attitudinal advocacy for equality at Time 2 to external attributions at Time 3 was also statistically significant ($\gamma_{23} = 0.30, p < 0.001$). This suggests that there may be reciprocal effects between external attributions and advocacy for equality. Indeed, we also found that personal harm from the Covid-19 pandemic at Time 1 significantly predicted attitudinal advocacy for equality at Time 2 ($\gamma_{22} = 0.02, p = 0.039$; see Figure 5 for details).

These results suggest that personal harm from the Covid-19 pandemic was associated with greater endorsement of external attributions for inequality five months later. External attributions, in turn, were associated with greater attitudinal advocacy for equality one year later. However, we also obtained evidence that personal harm was associated with greater attitudinal advocacy for equality five months later, which in turn, was associated with greater endorsement of external attributions for inequality one year later. The cross-lagged nature of these measures provides fairly strong evidence of the causal effect of personal harm at the beginning of the pandemic on subsequent attitudes towards inequality. However, the path through which harm changes attitudes is less clear. External attributions and advocacy for equality are highly

interrelated constructs, and may have been shifting simultaneously (as opposed to in succession, as we theorized initially).

Discussion

Though the Covid-19 pandemic was not the “great equalizer” it was predicted to be, might it nonetheless have influenced Americans’ attitudes and behaviors towards equality? While many have had firsthand experiences with personal harm resulting from the pandemic, this has not been the case for all Americans. Some have continued to go about day-to-day life as normal and remained relatively unharmed. Here, we examined whether personal harm from the pandemic related to people’s attitudes and behaviors towards equality. The results of our three-wave longitudinal study suggest that experiences of personal harm in the earliest days of the pandemic were associated with increased attitudinal and behavioral advocacy for equality one year later. Moreover, five months after experiencing personal harm, Americans’ greater endorsement of the external drivers of inequality served as a mechanism helping to explain the link between personal harm and increased advocacy for equality one year later.

Our research makes several important theoretical contributions. First, our research provides empirical evidence for a novel antecedent to both Americans’ understanding of the sources of inequality and their willingness to advocate for equality: personal harm from an external force—in this case, the Covid-19 pandemic. Documenting this novel antecedent helps reconcile previous disparate findings on whether those who experience adversity will be more or less likely to advocate for greater equality. On the one hand, previous research suggests that lower- (vs. higher-) power groups should be more likely to advocate for inequality because they are exposed to more chronic harm and therefore are especially likely to endorse external attributions (Kraus et al., 2009). On the other hand, previous research has also found that lower-

Deleted: influenced

(vs. higher-) power groups are often motivated to justify and maintain the current system (e.g., to reduce uncertainty and threat), rather than advocating for greater equality (Cramer, 2016; Godfrey & Wolf, 2016; Haney-López, 2014; Hochschild, 2018; Jost, 2017; Jost & Hunyady, 2016; Lamont et al., 2017; McCall, 2013).

We are able to help reconcile these disparate findings by empirically demonstrating that gaining firsthand experience with a *new* social, economic, or health arrangement does not ~~increase people's justification with~~ their current experiences as fair and legitimate. Instead, it ~~predicts people's endorsement of~~ external attributions and ~~relates to their~~ advocate for greater equality. The work we present here documents that firsthand harm from an external source reflects a situation where people may be more likely to advocate for equality, rather than justifying the current system.

Deleted: lead people to justify

Deleted: prompts people to more so endorse

Second, our work demonstrates that personal harm affects people's attitudes and behavior long after the initial harm was experienced – i.e., for a span of at least one year. Specifically, in the first months of the pandemic, experiencing more personal harm ~~predicted~~ people's attitudes toward and advocacy for equality one year later. This suggests that the effects of an external large-scale shock may be relatively long-lasting, laying the groundwork for future larger-scale efforts to promote equality in the U.S.

Deleted: shaped

Finally, our research delineates one specific pathway – *degree* of personal harm – through which large-scale negative events can ~~predict~~ attitudes towards and advocacy for equality. Indeed, our research suggests that merely observing the pandemic from afar is not sufficient to increase people's advocacy for equality; people must be personally impacted. Indeed, 30% of our sample did not report experiencing *any* type of personal harm arising from the pandemic prior to the Time 1 survey (May 2020), and as such, did not meaningfully ~~predict~~

Deleted: shift

Deleted: shift

an increase in their attitudes towards and advocacy for equality. This underlines the importance of intervening to help people make connections between exogenous events like the pandemic and how external forces contribute to inequality—regardless of whether they have been personally impacted. Our findings also help shed light on one key reason why other large-scale negative events (e.g., natural disasters) may not influence people’s attitudes or produce broad culture change – if they feel personally unaffected by them (Bergquist et al., 2019; Ray et al., 2017).

Despite these important contributions, we note several limitations and outstanding questions for future research. First, we only surveyed individuals after the pandemic began. Therefore, we cannot definitively demonstrate whether there was a shift in participants’ attitudes from *prior* to the pandemic to *during* the pandemic. However, our lagged analyses begin to demonstrate change by controlling for participants’ baseline attitudes at Time 1. Indeed, we find that we can control for people’s “baseline” attitudes at the start of the pandemic and find significant effects of personal harm on attitudes a year later. Nevertheless, these lagged analyses are limited because they cannot definitively demonstrate causality—they only support the temporal ordering of associations between variables.

We also attempted to better test for causality by conducting cross-lagged analyses, which provide greater confidence that people’s attitudes were driven by their experiences with personal harm (rather than the reverse). These analyses generally provided support for our predicted causal pathways, such that personal harm from Covid-19 at Time 1 predicted external attributions for equality at Time 2 and attitudinal advocacy for equality at Time 3 (and the reverse pathways were not significant; see Figures 4a-b). However, in a cross-lagged mediation analysis, there were reciprocal relationships between external attributions and attitudinal advocacy for equality at Times 2 and 3. Therefore, while we have more evidence for the link

- Deleted:** Furthermore, when
- Deleted:** conducted a cross-lagged analysis, we found
- Deleted:** personal harm predicts advocacy
- Deleted:** equality, but not vice versa (see Supplemental Materials Section X). Nonetheless, future research should compare...
- Deleted:** before
- Deleted:** onset
- Deleted:** large-scale negative event to those that occur after
- Deleted:** onset
- Deleted:** such an event

between personal harm at Time 1 and attitudes towards inequality (i.e., both external attributions and attitudinal advocacy for equality) we cannot definitively claim that external attributions exclusively lead to advocacy for equality, but not vice versa.

Thus, while our cross-lagged analyses generally provide support for the influence of personal harm on advocacy for equality over time, they also reveal that there may be reciprocal effects between people's external attributions and their attitudinal advocacy for equality. Taken together, our analyses suggest that the causal effects of personal harm from the Covid-19 pandemic on people's attitudes toward equality are consistent with our theorizing but not definitive. Future research should seek to replicate these findings to more systematically understand the process through which people's attitudes towards inequality change. For example, though following prior work, we theorized that external attributions would be the process through which people came to be more supportive of policies advocating for greater equality, our cross-lagged results suggest these two attitudes may have been changing simultaneously and exerting reciprocal influence on each other. In light of these findings, future interventions might consider whether to focus more on changing people's support for policies that advocate for greater equality directly without first seeking to change their general attributions for inequality.

Second, while we have some evidence that initial harm from the Covid-19 pandemic predicted attitudes a year later, the pandemic was still ongoing when we collected the Time 3 survey in June 2021. It remains unclear whether the effects will endure when the personal harms endured due to the pandemic have lessened. To better understand the endurance of our effects, future research should examine even longer-term effects and whether they will persist beyond the pandemic itself.

Deleted: clear

Finally, our work examined attitudes about inequality with a relatively large sample of over 1000 U.S. participants. Despite this large sample, there are at least three limitations. First, this sample was only conducted with U.S. participants and therefore we cannot comment on the experience of the Covid-19 pandemic on populations beyond the U.S. It may be that personal harm does not predict advocacy for equality when people live in cultures that are already more likely to endorse external attributions for outcomes in life (e.g., in East Asia). Furthermore, it is likely that what counts as personal harm will be quite different in countries with less access to resources. Along with other research questions, it is important to consider how our findings may be different in various parts of the world.

Deleted: say how

Deleted: has shaped

Second, we used an online convenience sample that differed from the U.S. population. Specifically, we had a slightly higher representation of racial/ethnic minorities (e.g., 29% of our sample were racial/ethnic minorities compared to 23.7% of population), a higher representation of college educated participants (e.g., 49% of our sample were college education compared to 33% of population), and more liberal participants (56% identified on the liberal side of our scale, 24% were at the midpoint and 21% were on the conservative side of our scale. According to Gallup polls, 25% of Americans described their political views as liberal, 37% of Americans as moderate, and 36% as conservative). Future research should aim to collect a more representative sample to understand the relationship between Covid-19 and attitudes toward equality in the U.S. population as a whole.

Deleted: how experiences with

Deleted: have shaped

Finally, given the challenges of conducting a three-wave longitudinal study during a pandemic, our sample was significantly reduced when we limited our sample to only those participants who finished all three waves and were eligible for the study. To address this data loss, we chose to impute data. As such, these results reflect our best approximation of

participants' responses rather than actual self-reported data. Nevertheless, when we conduct analyses with the small sample of only those who completed all three waves, results are equivalent, but weaker. Future research could attempt to recontact a random sampling of participants to reduce attrition and minimize the need for imputation (Gomila & Clark, 2020).

Overall, our research provides one possible silver lining of the Covid-19 pandemic for those who hope to broadly increase advocacy for equality in the U.S. Enduring an large-scale negative event like the pandemic has the potential to meaningfully shift people's attitudes towards and advocacy for equality—as long as people experience firsthand harm resulting from this external force. Indeed, the large number of people experiencing personal harm from the pandemic may serve as a critical first step toward building a more equitable U.S. society.

Open practices

In this article, we utilized the following open scientific practices: (a) provided open materials and (b) provided open data. Materials, data, and syntax for analyses are available on the Open Science Framework at the following OSF link: <https://bit.ly/3hcWRMr>. Links to the preregistration of sampling procedure, survey questions, and methodology are available at the following OSF links:

[Time 1: https://osf.io/amgcq?view_only=b3e8fd0631a34da49d97b0ff4e1ff733;

Time 2: https://osf.io/nv7w8?view_only=523ab3af3e2146139d72f5c329fc42a3;

Time 3: https://osf.io/jvzn9/?view_only=d16c905e9732491bbc2f11360e6478db]

References

- Acker, J. (2016). Inequality Regimes: Gender, Class, and Race in Organizations. *Http://Dx.Doi.Org/10.1177/0891243206289499*, 20(4), 441–464. <https://doi.org/10.1177/0891243206289499>
- Adeola, F. O. (2005). Racial and Class Divergence in Public Attitudes and Perceptions About Poverty in **USA: An** Empirical Study. *Race, Gender & Class*, 12(2), 53–66, 68–73, 75–80.
- Adler, N. E., & Rehkopf, D. H. (2008). U.S. Disparities in Health: Descriptions, Causes, and Mechanisms. *Http://Dx.Doi.Org/10.1146/Annurev.Publhealth.29.020907.090852*, 29, 235–252. <https://doi.org/10.1146/ANNUREV.PUBLHEALTH.29.020907.090852>
- Bartels, L. M. (2005). Homer Gets a Tax Cut: Inequality and Public Policy in the American Mind. In *Perspectives on Politics* (Vol. 3, Issue 1).
- Bénabou, R., & Tirole, J. (2006). Belief in a just world and redistributive politics. *Quarterly Journal of Economics*, 121(2), 699–746. <https://doi.org/10.1162/qjec.2006.121.2.699>
- Bergquist, M., Nilsson, A., & Schultz, P. W. (2019). Experiencing a Severe Weather Event Increases Concern About Climate Change. *Frontiers in Psychology*, 10, 220. <https://doi.org/10.3389/fpsyg.2019.00220>
- Breslau, N., Troost, J. P., Bohnert, K., & Luo, Z. (2012). Influence of predispositions on post-traumatic stress disorder: does it vary by trauma severity? *Psychol Medicine*, 43(2), 381–390. <https://doi.org/10.1017/S0033291712001195>
- Bromet, E. J., Atwoli, L., Kawakami, N., Navarro-Mateu, F., Piotrowski, P., Salmerón, D., Takeshima, T., Kessler, R. C., Psychiatric, U., Sanitari, P., Joan, S., & Author, P. M. (2017). Post-traumatic stress disorder associated with natural and human-made disasters in the World Mental Health Surveys HHS Public Access Author manuscript. *J. Posada-Villa*, 16(2), 227–241. <https://doi.org/10.1017/S0033291716002026>
- Brown, C. S., & Ravallion, M. (2020). *Inequality and the coronavirus: Socioeconomic covariates of behavioral responses and viral outcomes across US counties* (No. 27549). <https://doi.org/10.3386/w27549>
- Collins, C. (2021). *Updates: Billionaire Wealth, U.S. Job Losses and Pandemic Profiteers*. Inequality.Org. [https://inequality.org/great-divide/updates-billionaire-pandemic/#:~:text=February 24%2C 2021 Update%3A US,trillion Since Mid-March 2020.&text=After 11 months of pandemic,an increase of 44 percent](https://inequality.org/great-divide/updates-billionaire-pandemic/#:~:text=February%202021%20Update%3A%20US,trillion%20Since%20Mid-March%202020.&text=After%2011%20months%20of%20pandemic,an%20increase%20of%2044%20percent).
- Conn, K. M., Lovison, V. S., & Mo, C. H. (2021). *The Effect of Teaching in Underserved Schools on Beliefs About Education Inequality and Reform: Evidence from Teach For America*. 6696.
- Cozzarelli, C., Wilkinson, A. V., & Tagler, M. J. (2001). Attitudes toward the poor and attributions for poverty. *Journal of Social Issues*, 57(2), 207–227. <https://doi.org/10.1111/0022-4537.00209>
- Cramer, K. J. (2016). *The politics of resentment: Rural consciousness in Wisconsin and the rise of Scott Walker*. University of Chicago Press.
- Crear-Perry, J., Correa-De-Araujo, R., Lewis Johnson, T., Mclemore, M. R., Neilson, E., & Wallace, M. (2021). Social and Structural Determinants of Health Inequities in Maternal Health. *Journal of Women's Health*, 30(2), 230–235. https://doi.org/10.1089/JWH.2020.8882/ASSET/IMAGES/LARGE/JWH.2020.8882_FIGURE1.JPEG

Deleted: ¶

Deleted: Usa: an

- Croft, A., Dunn, E. W., & Quoidbach, J. (2014). From Tribulations to Appreciation: Experiencing Adversity in the Past Predicts Greater Savoring in the Present. *Social Psychological and Personality Science*, 5(5), 511–516. <https://doi.org/10.1177/1948550613512510>
- Davidai, S. (2018). Why do Americans believe in economic mobility? Economic inequality, external attributions of wealth and poverty, and the belief in economic mobility. *Journal of Experimental Social Psychology*, 79, 138–148. <https://doi.org/10.1016/j.jesp.2018.07.012>
- Fairlie, R. (2020). *The Impact of COVID-19 on Small Business Owners: Continued Losses and the Partial Rebound in May 2020*.
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., Koss, M. P., & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventive Medicine*, 14(4), 245–258. [https://doi.org/10.1016/S0749-3797\(98\)00017-8](https://doi.org/10.1016/S0749-3797(98)00017-8)
- Fiedler, K., Harris, C., & Schott, M. (2018). Unwarranted inferences from statistical mediation tests – An analysis of articles published in 2015. *Journal of Experimental Social Psychology*, 75, 95–102. <https://doi.org/10.1016/j.jesp.2017.11.008>
- Gharehgozli, O., & Atal, V. (2020). Revisiting the gender wage gap in the United States. *Economic Analysis and Policy*, 66, 207–216. <https://doi.org/10.1016/J.EAP.2020.04.008>
- Gilbert, D. T., & Malone, P. S. (1995). The correspondence bias. *Psychological Bulletin*, 117(1), 21–38. <https://doi.org/10.1037/0033-2909.117.1.21>
- Godfrey, E. B., & Wolf, S. (2016). Developing critical consciousness or justifying the system? A qualitative analysis of attributions for poverty and wealth among low-income racial/ethnic minority and immigrant women. *Cultural Diversity and Ethnic Minority Psychology*, 22(1), 93–103. <https://doi.org/10.1037/cdp0000048>
- Green, J. G., McLaughlin, K. A., Berglund, P. A., Gruber, M. J., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2010). Childhood adversities and adult psychiatric disorders in the national comorbidity survey replication I: Associations with first onset of DSM-IV disorders. *Archives of General Psychiatry*, 67(2), 113–123. <https://doi.org/10.1001/archgenpsychiatry.2009.186>
- Gudrais, E. (2008). Unequal America. *Harvard Magazine*.
- Haney-López, I. (2014). *Dog whistle politics: How coded racial appeals have reinvented racism and wrecked the middle class*. Oxford University Press.
- Hochschild, A. R. (2018). *Strangers in their own land: Anger and mourning on the American right*. The New Press.
- Jost, J. T. (2017). Working class conservatism: a system justification perspective. *Current Opinion in Psychology*, 18, 73–78. <https://doi.org/10.1016/j.copsy.2017.08.020>
- Jost, J. T., & Hunyady, O. (2016). Antecedents and Consequences of System-Justifying Ideologies: <https://doi.org/10.1111/j.0963-7214.2005.00377.x>, 14(5), 260–265. <https://doi.org/10.1111/J.0963-7214.2005.00377.X>
- Kantamneni, N. (2020). The impact of the COVID-19 pandemic on marginalized populations in the United States: A research agenda. In *Journal of Vocational Behavior* (Vol. 119, p. 103439). Academic Press Inc. <https://doi.org/10.1016/j.jvb.2020.103439>

- Kluegel, J. R., & Smith, E. R. (1986). *Beliefs about Inequality: Americans' Views of what is and what ought to be*. Routledge.
- Kraus, M. W., Piff, P. K., & Keltner, D. (2009). Social class, sense of control, and social explanation. *Journal of Personality and Social Psychology*, 97, 992–1004. <https://doi.org/10.1037/a0016357>
- Lamont, M., Park, B. Y., & Ayala-Hurtado, E. (2017). Trump's electoral speeches and his appeal to the American white working class. *The British Journal of Sociology*, 68, S153–S180. <https://doi.org/10.1111/1468-4446.12315>
- Markus, H. R. (2017). American = Independent? *Perspectives on Psychological Science*, 12(5), 855–866. <https://doi.org/10.1177/1745691617718799>
- Markus, H. R., & Kitayama, S. (2010). Cultures and selves: A cycle of mutual constitution. *Perspectives on Psychological Science*, 5(4), 420–430. <https://doi.org/10.1177/1745691610375557>
- McCall, L. (2013). *The undeserving rich: American beliefs about inequality, opportunity, and redistribution*. Cambridge University Press.
- McCall, L., Burk, D., Laperrière, M., & Richeson, J. A. (2017). Exposure to rising inequality shapes Americans' opportunity beliefs and policy support. *Proceedings of the National Academy of Sciences*, 114(36), 9593–9598. <https://doi.org/10.1073/pnas.1706253114>
- McLaughlin, K. A., Conron, K. J., Koenen, K. C., & Gilman, S. E. (2010). Childhood Adversity, Adult Stressful Life Events, and Risk of Past-Year Psychiatric Disorder: A Test of the Stress Sensitization Hypothesis in a Population-based Sample of Adults. *Psychol Medicine*, 40(10), 1647–1658. <https://doi.org/10.1017/S0033291709992121>
- McMahon, J. (2015). Behavioral economics as neoliberalism: Producing and governing homo economicus. *Contemporary Political Theory*, 14(2), 137–158. <https://doi.org/10.1057/cpt.2014.14>
- Mo, C. H., & Conn, K. M. (2018). When Do the Advantaged See the Disadvantages of Others? A Quasi-Experimental Study of National Service. *American Political Science Review*, 112(4), 1016–1035. <https://doi.org/10.1017/S0003055418000412>
- Newman, B. J., Johnston, C. D., & Lown, P. L. (2015). False Consciousness or Class Awareness? Local Income Inequality, Personal Economic Position, and Belief in American Meritocracy. *American Journal of Political Science*, 59(2), 326–340. <https://doi.org/10.1111/ajps.12153>
- Norton, M. I., & Ariely, D. (2011). Building a better America—one wealth quintile at a time. *Perspectives on Psychological Science*. <https://doi.org/10.1177/1745691610393524>
- NYGovCuomo. (2020). *Archive: Governor Andrew Cuomo Tweet*. Twitter. <https://twitter.com/NYGovCuomo/status/1245021319646904320?s=20>
- Oishi, S., Kesebir, S., & Diener, E. (2011). Income inequality and happiness. *Psychological Science*, 22(9), 1095–1100. <https://doi.org/10.1177/0956797611417262>
- Owoseje, T. (2020, March 23). *Coronavirus is "the great equalizer," Madonna tells fans from her bathtub*. CNN. <https://www.cnn.com/2020/03/23/entertainment/madonna-coronavirus-video-intl-scli/index.html>
- Perry, B. L., Aronson, B., & Pescosolido, B. A. (2021). Pandemic precarity: COVID-19 is exposing and exacerbating inequalities in the American heartland. *Proceedings of the National Academy of Sciences of the United States of America*, 118(8), 1–6. <https://doi.org/10.1073/pnas.2020685118>

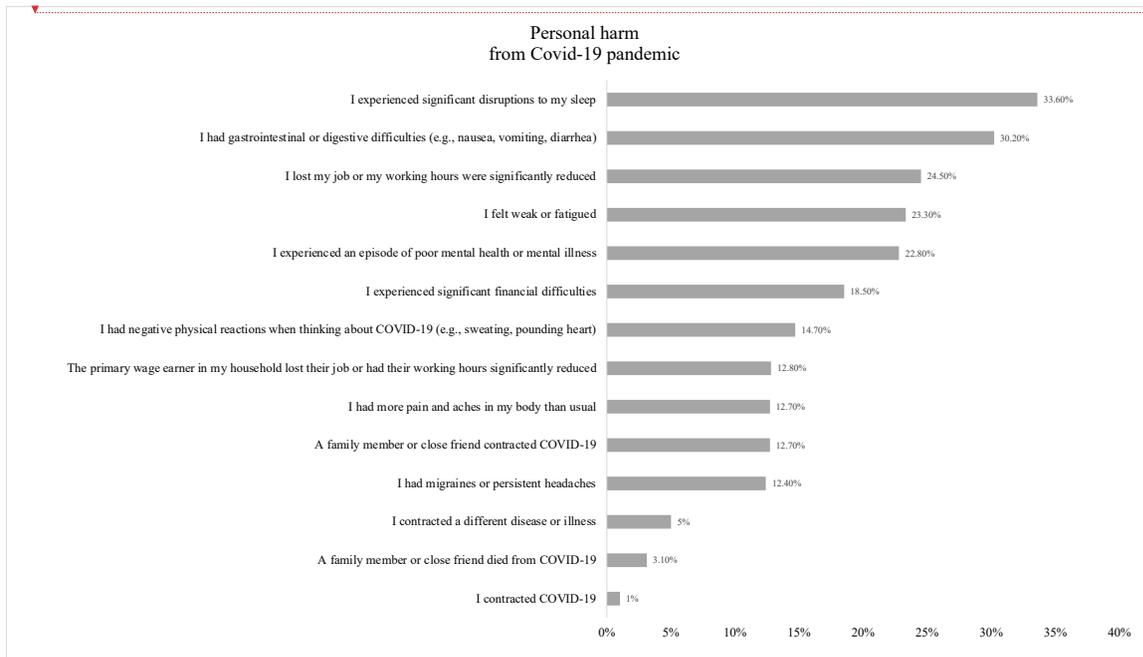
Deleted: beliefs

- Piff, P. K., Wiwad, D., Robinson, A. R., Aknin, L. B., Mercier, B., & Shariff, A. (2020). Shifting attributions for poverty motivates opposition to inequality and enhances egalitarianism. *Nature Human Behaviour*, *4*(5), 496–505. <https://doi.org/10.1038/s41562-020-0835-8>
- Putnam, R. D. (2015). *Our Kids: The American Dream in Crisis*. Simon and Schuster.
- Ray, A., Hughes, L., Konisky, D. M., & Kaylor, C. (2017). Extreme weather exposure and support for climate change adaptation. *Global Environmental Change*, *46*, 104–113. <https://doi.org/10.1016/j.gloenvcha.2017.07.002>
- Rosseel, Y. (2012). lavaan: An R Package for Structural Equation Modeling. *Journal of Statistical Software*, *48*(2). <https://doi.org/10.18637/jss.v048.i02>
- Schlesinger, M., & Heldman, C. (2001). Gender Gap or Gender Gaps? New Perspectives on Support for Government Action and Policies. *The Journal of Politics*, *63*(1), 59–92. <https://doi.org/10.1111/0022-3816.00059>
- Seery, M. D., Holman, E. A., & Silver, R. C. (2010). Whatever Does Not Kill Us: Cumulative Lifetime Adversity, Vulnerability, and Resilience. *Journal of Personality and Social Psychology*, *99*(6), 1025–1041. <https://doi.org/10.1037/a0021344>
- Selig, J. P., & Little, T. D. (2012). Autoregressive and cross-lagged panel analysis for longitudinal data. In B. Laursen, T. D. Little, & N. A. Card (Eds.), *Handbook of Developmental Research Methods* (pp. 265–278). The Guilford Press.
- Shah, A. K., Mullainathan, S., & Shafir, E. (2012). Some consequences of having too little. *Science*, *338*(6107), 682–685. https://doi.org/10.1126/SCIENCE.1222426/SUPPL_FILE/SHAH.SM.PDF
- Shedd, C. (2015). *Unequal City: Race, Schools, and Perceptions of Injustice*. Russell Sage Foundation.
- Stephens, N. M., Fryberg, S. A., Markus, H. R., & Hamedani, M. Y. G. (2013). Who Explains Hurricane Katrina and the Chilean Earthquake as an Act of God? The Experience of Extreme Hardship Predicts Religious Meaning-Making. *Journal of Cross-Cultural Psychology*, *44*(4), 606–619. <https://doi.org/10.1177/0022022112454330>
- Stephens, N. M., & Levine, C. S. (2011). Opting out or denying discrimination? How the framework of free choice in American society influences perceptions of gender inequality. *Psychological Science*, *22*(10), 1231–1236. <https://doi.org/10.1177/0956797611417260>
- Stuber, J. M. (2006). *Talk of Class The Discursive Repertoires of White Working-and Upper-Middle-Class College Students*. <https://doi.org/10.1177/0891241605283569>
- Tessler, H., Choi, M., & Kao, G. (2020). The Anxiety of Being Asian American: Hate Crimes and Negative Biases During the COVID-19 Pandemic. *American Journal of Criminal Justice*, *45*(4), 636–646. <https://doi.org/10.1007/s12103-020-09541-5>
- Webb Hopper, M., Nápoles, A. M., & Pérez-Stable, E. (2020). COVID-19 and Racial/Ethnic Disparities. *JAMA*, *323*(24), 2466–2467. <https://doi.org/10.1001/jama.2020.8598>
- Wiwad, D., Mercier, B., Piff, P. K., Shariff, A., & Aknin, L. B. (2020). Recognizing the Impact of COVID-19 on the Poor Alters Attitudes Towards Poverty and Inequality. *Journal of Experimental Social Psychology*, *93*, 104083. <https://doi.org/10.1016/j.jesp.2020.104083>

Zavala, V. A., Bracci, P. M., Carethers, J. M., Carvajal-Carmona, L., Coggins, N. B., Cruz-Correa, M. R., Davis, M., de Smith, A. J., Dutil, J., Figueiredo, J. C., Fox, R., Graves, K. D., Gomez, S. L., Llera, A., Neuhausen, S. L., Newman, L., Nguyen, T., Palmer, J. R., Palmer, N. R., ... Fejerman, L. (2020). Cancer health disparities in racial/ethnic minorities in the United States. *British Journal of Cancer* 2020 124:2, 124(2), 315–332. <https://doi.org/10.1038/s41416-020-01038-6>

Figure 1

Prevalence of Each Item of the Personal Harm Checklist at T1 (i.e., % of sample that checked “yes” for each indicator)



Delete

Figure 2

Timeline of Key Measures

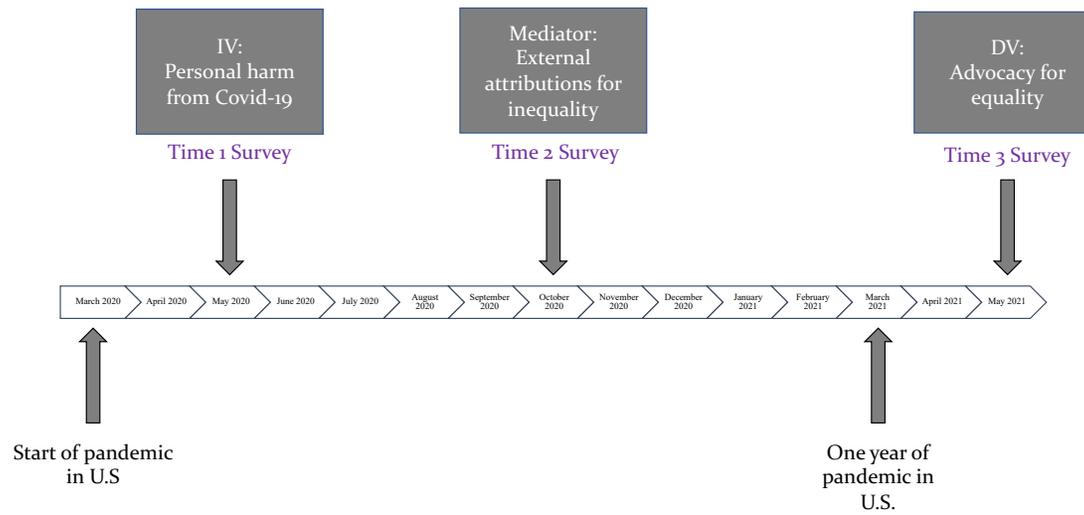
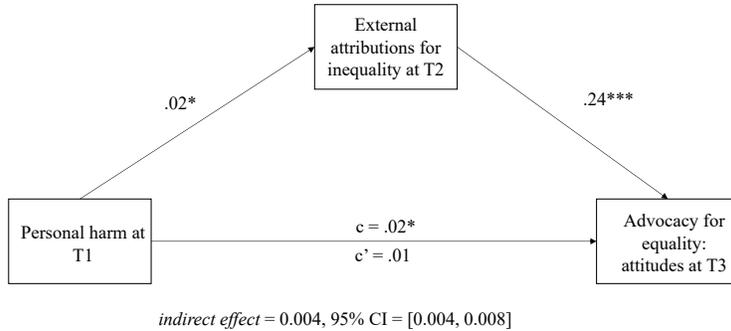


Figure 3a

Mediation Model for Advocacy for Equality Attitudes at T3

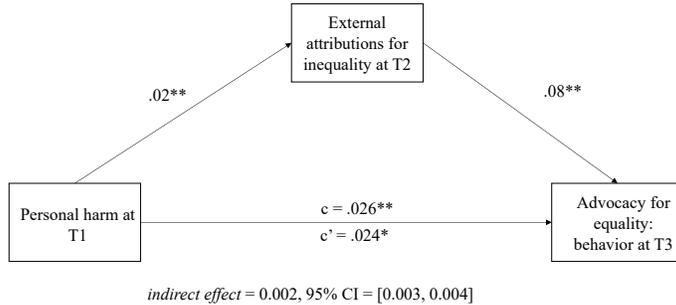


Deleted: <object>

Note. We used the PROCESS macro in SPSS (Hayes, 2017) to test our indirect effects model with 10,000 bootstrapped samples. This analysis control for individual differences (personal income, education, age, race/ethnicity, gender, and political orientation) as well as participants' "baseline" level of external attributions for inequality and "baseline" level of attitudinal advocacy for equality.

Figure 3b

Mediation Model for Advocacy for Equality Behavior at T3



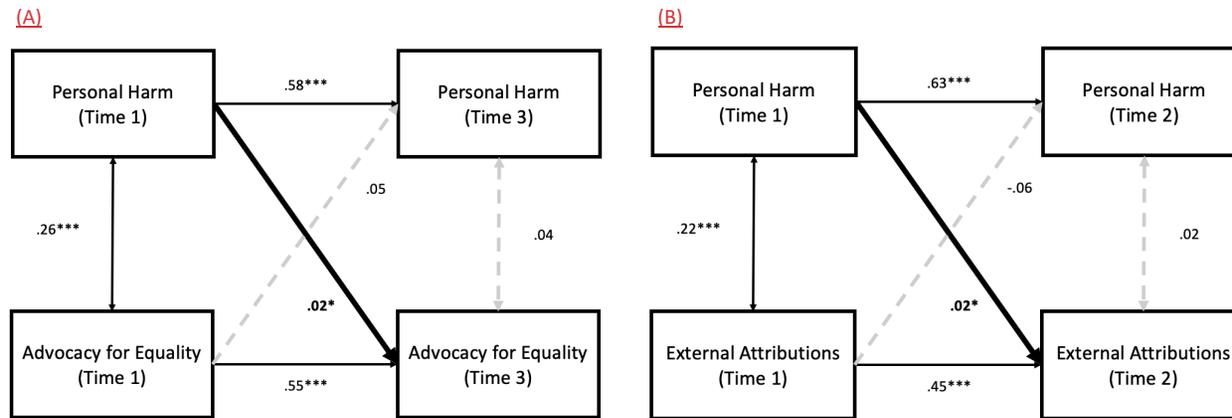
Deleted: <object>

Note. We used the PROCESS macro in SPSS (Hayes, 2017) to test our indirect effects model with 10,000 bootstrapped samples. This analysis control for individual differences (personal income, education, age, race/ethnicity, gender, and political orientation) as well as participants' "baseline" level of external attributions for inequality. We cannot control for participants' "baseline" level of behavioral advocacy for equality because we did not measure it at Time 1.

Deleted: <object>

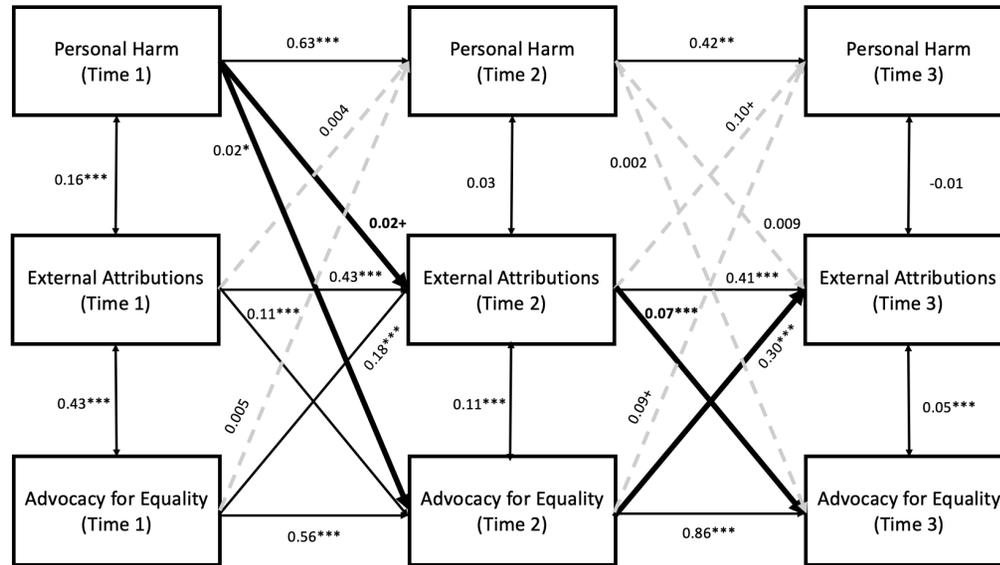
Figure 4a-b

(A) Cross-Lagged Model Linking Personal Harm at Time 1 to Advocacy for Equality at Time 3. (B) Cross-Lagged Model Linking Personal Harm at Time 1 to External Attributions at Time 2.



*Note. Parentheses represent 95% confidence intervals. + $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.*

Figure 5
Cross-Lagged Mediation Model.



Note. Parentheses represent 95% confidence intervals. + $p < .05$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 1

Regression results for attitudinal advocacy for equality, behavioral advocacy for equality and external attributions for inequality

	Attitudinal advocacy for equality at T3					Behavioral advocacy for equality at T3					External attributions for inequality at T2				
	<i>B</i>	<i>se</i>	<i>t</i>	<i>p</i>	95% CI	<i>B</i>	<i>se</i>	<i>t</i>	<i>p</i>	95% CI	<i>B</i>	<i>se</i>	<i>t</i>	<i>p</i>	95% CI
Personal harm at T1	.02	.01	2.29	.02	.00, .03	.03	.09	4.09	<.001	.02, .05	.02	.01	2.50	.01	.00, .04
Age	.00	.00	1.37	.17	-.00, .00	.00	.00	2.61	.01	.00, .01	.00	.00	2.57	.01	.00, .01
Gender	-.02	.03	-0.64	.52	-.09, .05	.01	.03	0.16	.87	-.06, .07	-.01	.04	-0.14	.89	-.08, .07
Race/Ethnicity	-.08	.04	-2.04	.04	-.15, -.00	-.02	.04	-0.49	.62	-.09, .05	-.14	.04	-3.66	<.001	-.22, -.07
Political orientation	-.12	.01	-9.21	<.001	-.15, -.10	-.16	.01	-15.65	<.001	-.18, -.14	-.18	.01	-14.99	<.001	-.21, -.16
Personal Income	-.03	.01	-2.65	.01	-.05, -.01	.01	.01	1.33	.19	-.01, .03	.00	.01	0.13	.90	-.02, .02
Education Level	-.02	.01	-1.42	0.16	-.04, -.01	.04	.01	2.72	.01	.01, .06	.02	.01	1.77	.07	-.00, .05
Baseline attitude at T1	.55	.01	42.21	<.001	.53, .58	--	--	--	--	--	.45	.02	22.31	<.001	.41, .49

Note. Baseline attitudes reflect the baseline attitude of the central dependent variable in each regression. Given that we did not measure behavioral advocacy for equality at T1, this regression does not include a baseline attitude.

Formatted: Line spacing: single

Dear Dr. Kraus,

Thank you again for providing the opportunity to further revise our manuscript “Personal Harm from the Covid-19 Pandemic Predicts Advocacy for Equality.” We are grateful for your review and the constructive feedback of our work.

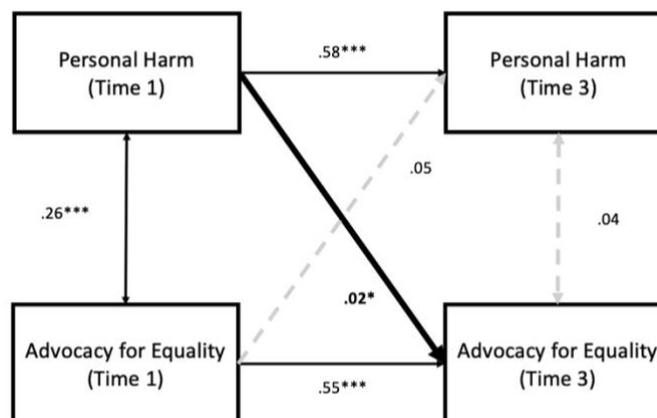
Below, we review the revisions we have made to our manuscript and explain how we have addressed your remaining concerns.

- 1. First, I think it is worthwhile to present a few things that occur in the supplement in the main text. In particular I think the cross-lagged analysis is essential in the main text as that is a gold standard kind of analysis for causal inference with longitudinal data. Your results aren't totally consistent with your model there, but I think being open about that in the main text of the paper is important for clarifying the conclusions here. We do have some support for your theoretical model across analyses and measures but not all analyses point in that direction, so there is more work to be done. Giving yourself a chance to think through alternatives to the causal model is good and this inconsistency makes that easier.**

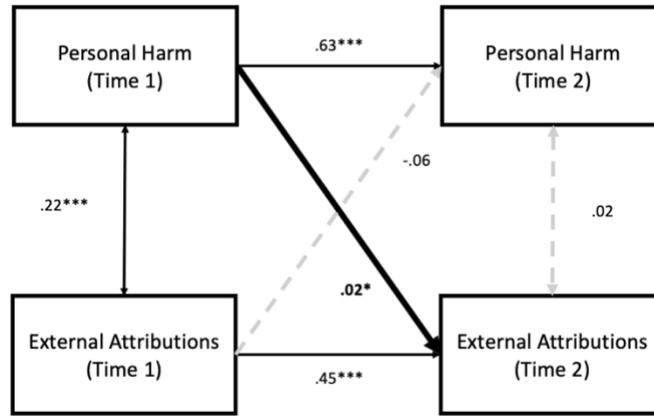
We appreciate this concern and have now included several cross-lagged analyses in the main text.

In the previous version of the paper, we included one cross-lagged analysis linking personal harm at Time 1 to advocacy for equality at Time 3 in the Supplemental Materials. This cross-lagged model generally provided support for a causal relationship between personal harm and advocacy for equality, however the reverse pathway was weaker but also significant. In reviewing this analysis and incorporating it into the main text, we chose to try to parallel the lagged models we presented in the main text as closely as possible. As such, while we did not include the standard set of controls in the previous version, in the current version of the paper, we include our standard set of controls and present the results of three separate cross-lagged models.

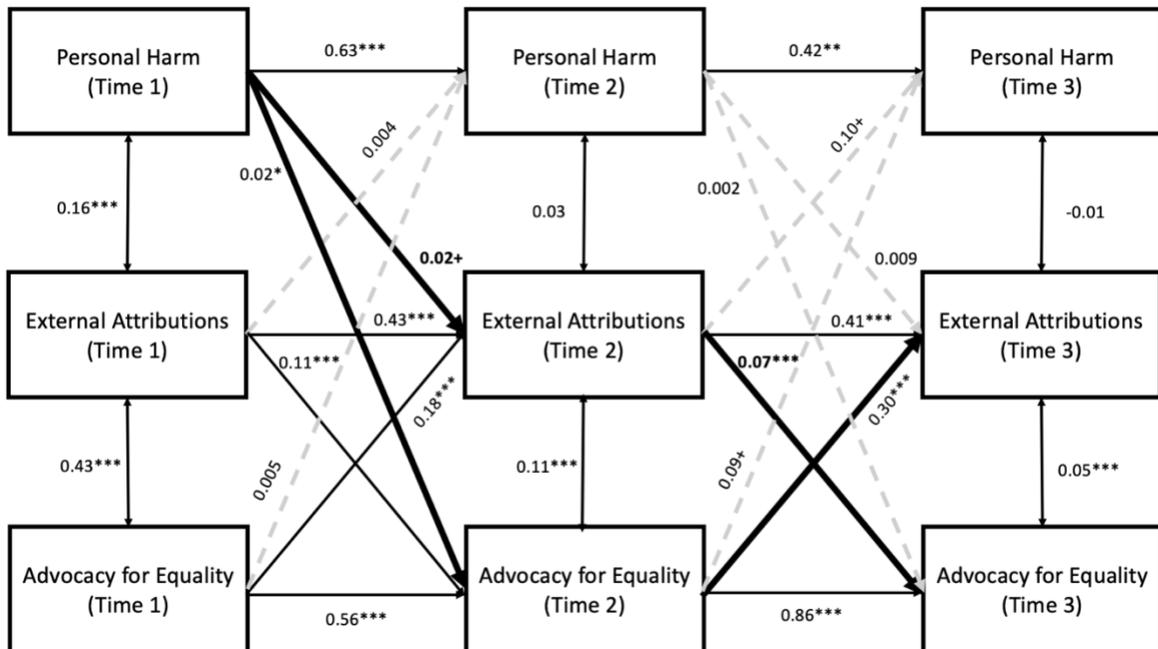
In our first model, we find that that personal harm at Time 1 predicts attitudinal advocacy for equality at Time 3, but the reverse relationship is not significant (see Figure 4a below):



In our second model, we find that personal harm at Time 1 predicts external attributions for inequality Time 2, but the reverse relationship is not significant (see Figure 4b below):



In our third model, we find support that personal harm affects attitudes towards inequality – i.e., both attributions for inequality and advocacy for equality at Time 2. In turn, both of these attitudes have reciprocal effects on one another at Times 2-3. Importantly, these attitudes at Time 1 do *not* predict the experience of personal harm at Time 2. This means that endorsing egalitarian views (i.e., external attributions and advocacy for equality) early on in the pandemic likely does not lead to experiencing greater amounts of personal harm later on in the Covid-19 pandemic. However, the process through which attitude change occurs is less definitive – our analyses suggest that both attitudes are changing concurrently and exerting reciprocal influence (see Figure 5 below):



Second, I would like to see full reporting of regression results throughout the paper. This means how each of your standard demographics relates to the DV of interest as well as predictors and mediators. This is important for interpreting and understanding results. I don't believe that is anywhere in the supplement either--I would prefer it to accompany each analysis in the results section, perhaps in one table.

Thank you for this suggestion – we agree that this is useful information to provide in the main text. We have now added this table on page 37.

Third, given some of the analysis inconsistency that enters given the cross-lagged analysis I wonder if we might temper some of our claims further in the paper. For instance, the discussion is still inclusive of causal language (at two points in the discussion harm "shapes" attributions) but some of the inconsistency in the results based on analytic strategy allow us to say, things like personal harm might shape this but what more do we need to know, how might we sample differently, and what things are still left to be studied. I hope in the revision you will embrace some more of this uncertainty in how you report the conclusions/discussion of the paper--right now there is still significant conceptual space between what is found in the data and what is interpreted.

We agreed that some of the inconsistencies in our results warranted a more nuanced discussion throughout the results and General Discussion. As such, we have now discussed what we are vs. are not able to analyze using cross-lagged models (see, for example, pg. 18), and interpret the results of our cross-lagged analyses with caution (see, for example, pgs. 21-2). Furthermore, we have substantially revised the General Discussion based on your feedback and our updated cross-lagged results.

For example, on pages 24-25 of the General Discussion, we now state:

“We also attempted to better test for causality by conducting cross-lagged analyses, which provide greater confidence that people’s attitudes were driven by their experiences with personal harm (rather than the reverse). These analyses generally provided support for our predicted causal pathways, such that personal harm from Covid-19 at Time 1 predicted external attributions for equality at Time 2 and attitudinal advocacy for equality at Time 3 (and the reverse pathways were not significant; see Figures 4a-b). However, in a cross-lagged mediation analysis, there were reciprocal relationships between external attributions and attitudinal advocacy for equality at Times 2 and 3. Therefore, while we have more evidence for the link between personal harm at Time 1 and attitudes towards inequality (i.e., both external attributions and attitudinal advocacy for equality) we cannot definitively claim that external attributions exclusively lead to advocacy for equality, but not vice versa.

Thus, while our cross-lagged analyses generally provide support for the influence of personal harm on advocacy for equality over time, they also reveal that there may be reciprocal effects between people’s external attributions and their attitudinal advocacy for equality. Taken together, our analyses suggest that the causal effects of personal harm from the Covid-19 pandemic on people’s attitudes toward equality are consistent with our

theorizing but not definitive. Future research should seek to replicate these findings to more systematically understand the process through which people's attitudes towards inequality change. For example, though following prior work, we theorized that external attributions would be the process through which people came to be more supportive of policies advocating for greater equality, our cross-lagged results suggest these two attitudes may have been changing simultaneously and exerting reciprocal influence on each other. In light of these findings, future interventions might consider whether to focus more on changing people's support for policies that advocate for greater equality directly without first seeking to change their general attributions for inequality."

We also took care to remove any mention of how personal harm "shapes" attitudes towards inequality throughout the General Discussion. While this term captures our theorizing in the Introduction, we sought to present a more cautious interpretation based upon our results in the General Discussion, as you suggested. We feel the paper has substantially improved based on your feedback.

Despite the fact that our results suggest a more complicated theoretical narrative than they did previously, we believe this narrative is more accurate and reflective of our results. Furthermore, we hope this complexity will inspire future research that seeks to understand the processes through which people's attitudes arise and change. Thank you for encouraging us to dive deeper into our data and wrestle with the nuances of our results.