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Case Report

Recognizing the Impact of COVID-19 on the Poor Alters Attitudes Towards Poverty and Inequality

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A B S T R A C T

The novel Coronavirus that spread around the world in early 2020 triggered a global pandemic and economic downturn that affected nearly everyone. Yet the crisis had a disproportionate impact on the poor and revealed how easily working-class individuals' financial security can be destabilised by factors beyond personal control. In a pre-registered longitudinal study of Americans ($N = 233$) spanning April 2019 to May 2020, we tested whether the pandemic altered beliefs about the extent to which poverty is caused by external forces and internal dispositions and support for economic inequality. Over this timespan, participants revealed a shift in their attributions for poverty, reporting that poverty is more strongly impacted by external-situational causes and less by internal-dispositional causes. However, we did not detect an overall mean-level change in opposition to inequality or support for government intervention. Instead, only for those who most strongly recognized the negative impact of COVID-19 did changes in poverty attributions translate to decreased support for inequality, and increased support for government intervention to help the poor.

The novel Coronavirus pandemic has touched nearly every individual on the planet. Its forced school closures, unemployment, and stay-at-home orders are reminders of people's collective vulnerability to factors outside their immediate personal control. Though the impact of the pandemic is widespread, its consequences have been unequally distributed across social strata (e.g., Adams-Prassl, Boneva, Golin, & Rauh, 2020; Parker, Horowitz, & Brown, 2020). Low-income workers are more likely to contract the virus (Wilson, 2020) and experience severe health risks when they do (Raifman & Raifman, 2020). The economic burdens and losses resulting from the virus have also been disproportionately borne by individuals with lower incomes who have little to no savings to cushion the economic blow (Cohen & Hsu, 2020; Gould & Shierholz, 2020; Parker et al., 2020). Perhaps in response, there has been significant media coverage of how the pandemic is exacerbating inequality, reinvigorating the national discussion surrounding the social safety net. Numerous op-eds on this topic have been published (Case & Deaton, 2020; Doubek, 2020; Fisher & Bubola, 2020; Scott, 2020), and opinion polls suggest that the majority of people believe that the pandemic has negatively affect the poor (Salvanto, de Pinto, Khanna, & Backus, 2020). Has the global pandemic—one of the largest exogenous shocks of the century—changed people's pre-existing attitudes about poverty and inequality? To explore this question, we leverage a

test of within-person attitude change and examine shifts in poverty- and inequality-related attitudes from months before the pandemic to during the pandemic.

Though it is possible that widespread impact of the pandemic may have prompted mean-level changes in attributions and attitudes toward poverty, we also probe whether changes are detectable only among individuals for whom the negative impacts of the Coronavirus on poverty are most salient. Indeed, some groups may be more attuned to the impact of the pandemic (e.g., those of lower income or the political left) and thus demonstrate stronger subsequent attitude change. Meanwhile, other groups—for example, those of higher incomes or the political right—may be motivated to downplay the severity or be less attuned to the asymmetric impact of the pandemic and its deleterious effects on economic inequality (Calvillo, Ross, Garcia, Smelter, & Rutchick, 2020). To examine these competing possibilities, we explore for whom the impact of the pandemic on the poor is salient and resulting group-based differences in the magnitude of attitude change.

Explanations of the causes of various behaviors or outcomes can reference myriad different dimensions (Heider, 1958; Weiner, 1985). In the broadest sense, human behavior or outcomes (e.g., poverty) can be seen as a result of (i) internal factors like laziness or lack of willpower (i.e., dispositional explanations), (ii) external factors including systemic

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injustice (i.e., situational explanations), or (iii) some combination thereof. While attribution theorists have parsed these dimensions into even finer categories (Hunt & Bullock, 2017), we focus on the most basic distinction between situational and dispositional attributions to examine how, and for whom, attributions for poverty may have shifted as a result of the pandemic.

Research demonstrates that attributions for poverty can change as a function of structural, environmental, and situational factors. For instance, interventions that make the situational challenges of living in poverty more salient, such as long-term contact with less financially well-off individuals or a short poverty simulation, can shift explanations for poverty and, in turn, support for efforts to alleviate it (Mo & Conn, 2018; Piff & Wiwad et al., 2020). Given past work indicating that attributions for poverty are malleable, we posit that the pandemic may have made the plight of the poor and situational causes of poverty and inequality in the United States more salient, leading (at least some) people to recognize that poverty is not a uniquely dispositional phenomenon.

Who may be most likely to update their beliefs in the face of a global pandemic? Past research on “perceptual salience”—how noticeable or visible something is—suggests that people who attune to the negative stressors and impact of the Coronavirus on the poor should be most likely to change their beliefs. Perceptual salience is a critical component of attitude change and formation (Taylor & Fiske, 1975). As noted above, the salience (and perceived importance) of the pandemic, however, may not be the same for all people and likely varies by group membership. For example, political liberals are more likely than conservatives to report concern about the public health impact of the pandemic and engage in protective behaviors (e.g., fewer trips, more physical distancing; Calvillo et al., 2020; van Holm, Monaghan, Shahar, Messina, & Surprenant, 2020). Personal relevance is another predictor of attitude change (Liberman & Chaiken, 1996). As such, attitude change might be stronger among those who have been personally impacted by the pandemic. In the present research, we explore whether various personal characteristics (i.e., age, income, political ideology, and the degree to which one has been impacted by the pandemic) influence the salience of the pandemic’s impact on the poor and subsequent within-person attitude change.

To investigate these questions, we conducted a longitudinal survey of American adults who reported their attitudes and beliefs about poverty before (Time 1) and during (Time 2) the pandemic. We pre-registered our predictions that between April 2019 and May 2020 participants would demonstrate increased situational attributions for poverty, decreased dispositional attributions for poverty, decreased support for economic inequality, and increased support for government intervention to address inequality and poverty (x <https://aspredicted.org/cj2et.pdf>). Additionally, we examined whether any general changes in within-person attitudes were related to more specific recognition of the negative impact the pandemic has had on the poor as opposed to, for example, simple individual change over time. Thus, we predicted that change in more holistic attitudes toward poverty and inequality over time would be moderated by the belief that the pandemic has had substantial impact on the financial situation of poor Americans.

1. Methods

1.1. Participants

In April 2019 (Time 1), we recruited 453 Americans ($M_{age} = 34.77$, no gender information collected) from Prolific Academic. We deliberately recruited a sample that was evenly divided among Republicans ($n = 222$) and Democrats ($n = 231$). Because this sample was initially recruited for an unrelated study, we do not have any relevant a priori justification for this sample size. In May 2020 (Time 2) we re-contacted the same individuals with an additional survey. Over a one-week span, 233 of the original participants completed a second survey (51.43%

participant retention; $M_{age} = 39.82$, no gender information collected). A sensitivity power analysis conducted with *g*power* (Faul, Erdfelder, Lang, & Buchner, 2007) indicated that a sample of 233 participants provided 80% power to detect within-subject effects as small as $d_z = 0.163$ with $\alpha = 0.05$.

We did not detect evidence for selective attrition across political ideology, income, education level, or social class. However, participants who completed both surveys were significantly older than the participants who only completed the initial survey (Table S1), and reported slightly higher dispositional attributions for poverty at Time 1 (See SOM for full description). Age-based attrition is common in longitudinal research and often does not significantly bias results (Zethof et al., 2016). In our data, age was not correlated with attitude change between Times 1 and 2 (all $ps > 0.08$; See SOM for full statistics). Controlling for political ideology, age was not correlated with attributions for poverty at Time 1 and 2 nor a recognition that the pandemic has negatively impacted the poor (see SOM for full statistics), suggesting that age-based attrition is unlikely to bias our results. The May 2020 sample maintained an even split of Democrats ($n = 116$) and Republicans ($n = 117$).

1.2. Time 1

1.2.1. Procedure

Descriptive statistics were computed from participants who completed both waves of data collection. Participants also completed additional measures for an unrelated study; all measures can be found on the Open Science Framework (<https://osf.io/x85mz/>). See SOM for all individual scale items. Unless reported otherwise, all items were presented on seven-point scales ranging from 1 (“Strongly Disagree”) to 7 (“Strongly Agree”).

At Time 1, participants reported their attributions for poverty (Guimond, Begin, & Palmer, 1989) by reporting “how important you believe each of the following factors are in explaining unemployment and poverty in the United States.” Participants rated 12 different factors, which (following Guimond et al., 1989), we averaged into separate subscales for situational ($M = 4.43$, $SD = 1.28$, $\alpha = 0.90$) and dispositional attributions for poverty ($M = 3.30$, $SD = 1.61$, $\alpha = 0.90$). Next, participants indicated their support for economic inequality on the Support for Economic Inequality Scale (Wiwad et al., 2019; $M = 2.83$, $SD = 1.68$, $\alpha = 0.95$). Finally, participants reported their support for poverty and inequality oriented government intervention (Pew Research Center, 2014) using a four-point scale ranging from 1 (“Nothing at all”) to 4 (“A Lot”). We mean composited the four items into a single measure ($M = 3.08$, $SD = 0.79$, $\alpha = 0.88$).

1.2.1.1. Additional measures. Participants completed several additional exploratory measures, including Belief in a Just World (Lambert, Burroughs, & Nguyen, 1999) and Social Dominance Orientation – Egalitarianism (Ho et al., 2015; Jost & Thompson, 2000). Because none of our pre-registered analyses involved these items, we report them only in the SOM text.

1.3. Time 2

1.3.1. Procedure

Participants completed the same primary measures as Time 1 using the same scales presented above. Specifically, participants reported their situational ($M = 4.69$, $SD = 1.31$, $\alpha = 0.91$) and dispositional attributions for poverty ($M = 3.05$, $SD = 1.65$, $\alpha = 0.93$), support for economic inequality ($M = 2.85$, $SD = 1.74$, $\alpha = 0.96$), and support for poverty and inequality-oriented government intervention ($M = 3.14$, $SD = 0.76$, $\alpha = 0.89$).

In order to measure recognition of the pandemic as an exogenous shock, participants then reported the extent to which they believe the pandemic has had a negative impact on: the U.S. economy, the financial

situations of the rich, poor, and average American, as well as their personal health, financial situation, day-to-day life, and family and loved ones. Consistent with our pre-registration, we did not mean composite these items; full items descriptive statistics for each item can be found in the SOM (Table S2). Second, participants reported their belief that poor Americans have been negatively impacted by the pandemic on four items we created. We mean composited the items into a single measure ($M = 5.92$, $SD = 1.33$, $\alpha = 0.89$). Participants then reported their willingness to personally help the poor on three items we created. Consistent with our pre-registration, we mean composited the items into a single measure ($M = 5.40$, $SD = 1.30$, $\alpha = 0.84$). Lastly, participants reported their support for government intervention to help the poor. We mean composited these two items to index support for government intervention to help the poor ($M = 4.93$, $SD = 1.85$, $r(231) = 0.796$, $p < .001$),

1.3.1.1. Additional Time 2 measures. Participants completed the same two exploratory measures as at Time 1, as well as three additional measures not collected at Time 1. Because none of our pre-registered analyses involved these items, we report them only in the SOM text.

1.4. Deviation from pre-registration

In our pre-registration (<https://aspredicted.org/cj2et.pdf>) we predicted that participants would demonstrate a decrease in dispositional, and increase in situational, attributions for poverty, a decrease in support for economic inequality, and a decrease in support for government intervention between April 2019 and May 2020. We pre-registered that we would test these four main effects with a series of paired *t*-tests. Additionally, we predicted that these attitude change effects would be moderated by the belief that the poor have been negatively impacted by the pandemic. We pre-registered that we would test this moderation with a series of linear regressions utilizing the observed difference scores (Time 2 – Time 1) for each key construct as the dependent variables.

However, since finalizing our pre-registration, we learned that Latent Change Score Modeling (LCSM; Kievit et al., 2018) is a more robust analytic strategy for several reasons. First, analyzing raw difference scores via a change score or regression approach can lead to perplexing and misleading results whereby the analyses do not accurately reflect the raw data (Kievit et al., 2018; Lord, 1967). Second, utilizing LCSMs also alleviates an additional challenge with analyzing difference scores, such that the more reliable a measure is at each individual time point, the more unreliable its difference score becomes (Allison, 1990; Kessler, 1977). Third, the LCSM approach is equivalent to a paired *t*-test when analyzing simple mean change over time (Kievit et al., 2018). Fourth, with the use of LCSMs we are able to more parsimoniously assess both our main effects and moderation predictions together with one set of succinct models. In light of these strengths, we shifted our approach given that latent change score modeling was a more appropriate analytic strategy. Critically, all analyses are consistent across the pre-registered and deviated analytic approaches with the exception of the relationships between belief that the poor have been impacted by the pandemic with (a) situational attributions for poverty and (b) support for government intervention. A full write up of the analyses as originally proposed can be found in the SOM.

2. Results

We conducted a series of LCSMs (Kievit et al., 2018) exploring whether attributions for poverty as well as support for inequality and government intervention (a) changed within an individual over time, and (b) whether this change was influenced by the belief that the poor have been negatively impacted by the pandemic (<https://aspredicted.org/cj2et.pdf>).

2.1. Model specification

We used the procedure for conducting LCSMs laid out by Kievit et al. (2018) and Malone et al. (2004). Specifically, we defined the latent change of each dependent variable (*Y*) as:

$$Y_{T2} = (1)Y_{T1} + (1)\Delta Y \quad (1)$$

Thus, by including no error term and constraining the coefficients relating the Time 1 score (Y_{T1}) and the change over time (ΔY) to 1, the Time 2 score (Y_{T2}) is the direct sum of the Time 1 score plus change. For our exploration, there are two key components to the LCSM. First, we can observe the mean latent change ($\mu\Delta Y$) of each dependent variable between Time 1 and Time 2. Second, this model structure creates a latent variable of this mean change that can then be utilized as a normal latent variable in further structural equation models in our exploratory analyses (Malone et al., 2004).

It is worth noting that we conducted each LCSM as fully latent structural model (i.e., where Y_{T1} and Y_{T2} are latent—as opposed to observed—variables), with the individual scale items as the manifest indicators. In addition to these analyses, we also conducted the following LCSMs utilizing observed variables of Y_{T1} and Y_{T2} (Figs. S1–S4). In these additional observed variable models, the $\mu\Delta Y$ coefficient is the directly observed mean difference of $Y_{T2} - Y_{T1}$. Our results did not change when we used this observed variable approach. For clarity, we only present the diagrams and coefficients for the structural models. Complete code, data, and full parameter estimates for the structural and measurement components of each model can be found on the Open Science Framework (<https://osf.io/8byzd/>).

2.2. Confirmatory analyses

First, we explored whether there was significant mean-level change in attributions for poverty as well as support for economic inequality and government intervention (See Table S3 for correlations between all modelled variables). Consistent with our pre-registered hypotheses, between Time 1 and Time 2, on average participants reported lower dispositional attributions for poverty ($\mu\Delta Y = -0.266$, $p = .019$, 95% CI $[-0.490, -0.043]$) and higher situational attributions for poverty ($\mu\Delta Y = 0.530$, $p < .001$, 95% CI $[0.320, 0.740]$). However, contrary to our pre-registered predictions, we did not find evidence for a change in the mean level of support for economic inequality ($\mu\Delta Y = 0.008$, $p = .928$, 95% CI $[-0.161, 0.176]$) or support for government intervention ($\mu\Delta Y = 0.047$, $p = .297$, 95% CI $[-0.041, 0.134]$; Figs. 1a–d). While we did not see mean-level change in support for inequality or government intervention (Table 1), we did observe significant individual variation within each variable (Support for Inequality: $\sigma^2 = 0.935$, $p < .001$, 95% CI $[0.512, 1.358]$; Support for government intervention $\sigma^2 = 0.230$, $p < .001$, 95% CI $[0.105, 0.355]$). That is, while we did not find evidence for a change in the mean level of support for inequality or government intervention across the entire sample, this was not because there was no attitude change but rather because participants varied in the direction and magnitude of change (See SOM for additional analyses). Therefore, we sought to explore whether individuals' beliefs about the poor being negatively impacted by the pandemic predicted their change in support for inequality and government intervention.

Consistent with our predictions, we found that stronger belief that the poor have been negatively impacted by the pandemic predicted within-person change in attributions for poverty as well as support for economic inequality and government intervention between Times 1 and 2 (Figs. 1a–d). Specifically, higher beliefs that the poor have been negatively impacted by the pandemic predicted greater decreases in dispositional attributions for poverty ($\beta = -0.272$, $p = .011$, 95% CI $[-0.480, -0.064]$), greater increases in situational attributions for poverty ($\beta = 0.305$, $p = .003$, 95% CI $[0.103, 0.506]$), greater decreases in support for inequality ($\beta = -0.335$, $p = .012$, 95% CI $[-0.596, -0.075]$, Fig. 2; van Langen, 2020), and greater increases in support for

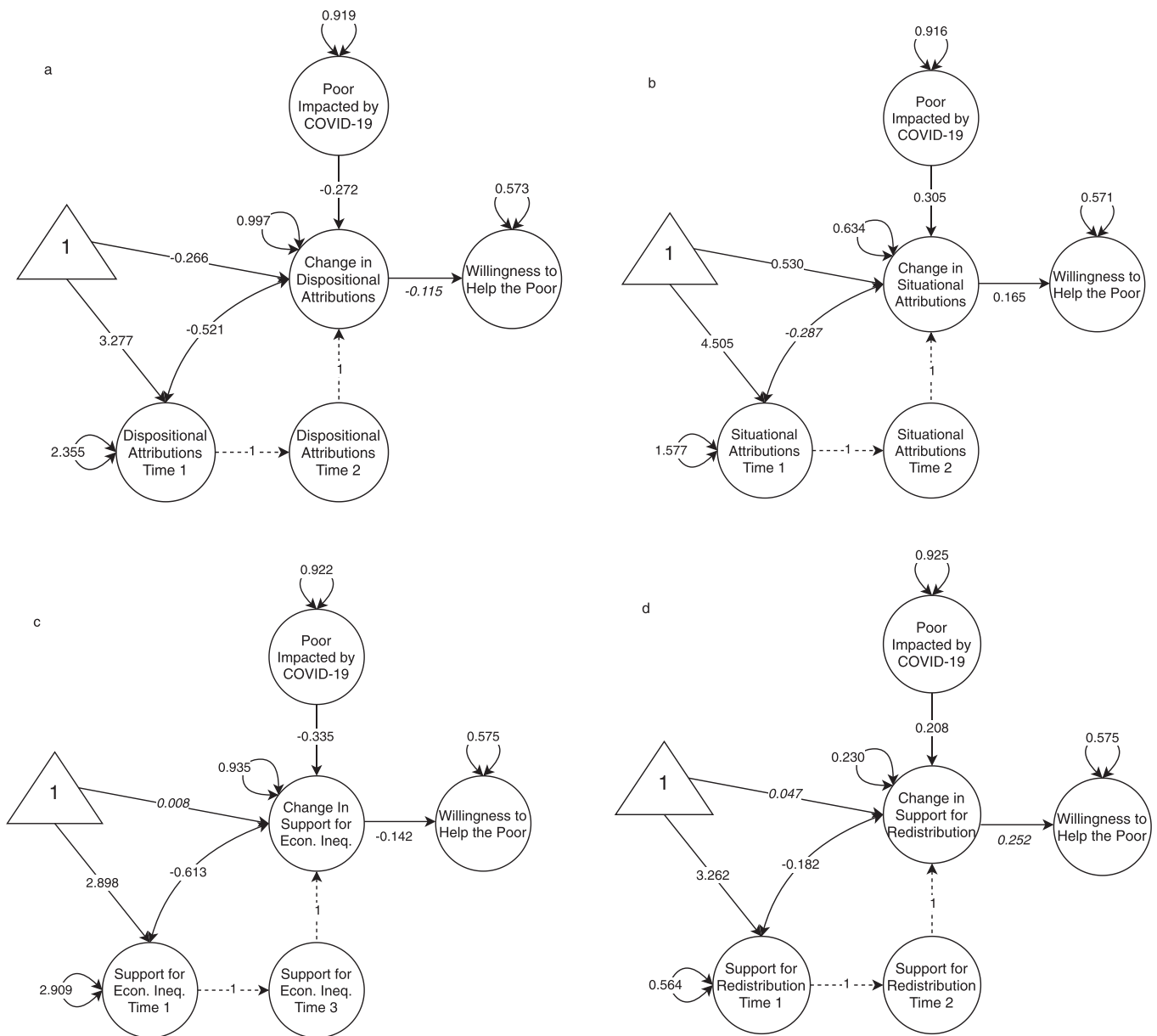


Fig. 1. Latent Change Score Models depicting the impact of beliefs about the effect of the pandemic on attitude change between April 2019 and May 2020 and willingness to help the poor. Each figure panel depicts a different focal variable. (a) Dispositional Attributions for Poverty ($n = 233$). (b) Situational Attributions for Poverty ($n = 233$). (c) Support for Economic Inequality ($n = 233$). (d) Support for government intervention ($n = 233$).

Table 1

Constructs, measures, sources, sample sizes, and descriptive statistics across both time points.

Variable	Source	Time 1 Observations	M (SD)	Time 2 Observations	M (SD)	Range
Situational attributions for poverty (8 items)	Guimond et al., 1989	233	4.43 (1.31)	233	4.69 (1.31)	1–7
Dispositional attributions for poverty (4 items)	Guimond et al., 1989	233	3.30 (1.61)	233	3.06 (1.66)	1–7
Support for economic inequality (5 items)	Wiwad et al., 2019	233	2.83 (1.68)	233	2.85 (1.75)	1–7
Support for government intervention (4 items)	Pew Research Center, 2014	233	3.08 (0.79)	233	3.14 (0.76)	1–4
Coronavirus' Impact on the Poor (4 items)	Present Work	–	–	233	5.91 (1.34)	1–7
Willingness to Help the Poor (3 items)	Present Work	–	–	233	5.39 (1.30)	1–7

Note. Individual item text for each scale can be found in the SOM. For every scale, higher means correspond to stronger endorsement of the given construct.

government intervention ($\beta = 0.208, p < .001, 95\% \text{ CI } [0.097, 0.319]$).

Thus, our confirmatory analyses show that during the pandemic, participants who more strongly recognized the negative impact of the pandemic on the poor demonstrated decreased dispositional and increased situational attributions for poverty, as well as decreased support for economic inequality and increased support for government

intervention, relative to their attitudes a year earlier.

2.3. Exploratory analyses

We conducted exploratory analyses to examine whether change in attributions for poverty, support for economic inequality, and support

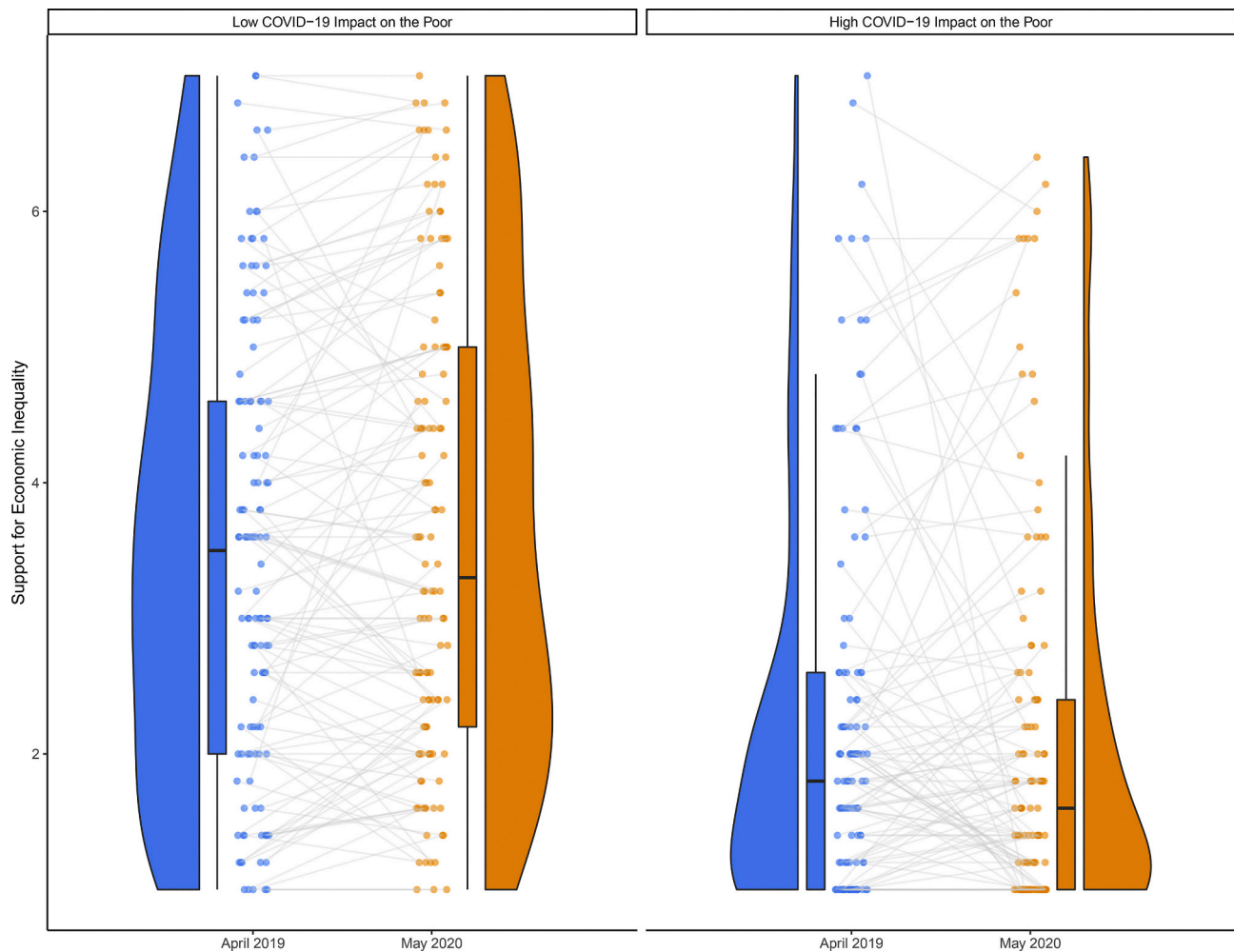


Fig. 2. Raw data ($n = 233$) depicting the average change and individual variation in Support for Economic Inequality between April 2019 and May 2020 for people low (below the median) versus high (equal to or above the median) on the belief that the pandemic has negatively impacted the poor. Boxplots depict the median and interquartile range, whiskers extend to largest and smallest value within 1.5 times the interquartile range. Distributions depict density plots for support for economic inequality at each time point within each group.

for government intervention were related to downstream (a) willingness to personally help the poor and (b) support for government action to reduce poverty specifically. While these latter two constructs are related ($r(231) = 0.513, p < .001$), they differ conceptually; the former reflects one's willingness to donate their own resources (e.g., money, food, etc.) to the poor, whereas the latter reflects support for government action to help the poor. We found that increases in situational attributions for poverty and decreases in support for economic inequality predicted both higher willingness to personally help the poor (Situational attributions: $\beta = 0.165, p = .017, 95\% \text{ CI } [0.030, 0.300]$; support for economic inequality: $\beta = -0.142, p = .044, 95\% \text{ CI } [-0.280, -0.004]$; Figs. 1b-c) and greater support for government action to reduce poverty (Situational attributions: $\beta = 0.254, p = .007, 95\% \text{ CI } [0.068, 0.440]$; support for economic inequality: $\beta = -0.246, p = .044, 95\% \text{ CI } [-0.486, -0.006]$; Figs. S5-6). In contrast, decreases in dispositional attributions for poverty and increases in support for government intervention did not predict higher willingness to personally help the poor (Dispositional attributions: $\beta = -0.115, p = .085, 95\% \text{ CI } [-0.247, 0.016]$; support for government intervention: $\beta = 0.252, p = .158, 95\% \text{ CI } [-0.097, 0.601]$; Figs. 1a and 1d) or support for government action to reduce poverty (Dispositional attributions: $\beta = -0.170, p = .111, 95\% \text{ CI } [-0.379, 0.039]$; support for government intervention: $\beta = 0.387, p = .361, 95\% \text{ CI } [-0.442, 1.261]$; Figs. S7-8). Our confirmatory analyses suggest that the pandemic is related to meaningful change in attitudes surrounding

poverty, inequality, and government intervention. Our exploratory analyses further suggest that the attitude changes surrounding dispositional attributions for poverty and tolerance for inequality predict willingness to engage in and support efforts to help the poor.

We also explored whether recognizing the impact of the pandemic on the poor, and the resulting attitude change, was related to various demographic characteristics. In order to test this question, we first conducted a series of linear regressions predicting recognition that the poor have been negatively impacted by the pandemic. We found that neither age ($\beta = -0.075, p = .255$) nor the degree to which a participant was personally impacted by the pandemic ($\beta = 0.021, p = .747$) was related to recognition that the poor have been negatively impacted by the pandemic. However, we found that Democrats (versus Republicans; $\beta = -0.402, p < .001$) and lower income individuals ($\beta = -0.146, p = .026$) more strongly recognized the impact of the pandemic on the poor.

Given that Democrats and lower income individuals more strongly recognize the impact of the pandemic on the poor, it is possible that they demonstrate stronger attitude change between April 2019 and May 2020. In order to explore this question, we ran a series of multigroup LCSMs that were identical to our confirmatory models with the addition of both party identification ($-1 = \text{Democrat}$ and $1 = \text{Republican}$) and median-split income ($-1 = \$0\text{--}\$59,999$ and $1 = \$60,000+$) entered as grouping factors. Specifically, we investigated whether groups differed on (a) mean attitude change and (b) the moderating effect of recognizing

the impact of the pandemic on the poor (full model depictions and coefficients can be found in Figs. S9-S16). For each of the original models (i.e., Figs. 1a-d) we first specified the grouping factor. Next, we ran the model twice: once in which all parameters are free to vary, and once in which a parameter of interest was held constant between the two groups. To test whether a specific grouping factor (e.g., political party identification) impacted a parameter of interest, we used an equality-constrained likelihood ratio test (Kievit et al., 2018). This test involves comparing two models: one where all parameters are free to vary, and one where the parameter of interest is held constant between the two groups. If the constrained model fits the data significantly worse (e.g., we reject the null hypothesis), we can conclude that the fixed parameter is meaningfully different between groups because constraining the parameter of interest to be equal between the two groups worsened the model fit.

Political Ideology. We found that there were no differences between Democrats and Republicans on overall change in dispositional ($\chi^2 = 1.171, p = .279$) or situational attributions for poverty ($\chi^2 = 2.247, p = .134$), support for economic inequality ($\chi^2 = 0.771, p = .380$), or support for government intervention ($\chi^2 = 0.483, p = .487$). However, we did find support for ideological differences in how recognition of the pandemic's impact on the poor influenced attitude change. Specifically, Democrats (relative to Republicans) who more strongly recognized that the pandemic has impacted the poor displayed stronger increases in situational attributions for poverty ($\chi^2 = 5.195, p = .023$) and support for government intervention ($\chi^2 = 11.228, p < .001$) as well as a stronger decrease in support for economic inequality ($\chi^2 = 21.451, p < .001$). Importantly, recognition of the impact of the pandemic on the poor was only associated with increases in situational attributions for poverty (Democrats: $\beta = 0.600, p = .001$; Republicans: $\beta = 0.083, p = .409$) and reductions in support for economic inequality (Democrats: $\beta = -0.723, p < .001$; Republicans: $\beta = -0.163, p = .258$) among Democrats. Recognition of the pandemic's impact on the poor predicted increased support for government intervention among both Democrats ($\beta = 0.384, p < .001$) and Republicans ($\beta = 0.123, p = .043$). These findings suggest that while mean-level attitude change was similar across ideological lines, Democrats—relative to Republicans—who recognized the impact of the pandemic on the poor demonstrated stronger attitude change.

Income. We found no evidence for differences in either mean level attitude change or pandemic-influenced attitude change between high- and low-income participants (all $ps > 0.151$; See SOM for full chi-square tests). Additionally, there was no association between personal impact of the pandemic and income ($r(231) = 0.011, p = .873$). This finding contrasts with research showing that low-income individuals tend to be more impacted by the pandemic (e.g., Raifman & Raifman, 2020; Wilson, 2020) and thus might demonstrate stronger attitude change (Liberman & Chaiken, 1996). Our analyses suggest that the pandemic has not disproportionately shifted attitudes about poverty, inequality, or government intervention across social class.

3. Discussion

The pandemic raised national awareness of the struggles of the working poor and how factors beyond personal control can contribute to poverty. Did this increased awareness shift how people understand and respond to poverty? In a pre-registered, two-wave longitudinal study spanning over one year, we found that exposure to a singular, salient exemplar of the situational causes of poverty (i.e., the impact of the pandemic on the poor) can lead to a shift in general attitudes. Specifically, recognizing the impact of the pandemic on the poor was related to decreased dispositional attributions for poverty as well as increased situational attributions for poverty, opposition to inequality, and support for government intervention. Additionally, within-person increases in situational attributions for poverty and opposition to inequality in turn predicted a higher willingness to help the poor. In line with previous research (Piff & Wiwad et al., 2020), we also found that changes in

attributions for poverty predicted increased opposition to inequality and support for government intervention.

Additionally, we explored whether different demographic groups were more likely to recognize the impact of the pandemic on the poor and demonstrate stronger attitude change. While neither age nor personal impact of the pandemic was related to recognizing the impact of the pandemic on the poor, both political ideology and income were associated with recognizing this impact. In further exploration, we found that Coronavirus-influenced increases in situational attributions for poverty, opposition to inequality, and support for government intervention were significantly stronger among Democrats relative to Republicans. There were, however, no differences across median-split high- and low-income individuals. Overall, this suggests that Democrats were more likely to recognize the impact of the Coronavirus on poverty and inequality, and more likely to change their attitudes as a result.

Of course, we are not able to account for all world events, environmental change, and personal growth that may influence within-person attitude change. However, our analytic approach has demonstrated a direct link between recognition of the impact the pandemic has had on the poor as one significant predictor of attitude change. Thus, while this is certainly not the only factor influencing change, the present work suggests that the pandemic has shifted underlying beliefs about poverty and egalitarian attitudes.

Interestingly, we found mean-level attitude change in attributions for poverty but not support for economic inequality or government intervention. One potential explanation for this finding is that most people were not aware of pandemic-driven increases in economic inequality and thus did not experience greater concern about economic inequality or support for government intervention to alleviate it. Additionally, past research has found that even when opposition to inequality increases, support for government policies that address inequality remains low partly because people do not trust the government to enact such policies (Kuziemko, Norton, Saez, & Stantcheva, 2015). While we do not have data on trust in the government within our sample, the generally low level of trust in the United States government during the pandemic is a plausible explanation for why we observed shifts in broad attributions for poverty but not in policies aimed at addressing poverty and inequality.

Previous research has demonstrated that beliefs about poverty are an important driver of support for economic inequality and government intervention (Piff & Wiwad et al., 2020). Here we build upon this previous research and provide evidence that the pandemic, an external shock and situational cause of poverty, has fostered some opposition to inequality and support for government intervention. The present research suggests the recent pandemic may provide an opportunity to leverage the global spotlight on poverty and inequality (Fisher & Bubola, 2020) to exact meaningful social change.

There are multiple open questions for future research. First, it is critical to understand whether (and how) these attitude changes translate to actual behavior, such as personal donations or voting for policies that help the poor. Emerging evidence is suggestive of such an association. Research has found that support for a Universal Basic Income in the United Kingdom is higher during the pandemic than under normal circumstances (Nettle, Johnson, Johnson, & Saxe, 2020). It will be important to test whether similar patterns are observable in the United States.

Second, future research should help shed light on the causal connection between the pandemic and attitude change. Here, we show that during the pandemic, beliefs about the impact of the pandemic are associated with a change in attitudes from a year earlier. Although these findings are consistent with the idea that the pandemic caused the attitude changes, there are alternative interpretations. For example, it is possible that participants changed their attitudes toward inequality in the time since our last study, and this change in their attitudes made them more open to recognizing the impact of the pandemic. We have

taken steps to address this by using a unique research and analytic design to measure what degree of within-person attitude change is predicted by recognition of the impact of the pandemic. Despite this, it is difficult to completely rule out how this attitude change is influenced by regression to the mean (Davis, 1976) or other, unmeasured, phenomena.

Lastly, the observed relationships are likely to be influenced by local levels of Coronavirus infections, restrictions, and consequences where a person resides. For example, we might expect greater attitude change if someone lives in a county with high (versus low) rates of Coronavirus infections, greater job loss, and stronger restrictions. Thus, future research should explore how the observed attitude change is moderated by the localized impact of the pandemic.

Nevertheless, the present research suggests that the pandemic has for some, but not all, exacted meaningful shifts in egalitarianism. Amidst this crisis, there has been greater awareness of how extraneous factors can exacerbate poverty; here, we show that this attention has the potential to foster shifts in attitudes toward inequality and the poor. While the pandemic will likely exacerbate already record-setting inequalities in the United States by disproportionately harming the poor, it may also mobilize those who see its damage to help society's most economically vulnerable.

Open practices statement

All data, materials, and data-analysis scripts, and supplemental information supporting the findings and procedures in this manuscript are publicly available on the Open Science Framework and can be found here: <https://osf.io/8byzd/>. The design and analysis plans were pre-registered and the pre-registration document can be found here: <http://aspredicted.org/cj2et.pdf>. All changes to the pre-registration are reported here in the manuscript.

Declaration of Competing Interest

The authors declare no competing interests.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jesp.2020.104083>.

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