EPR: A Theory of Prejudice Reduction and Support for Racial Policies*

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Abstract
This paper develops Engagement, Perspective-Taking, and Recalibration (EPR), a theory of prejudice reduction and support for racial policies. I argue that interventions using engagement to encourage perspective-taking reduce prejudice and recalibrate the subject's emotional orientation toward an out-group. Using EPR, I develop an intervention to reduce prejudice toward African Americans and increase support for racial equity policies. The intervention encourages individuals to adopt the perspective of a Black man who experiences prejudice and make choices how to respond. Using an experiment in which 1,261 adults completed either the treatment or a placebo task, I find that the intervention significantly reduces prejudice, with the largest effects among those with the highest baseline animus. Reducing prejudice increases support for policies aimed at helping Black people. These results provide insight into the nature of prejudice and its impact on racial policies, and offers a low-cost intervention to increase tolerance.

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The pressing need for research reducing anti-Black prejudice is highlighted by data indicating that racism's deleterious impacts have persisted or worsened in recent years. The life expectancy, educational attainment, and economic success of White and Black Americans have never reached parity (Arias and Xu 2019; Creamer 2020). Nationwide, hate crimes have increased (FBI 2018) and the majority of arrests for domestic terrorism in 2019 were motivated by White supremacy (Chalfant 2019). Racially motivated hate crimes impact even the most unlikely of victims, including the 2017 murder of Lieutenant Richard Collins, III on the campus of the University of Maryland and the 2020 murder of Ahmaud Arbery in a residential Georgia neighborhood.

Yet, research evaluating the effectiveness of prejudice reduction techniques shows mixed results, and rarely explores the implications for policy attitudes. For example, while large literatures exist on inter-personal contact and perspective-taking, the results from them are mixed at best, and often have been tested on narrow samples (e.g., Paluck et al. 2019). Moreover, many of these interventions are not scalable since they require bridging pervasive geographic divides, or extensive, moderated instructions. Indeed, in a recent meta-analysis of interventions published in the past decade, Paluck et al (2021) conclude that much research is "misguided if the aim is to provide actionable, robust, evidence-based recommendations for reducing prejudice in the world" (535).

Their conclusion highlights the lack of focus on practical, implementable solutions to reduce prejudice, with a noteworthy absence of research on scalable interventions that alter prejudice and shape attitudes about racial equity policies. To achieve implementable solutions, the intervention must be scalable, effective, and recognize the empirical realities of the world in which we now live. This means recognizing that much of our country continues to be highly

racially segregated (Williams and Emamdjomeh 2018), that contact interventions have the potential to diminish support for social change – particularly among members of minority groups (Hässler et al. 2020) – and that traditional and virtual-reality perspective-taking interventions can produce backlash effects (Epley, Caruso, and Bazerman 2006; Oh et al. 2016; Pierce et al. 2013) and be difficult to implement.

Similarly, as mentioned, there is limited research on the impact of prejudice reduction on support for race conscious policies. The few studies that do evaluate the impact of prejudice reduction and support for policies benefiting stigmatized out-groups have found mixed results, with many finding prejudice reduction *without* commensurate increases in support for policies (e.g. Bor and Simonovits 2021; Finseraas and Kotsadam 2017).

Positing a comprehensive theory of prejudice reduction and support for racial policies addresses an important question in American public opinion research: There is a longstanding debate about whether racism motivates opposition to racial policies (Kinder and Sanders 1996; Rabinowitz et al. 2009) or if opposition is rooted in race-neutral principles central to conservative ideology, including limited government and individualism (Sniderman and Piazza 1993; Sniderman and Tetlock 1986). If opposition stems from ideological principles, such as the belief that government support hurts individuals by making them dependent on the state, then reducing prejudice toward the policy's beneficiary should not impact preferences. Yet, if opposition to policies benefiting African Americans is rooted in animus, then reducing prejudice should increase support. Despite this longstanding debate, the few studies that investigate policies often do not offer theoretical explanations for why prejudice reduction should be linked to policy support (but see Bor and Simonovits 2021; c.f. Todd, Bodenhausen, and Galinsky 2012).

To better understand the nature of prejudice and its causal link with support for racial policies, I develop and test Engagement, Perspective-Taking, and Recalibration (EPR), a theory of prejudice reduction and political attitudes. Drawing on research from psychology, cognitive neuroscience, and political science, I argue that engagement through interactive role-play encourages perspective-taking and other forms of empathy. I further argue that people do not automatically empathize with individuals unlike themselves, yet empathy is crucial to maintaining an equitable mindset and resisting the worst impulses of prejudice. Engagement through role-play helps individuals overcome automatic empathy barriers and adopt the perspective of out-group members. This decreases prejudice and recalibrates individuals' blame appraisals and emotional orientation towards an out-group. This alters support for political preferences informed by prejudice, including race-conscious policies.

To test this theory, I develop and experimentally evaluate an intervention that encourages individuals to adopt the perspective of an African American man. They read a story depicting experiences of racism and choose how to respond to encounters as though they were the protagonist. The intervention is deployed online, making it a low-cost treatment that could be readily implemented by organizations wishing to combat prejudice. My technique differs from other modes of prejudice reduction such as those based on real or imagined contact (Finseraas and Kotsadam 2017; Husnu and Crisp 2010), traditional perspective-taking (Batson et al. 1997; Galinsky and Moskowitz 2000), immersive virtual reality perspective-taking (Banakou, Hanumanthu, and Slater 2016), moral education (Li et al. 2019), and diversity training (Bezrukova et al. 2016) in that EPR is readily scalable, cost-effective, and able to reach individuals who live in racially homogenous areas—and in that it has been empirically evaluated on a large, diverse sample, distinct from most interventions of the past decade (Paluck et al.

2021). Additionally, EPR interventions harness well-established neural biases through engagement to circumvent the deleterious effects of prejudice.

A dual-wave experiment evaluated the treatment's efficacy on 1,261 adults recruited by the survey firm Qualtrics in summer 2020. The first wave collected demographics, baseline prejudice, and baseline support for government assistance to Black people. In the second wave, those randomly assigned to the treatment completed the intervention and those in the control completed a placebo task. Next, all participants completed items measuring their prejudice and support for racial policies. Results indicate that the treatment significantly reduces racial resentment, negative affect, and belief in anti-Black stereotypes—with the largest effects among those with the *highest* baseline prejudice. Additionally, the treatment increases support for race-conscious policies including additional changes to ensure racial equality, affirmative action, and government aid to Black people. These results suggest a critical link between individual racism and support for policies that would combat entrenched, institutional, forms of racism.

Background: The Affective Component of Prejudice

Explanations for the source of prejudice are numerous. Some argue that prejudice stems from competition between groups and the majority's desire to preserve a superior social status (Blumer 1958; Bobo 1999; Quillian 1995). Alternative approaches emphasize personality (Adorno et al. 1950), demonstrating that certain traits and backgrounds lead to more prejudice than others. Cognitive or socio-psychological theories stress automatic mental processes and the desire to maintain a positive self-image by preferring one's in-group at the expense of out-groups (Tajfel 1970). The most persuasive theoretical approach to understanding prejudice is from Gordon Allport (1954). Allport emphasized the structure of between-group interactions on

cognitive processes and personality development, yet argued that *all* of the theories of prejudice explain aspects of the phenomenon and none *alone* do so completely.

Despite these differences, one key commonality is the importance of affect and emotion. Even theories that emphasize prejudice as rooted in realistic conflict admit prejudice is an affect-laden orientation. Thus, while the root causes may be disputed, scholars generally agree that prejudice involves two components: affect (e.g., dislike), and overgeneralized, incorrect beliefs (e.g., stereotypes) (Allport 1954). Efforts to reduce prejudice can target the affective component (feelings toward the group), the incorrect beliefs, or both. Yet the crucial distinction between a prejudice and a simple prejudgment is the emotional component, with prejudice actively resistant to new knowledge (Allport 1954, 9).

This distinction suggests that efforts to reduce prejudice by combating beliefs will fail. Indeed, theories of motivated reasoning argue that such interventions will prove ineffective because individuals evaluate information biased in favor of their current beliefs (Kunda 1990; Shoda, Mcconnell, and Rydell 2014)—a biased individual is motivated by their distaste to maintain their disdain despite evidence to the contrary. As Allport explained, "Certain [fact-based] programs designed to reduce prejudice succeed in altering beliefs but not in changing attitudes" because "beliefs, to some extent, can be rationally attacked and altered. Usually, however, they have the slippery propensity of accommodating themselves somehow to the negative attitude which is much harder to change … The process is one of rationalization—of the accommodation of beliefs to attitudes" (1954, 13-4). Research finding informational interventions are only weakly or not at all successful confirms this difficulty (Hopkins, Sides, and Citrin 2019; Stephan and Stephan 1984; Williamson 2019).

Successful interventions instead target prejudice's affective component. Intergroup contact interventions argue that contact reduces prejudice by increasing positive feelings toward the out-group member, which can transfer to the out-group as a whole. Pettigrew and Tropp (2008) confirmed that affective factors are the main mediators of the efficacy of intergroup contact, concluding that these findings demonstrate consistency with the growing consensus on the centrality of affect in intergroup processes (Esses and Dovidio 2002; Smith 1993; Stephan et al. 2002). Additionally, research finds that negative emotions toward out-groups are stronger predictors of policy attitudes than general prejudice (Cottrell, Richards, and Nichols 2010). Taken together, the evidence suggests that techniques targeting prejudice's affective component by improving feelings toward out-groups attack the root of the problem. But improving feelings toward out-groups reveals a new set of challenges.

The Empathy Gap

Prejudice stands in harsh contrast to a defining characteristic of humanity—empathy, or the ability to recognize and vicariously share another's emotional state. According to the perception-action model of empathy, seeing another engage in a behavior or express an emotion activates the same neural pathways as if the observer themself were in that position (Preston and de Waal 2002). This perception-action coupling process has found support in functional magnetic resonance imaging (fMRI) studies (Bernhardt and Singer 2012; Decety and Jackson 2004).

Yet, if empathy is automatic, how can an individual maintain a prejudicial mindset and express so little concern for the well-being of out-group members? Gutsell and Inzlicht (2012) offer evidence of an "empathy gap": participants in their study who observed an in-group member experiencing sadness demonstrated similar neural activation as if they themselves were sad, indicating an automatic empathetic response; however, when they observed a sad out-group

member, participants did not demonstrate the same activation. This pattern intensified the more prejudiced they were. Xu and colleagues (2009) find similar results when subjects observed racial out-groups experiencing pain, suggesting that barriers to empathizing with out-groups are a key challenge for encouraging positive affect. That said, evidence indicates that empathy barriers are not insurmountable. Not all out-groups elicit the same degree of bias in empathetic responding, and the degree of bias depends on context (Gutsell and Inzlicht 2010, 2012). These variations indicate that an individual's degree of bias in empathetic responding can be manipulated under the right circumstances.

Reducing Prejudice Through Perspective-Taking

One promising method of encouraging empathy is through perspective-taking. According to the psychological theory of perspective-taking, encouraging a subject to adopt the perspective of an individual out-group member can encourage more positive views toward the out-group overall (Batson et al. 1997), either by encouraging the overlap of cognitive representations of the self and the out-group (Davis et al. 1996) so that positive self-evaluations transfer to out-group members (Todd and Galinsky 2014) or by increasing the salience of non-dispositional factors when explaining out-group behavior (Vescio, Sechrist, and Paolucci 2003).

Yet existing perspective-taking interventions face key limitations. Traditional perspective-taking interventions typically involve providing a photo of an out-group member and instructing participants to write about the person's perspective. This requires the researcher to provide instruction, oversight, and requires high levels of cognitive effort which may burden the participant—conditions that are difficult to implement on a large scale. Alternatively, immersive virtual-reality (VR) perspective-taking techniques require less cognitive effort on the part of participants, but are extremely expensive to produce and implement, while the speed of

technological advancements necessitates frequent updates, further increasing costs. Despite generally supportive evidence of their efficacy (Finlay and Stephan 2000; Todd et al. 2011; Todd and Galinsky 2014; Vescio, Sechrist, and Paolucci 2003), traditional and VR perspective-taking techniques have been shown to produce backlash effects when they evoke zero-sum competitions (Epley, Caruso, and Bazerman 2006; Groom, Bailenson, and Nass 2009; Oh et al. 2016; Pierce et al. 2013). Traditional perspective-taking techniques have also produced null results on attitudes (Broockman and Kalla 2021; Adida Lo and Platas 2018) and may encounter resistance if people do not want to take the perspective of a stigmatized group member (Todd and Galinsky 2014). Additionally, Eyal et al (2018) find that perspective-taking does not improve accuracy at predicting others' perspectives whereas perspective-getting (hearing an out-group member's perspective) increases accuracy and, in a recent study, may be responsible for the successful effects in perspective-taking research (Kalla and Broockman 2021). A summary of these limitations is in table 1 below.

The EPR Process

I argue that prejudice may be reduced by actively engaging subjects to facilitate perspective-taking through participation in an interactive intervention in which the subject vicariously experiences discrimination and responds.

The "engagement" step of the EPR process involves actively making decisions in the best interest of the out-group member which helps prejudiced individuals overcome the empathy barrier to experience perspective-taking (the second step of the process). Decision-making helps activate the subject's neural representation of behavior depicted in the story, which results in engagement by neural networks that simulate the action of the player-character. By facilitating the activation of the subject's neural path that most closely resembles the character's actions, the

treatment makes it easier for the subject to empathize with the main character in the narrative. Recall that fMRI studies suggest that neural activation is suppressed when observing out-group members, particularly if an individual is prejudiced toward the group.[1] By making choices and experiencing the consequences, the subject experiences action-based neural coupling, easing the ability to experience emotional coupling with the character thereby increasing empathetic response. The subject's empathetic response to the vicarious experience of discrimination increases positive affect toward the main character, which transfers to more positive affect for the out-group (e.g., African Americans), increases self–out-group merging, and increases the likelihood of explaining out-group members' behavior with non-dispositional versus dispositional factors.

Traditional perspective-taking treatments encourage the cognitive component of empathy (perspective-taking) via instruction. This is a passive approach that hedges its success on compliance with those instructions. Conversely, engaging individuals to encourage empathy

[1] Cognitive neuroscience studies find that the neural mechanisms activated when imagining performing an action and actually executing an action overlap significantly (Decety 1996). Additionally, experimental work finds that mimicking the behavior of an out-group member reduces implicit bias (Inzlicht, Gutsell, and Legault 2012). Even without the experimental subjects actively imagining performing the actions in the intervention, the mere suggestion of action can be sufficient to activate shared neural representations. As Preston and de Waal (2002) explain, "actions that are self-generated, perceived in another, imagined, or even suggested by an object seem to activate shared representations." Together, these findings provide strong support for the proposed process.

relies on well-established neural processes to help overcome empathy barriers to reduce prejudice. The intervention's interactive, simulation format also encourages increased empathy by facilitating vicariously experiencing discrimination. As Sirin, Valentino, and Villalobos (2016) explained, "members of historically oppressed groups [are] better able to experience cognitive empathy or 'put themselves in the shoes' of other minorities experiencing discrimination, especially when it mirrors their own histories. An individual's direct experience with discrimination should thus serve as a primary causal antecedent of empathy toward others … After all, to take the perspective of another person, it helps to hold a repertoire of similar experiences" (429). Prejudiced individuals might not have the experience of discrimination to aid in their ability to empathize with minorities; however, simulating the experience can add to such a repertoire. Simulation also enables perspective-getting, in which subjects receive information about the perspective of an out-group, which avoids pitfalls of traditional and VR perspective-taking techniques. See table 1 for a full comparison of EPR with other perspective-taking techniques, however the main takeaway is that EPR interventions do not *solely* reduce prejudice through perspective-taking, instead relying on thick textual description of discrimination encounters and an engaging, interactive format to encourage multiple forms of empathy and perspective-getting.

The importance of choice in overcoming empathy barriers is demonstrated by the success of interactive interventions. For instance, Simonovits, Kézdi, and Kardos (2018) reduce prejudice toward the Roma people in Hungary using a "create-your-own-adventure" online game format in which subjects navigate through a maze-like story from the perspective of a Roma adolescent experiencing prejudice. A similar study uses interactive narrative (also in a "create-your-own-adventure" format) to reduce prejudice toward Mexican migrants and increase support

for policies benefiting them (Parrott, Carpentier, and Northup 2017). Both studies' authors suspected that their intervention reduces prejudice essentially via the same mechanisms described in the perspective-taking literature, whereas similar studies characterize their techniques in the context of "serious games" and interactive narratives (Shaza et al. 2021).[2] EPR interventions build off these studies by developing a similarly scalable, interactive intervention targeting anti-Black racism, however unlike these authors, I argue that the element of choice is key to overcoming empathy barriers. Indeed, these interventions should more clearly be considered EPR interventions rather than merely interventions aimed at encouraging perspective-taking.

These first two steps of the EPR process—engagement and perspective-taking—explain how to reduce prejudice toward an out-group, in this case African Americans. The last step—recalibration—explains how this process alters policy attitudes. Each of these prejudice-reducing mechanisms recalibrates the subject's emotional orientation toward African Americans as a group and, critically, recalibrates blame appraisals. Banks (2014) found that anger activates the racial attitudes of both those who are prejudiced (racial conservatives) and those who are sympathetic (racial liberals) toward Black people; however, these groups differ in their attribution of blame for America's race problems: while racial conservatives direct their anger toward Black people, racial liberals direct their anger toward the perpetrators of racism and discrimination. This is consistent with the concept of the "deservingness heuristic" in which

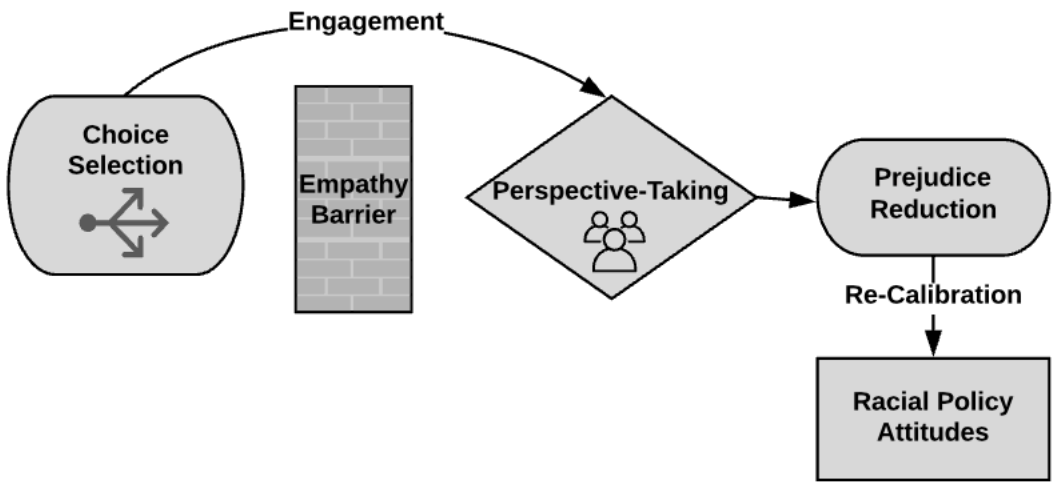
[2] "Serious games" are gamified content used for educational or training purposes in a variety of fields, including notably healthcare, where an entire journal is devoted to the study of serious games for promoting health (*Games for Health Journal*).

people categorize individuals based on who is to blame for their misfortune. For example, those viewed as lazy are themselves to blame for their misfortune whereas the unlucky are deserving of assistance (Petersen 2012).

Reducing the empathy barrier via engagement recalibrates the target of subjects' blame appraisals. By experiencing anger and frustration in response to the situations that arise while navigating the treatment, those emotions become directed at the perpetrators of racism. Moreover, empathy motivates helping behavior. Research shows that the empathy gap decreases individuals' willingness to aid needy out-group members (Cuddy, Rock, and Norton 2007); encouraging empathy through engagement should conversely increase that desire. As Arceneaux (2017) explained, "Because the out-group empathy gap shapes helping behavior in interpersonal settings, it should also influence how people evaluate public programs aimed (or perceived to be aimed) at largely helping out-groups" (71).

Similarly, Sirin, Valentino, and Villalobos (2016) argue that empathy improves intergroup attitudes and makes individuals more supportive of policies favorable toward that group. They show how minority group members, due to their shared experiences of discrimination, express greater empathy toward other marginalized groups. EPR facilitates the vicarious experience of discrimination—even among groups that have historically been spared this experience—enabling empathy to be more easily felt across group boundaries.

Figure 1. EPR Theory Summary



To summarizes the EPR process (see Figure 1): engagement through choice selection encourages perspective-taking and emotional congruence with the main character. This results in a recalibration of blame appraisals for race relations, which alters policy attitudes about the group.

EPR leads to the following predictions. First, EPR treatments will evoke empathy, which will reduce prejudice. Research has identified several components of empathy (Batson and Ahmad 2009; Davis 1994; Finlay and Stephan 2000; Gladstein 1983) including (1) cognitive and (2) emotional empathy. Cognitive empathy, or perspective-taking, involves imagining how one would feel in another person's situation or imagining another's perspective given their situation. Emotional empathy involves feeling another's emotions (parallel empathy) and concern for a needy person (empathetic concern) which includes compassion and sympathy (Batson and Ahmad 2009, 144). I test for evidence of these components among treated subjects, expecting subjects will express higher levels of empathetic versus non-empathetic emotions.

H1 (Empathy Hypothesis): EPR treatments should encourage perspective-taking, parallel empathy, and empathetic concern.

The treatment should also reduce multiple forms of prejudice, including racial resentment, belief in stereotypes, and negative affect. Racial resentment is a modern form of racism characterized by anti-Black affect and the belief that racial inequities stem from African Americans' failure to work hard (Kinder and Sanders 1996). Explicit stereotypes are characterized by the belief that Black people are lazier, less intelligent, or more violent than other groups. Favorability or affect toward the group is characterized by positive ratings of the group and is typically measured using feeling thermometers (Kinder 2013). Since all forms of prejudice contain a component of anti-Black affect (Allport 1954), treatments which increase empathy should reduce prejudice regardless of the form.

H2 (Prejudice Hypothesis): EPR treatments should reduce racial resentment, negative affect toward Black people, and anti-Black stereotypes.

The greatest effects should be on those with the highest baseline prejudice. In their day-to-day lives, highly prejudiced individuals are unlikely to be exposed to situations that would mitigate this bias. Despite reforms to strike down legal barriers to integration, much of the US continues to be highly segregated (Williams and Emamdjomeh 2018). Given the tendency to engage in selective exposure to information that matches preexisting beliefs (Iyengar and Hahn 2009; Stroud 2008), prejudiced individuals may consume information that ignores the empirical realities of racial inequality and the perspectives of people of color. Taken together, highly prejudiced individuals may be less likely to have encountered out-group perspectives, making the treatment even more novel. Those with the lowest baseline prejudice will demonstrate weaker responses to the treatment due to floor effects.

H3 (Conditional Effects Hypothesis): EPR treatments should reduce prejudice, with the largest effects among those with the highest baseline prejudice.

Reducing prejudice will also alter attitudes toward racial policies. Altering who the individual feels is to blame for racial problems by shifting attribution away from African Americans and toward the forces of racism and discrimination should increase support for policies redressing racial inequities. Observational research demonstrates links between prejudice and opposition to race-conscious policies, finding that racism dominate race-neutral factors (such as ideology) when predicting policy preferences (Bobo 1991; Kinder and Sanders 1996; Sears et al. 1997). More recently, researchers find that racism only predicts support for affirmative action helping Black people (Rabinowitz et al. 2009), which received lower support than programs benefiting women and the poor (Reyna et al. 2005).

H4 (Racial Policies Hypothesis): Reducing prejudice will increase support for policies benefiting Black people.

Table 1. Comparison of Perspective-Taking Techniques

	TECHNIQUE		
	EPR	**Traditional Perspective-Taking**	**VR Perspective-Taking**
Method of Achieving Perspective-Taking	Engagement– Textual, thick description, and choices.	Instructional– Textual or video stimuli sometimes provided.	Engagement– VR games (video+ custom computer program+ headset/ body sensors+ operational instruction) and choices
Includes Perspective-Getting?	Yes	Mixed (Eyal, Steffel, and Epley 2018; Kalla and Broockman 2021)	No
Effective when evoking zero-sum competitions?	Yes- Job/ Promotion scenarios	No (Epley, Caruso, and Bazerman 2006; Pierce et al. 2013)	No (Groom, Bailenson, and Nass 2009; Oh et al. 2016)
Cost to Scale	$	Unclear or Impractical	$$$
Discrimination Encounters?	Yes	Mixed	Mixed

Level of Emotive Content	High	Low-Medium	Low-Medium
Level of Cognitive Effort	Low	High	Low
Includes at least 1 image of out-group	Yes	Mixed	Yes

Research Design

The experiment proceeded as follows: between June 2 and July 2, 2020, the survey firm Qualtrics recruited 2,225 adult U.S. citizens to complete the first wave of the study.[3] Wave One gathered demographics, baseline racial resentment, feeling thermometers to measure negative affect, and support for government aid to Black people. After a buffer of at least seven days, participants were invited to complete Wave Two. This buffer period ensured subjects were not primed to think of race prior to the experimental portion of the study and alleviated pressures to answer questions consistently before and after the manipulations (Mendelberg 2008). Between July 2 and 20, 2020, 1,261 participants completed Wave Two. Despite attrition between waves, respondents who completed Wave Two did not significantly differ from respondents who did not (see Appendix p. 2 for details). Wave Two proceeded as follows. First, participants were randomly assigned to either the treatment or control condition.[4] To increase the precision of

[3] Participants consented to a "current events study." Participants were debriefed regarding the study's true purpose after completing wave two. This research was approved under IRB #1504820-1.

[4] Statistical tests indicate randomization was successful as treatment assignment could not be predicted by available indicators (party, ideology, race/ethnicity, gender, residing in the South, sexual orientation, or education). For those ages 18-34, $= 6.37, p = 0.61$; ages 35 to 44, $=$

estimates and to ensure conditions were balanced given a higher-than-expected rate of older adults in the first wave, I block randomized by age. Those assigned to the treatment were told they would complete a machine-learning simulation in which they would be the main character, reading scenarios and making choices to advance in life. Treated subjects were then shown a photograph and told to adopt the perspective of Andre, a middle-aged Black man working as a project manager in an office. Throughout the treatment, Andre experiences discrimination, including from work colleagues and police. The six treatment scenarios are based on actual events and took approximately ten minutes to complete.[5]

The scenarios present a mix of blatant prejudice and microaggressions, including difficulty crossing the street, being asked to perform a servile task at work, being held to a different standard than a White colleague, racial profiling by police, encountering microaggressions and blatant racism from contractors, and being passed over for a promotion that a less qualified White colleague received instead. The treatment is written in second person (the "you" perspective) and uses thick description to aid in achieving emotional reactions by the subject. The treatment includes a total of 17 choices to aid engagement, none of which

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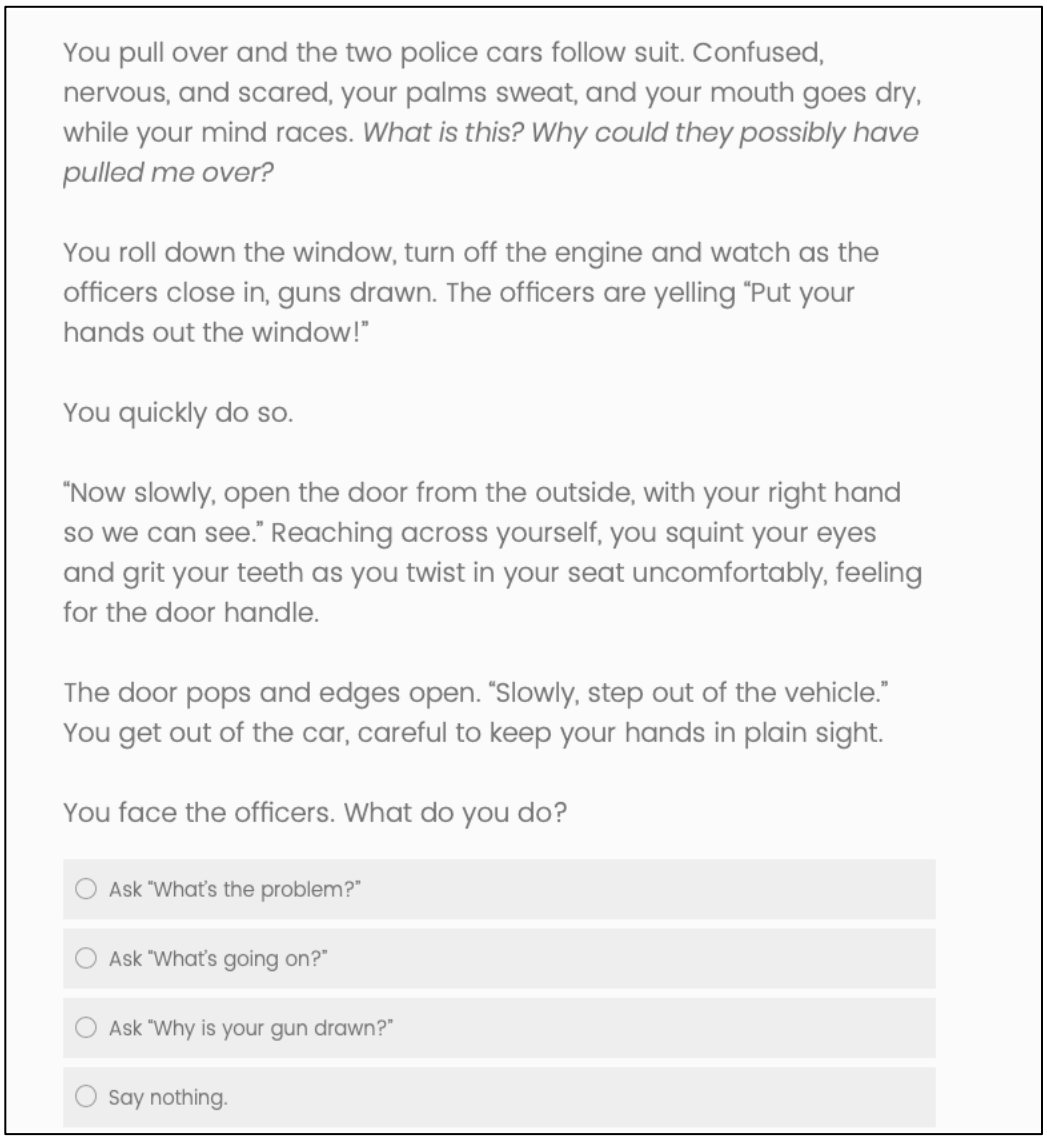
$4.38, p = 0.82$; ages 45-54, $= 6.76, p = 0.56$; ages 55 to 64, $= 9.16, p = 0.33$; ages 65 and older, $= 11.59, p = 0.17$.

[5] For example, the police encounter is adapted from an *Atlantic* reader's experience in central Florida. ("Your Stories of Racism," July 13, 2015, https://www.theatlantic.com/national/archive/2015/07/your-stories-of-racism/398117/.) Several scenes were also based on incidents the author personally witnessed.

meaningfully alter the treatment text.[6] An excerpt from the treatment is shown in Figure 2. After navigating the treatment, subjects answered questions measuring perspective-taking, parallel empathy, empathetic concern, and two open-ended questions that provided additional qualitative evidence that the treatment evoked empathy as intended (*H1*).

[6] The full treatment is available at: https://app.mazetec.org/player/9df69bbe-66d0-4a78-868a-95caf4cc0d69/epr/prejudice-reduction-general-treatment?removeheader=true

Figure 2. Treatment Excerpt.



Control subjects completed a placebo task in which they guessed the emotion displayed on a series of White faces (Baron-Cohen et al. 2001). This "reading the eyes in the mind" test was originally designed for autism and measures social sensitivity and ability to read the emotions of others (Baron-Cohen et al. 2001; Gutsell and Inzlicht 2012). This control is commonly used in prejudice reduction research (e.g., Simonovits, Kézdi, and Kardos 2018). Generally, placebo controls are extensively used in prejudice reduction research (e.g., Kalla and Broockman 2021) and other work testing pro-social interventions (Pink et al. 2021; Roozenbeek

and van der Linden 2020) to ensure similar survey engagement and to address possible differential attrition. The control took roughly the same amount of time to complete as the treatment. Control subjects were equally likely as treated subjects to finish wave 2 (two-sample proportions test: $\chi^2 = 2.25, p = 0.13$). Use of this control demonstrates that it is the impact of an EPR intervention that reduces prejudice, rather than generally engaging respondents to imagine Whites' perspectives.

Next, all subjects completed questions measuring racial resentment, belief in stereotypes, anti-Black affect, and attitudes toward racial policies. Support for racial policies included notions that more progress is needed to ensure racial equality, that government should help Black people, affirmative action, and reparations for slavery. Table 2 summarizes the outcome variables.

Table 2. Overview of Constructs and Measures

Construct: Empathy		
Measures	Waves	Items
1. Parallel Empathy (Emotional empathy)	2 (Treated only)	"Did you experience any of the following emotions during the simulation? Please select all that apply" [Angry, Frustrated, Sad, Scared]
2. Empathetic concern (Emotional empathy)	2 (Treated only)	"Did you experience any of the following emotions during the simulation? Please select all that apply" [Compassion, Sympathetic]
3. Perspective-taking (Cognitive empathy)	2 (Treated only)	Tried to adopt the perspective of the main character; Tried to imagine what the main character might be thinking, feeling, or experiencing; Tried to remain objective and emotionally detached (reverse coded)
Construct: Prejudice		
Measures	Waves	Items
1. Racial Resentment	1 & 2	4-item measure from Kinder and Sanders (1996)
2. Negative Affect	1& 2	Difference in feeling thermometer ratings for Whites and Blacks
3. Stereotypes	2	Difference in ratings for Whites and Blacks on unintelligent versus intelligent, violent versus peaceful, and lazy versus hard-working stereotypes

Construct: Support for Racial Policies

Measures	Waves	Items
1. Aid to Blacks	1 & 2	ANES question where respondents rate whether "government should help blacks" or "blacks should help themselves" on 7-point scale.
2. Additional Changes to Ensure Racial Equality	2	Agreement with statement: "Our country needs to continue making changes to give blacks equal rights with whites." versus "Our country has made the changes needed to give blacks equal rights with whites."
3. Affirmative Action	2	Agreement with statement: "Because of past discrimination, blacks should be given preference in hiring and promotion" versus "Preference in hiring and promotion of blacks is wrong because it discriminates against whites."
4. Reparations	2	"Would you support or oppose the federal government making a cash payment to black Americans as a way to compensate them for harm caused by slavery and other kinds of discrimination against blacks in the past?"

Note: Full question wording in Appendix.

Although direct measures of prejudice may prompt concern about social desirability or demand effects, research indicates such concerns may be misplaced. There is little evidence that experimenter demand effects exist, as neither explicit instructions nor payment can consistently encourage them (Mummolo and Peterson 2019). Prejudice may also not be notably subject to social desirability: There is no significant difference between prejudice reported in list experiments (a technique to mitigate social desirability) versus direct measures (Blair, Coppock, and Moor 2020) and opinion research shows that Americans are increasingly tolerant of anti-minority rhetoric (Reny, Valenzuela, and Collingwood 2020; Valentino, Neuner, and Vandenbroek 2018). Online surveys (such as used here) also mitigate social desirability (Kreuter, Presser, and Tourangeau 2008), which should further alleviate concerns.

The Appendix contains additional study details and question wording (p. 1-2 and 10-13). The sample was diverse; however, it was markedly older than the actual electorate. Older Americans tend to hold more stable and conservative racial views than younger Americans

(Henry and Sears 2009; Parker, Graf, and Igielnik 2019), which could bias treatment estimates downward.

Inadvertently, the study collected baseline measures of prejudice at the height of public outcry over the murder of George Floyd, which led to a temporary baseline decrease in prejudice and increase in support for government aid to Blacks in June 2020. By July 2020 (when the experimental manipulation took place), prejudice had significantly increased and support for government aid to Black people had decreased in the control condition, suggesting that the results presented here are biased downward.

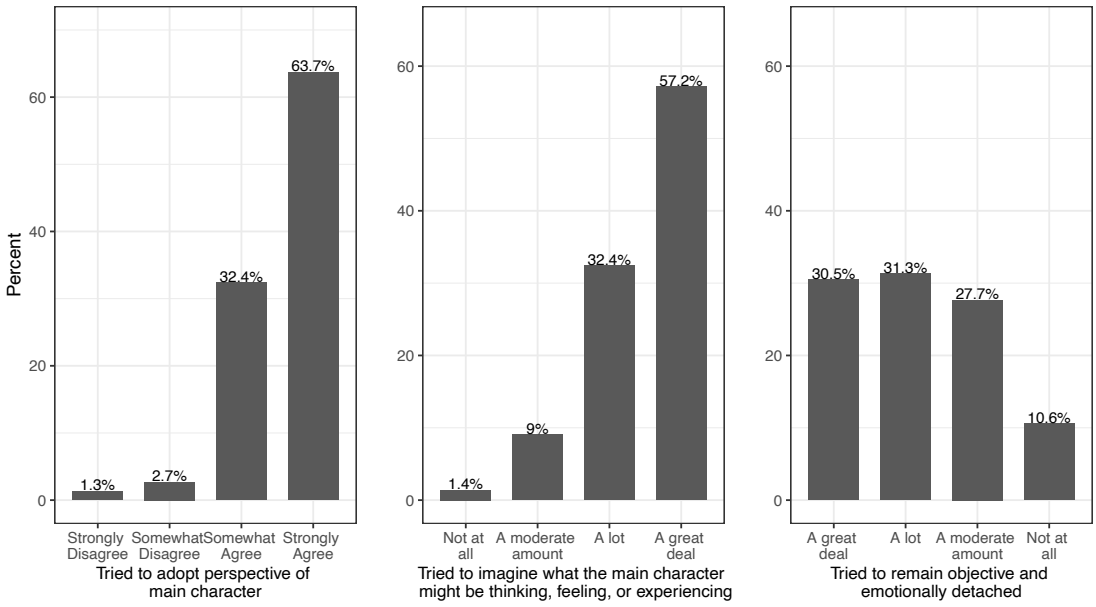
Despite the timing of the study biasing treatment effects downward, readers may still be concerned that the context of the study might somehow be responsible for the results presented here. However, a pilot study run in winter 2018 on a student sample found consistent results, suggesting EPR treatments are effective in both highly racialized (2020) and less racialized (2018) national contexts. Details in Appendix E (p. 13-16).

Results

Empathy Results

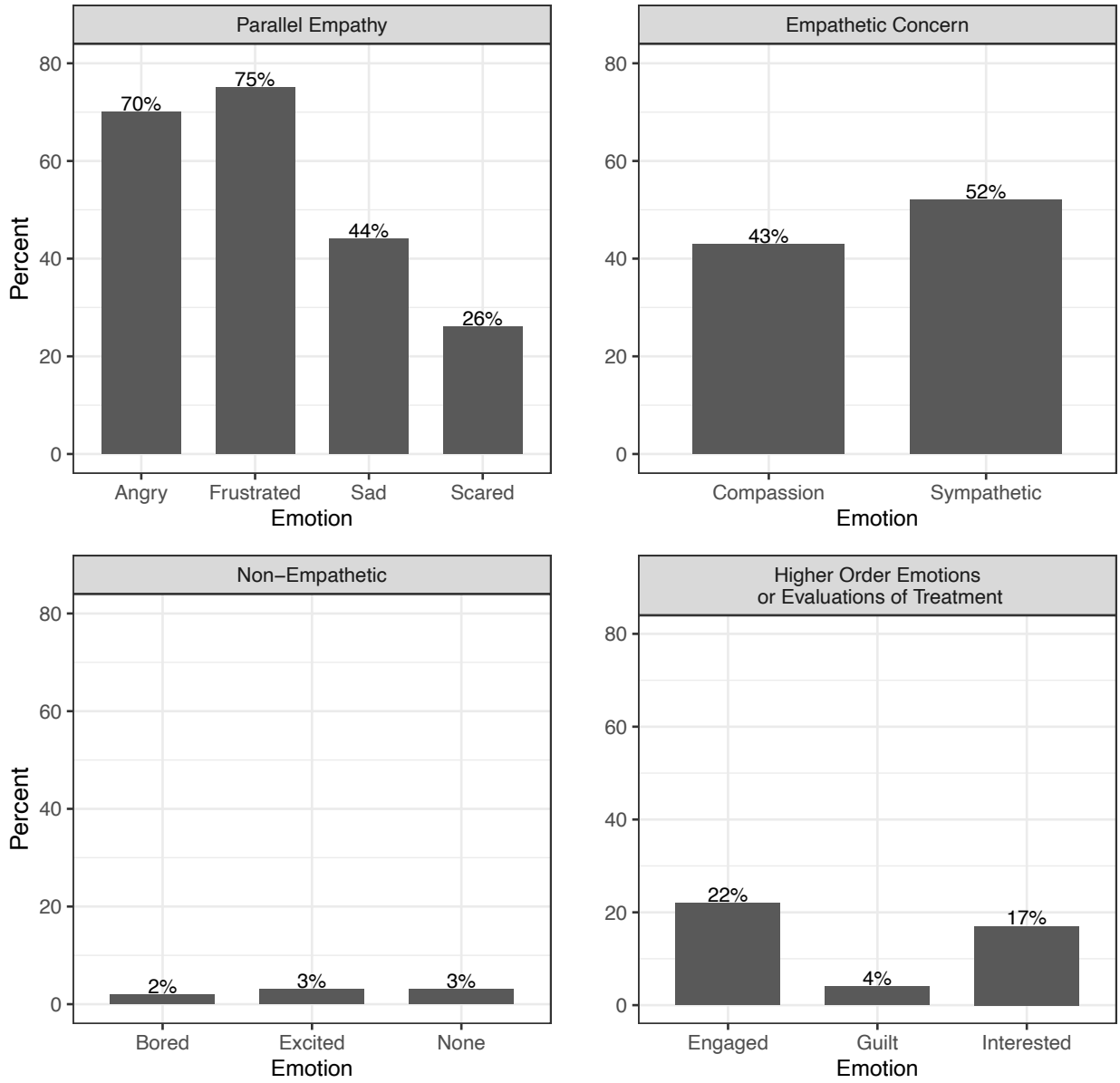
As shown in Figure 3, most treated subjects engaged in perspective-taking: 96% agreed they tried to adopt the main character's perspective (H_a: prop. "Agree" $> 0.5,\ \chi^2 = 721, \mathrm{p} < 0.001$) and 90% tried to imagine what the main character was thinking, feeling, or experiencing *a lot* or *a great deal* (H_a: prop. saying "A lot"/"great deal" $> 0.5,\ \chi^2 = 532, \mathrm{p} < 0.001$). Unexpectantly, only 38% said they tried to remain objective and emotionally detached *not at all* or *a moderate amount* (H_a: prop. saying "not at all"/"moderate amount" $> 0.5,\ \chi^2 = 47, \mathrm{p} = 0.38$). However, this may have been a weaker test because it violates the social norm of objectivity.

Figure 3. Multiple-Choice Manipulation Checks: Evidence of Perspective-Taking



To test for parallel empathy, subjects were asked to indicate the emotions they experienced while navigating the treatment; evidence would include any of the emotions the main character expressed. As shown in Figure 4, responses suggest most treated subjects experienced parallel empathy (H_a: prop. $> 0.5,\ \chi^2 = 495, \mathrm{p} < 0.001$). *Compassion* and *sympathy* tested for empathetic concern, with most respondents demonstrating these emotions (H_a: prop. $> 0.5,\ \chi^2 = 58, \mathrm{p} < 0.001$). Feeling *nothing*, *excited*, or *bored* demonstrates a lack of empathy; roughly 3% reported such emotions (H_a: prop. $< 0.5,\ \chi^2 = 621, \mathrm{p} < 0.001$).

Figure 4. Emotions of Treated Subjects—Evidence of Empathy



Question text: 'Did you experience any of the following emotions during the simulation? Please select all that apply.'

Lastly, subjects provided their reactions in two open-ended questions: "Please describe what you thought or felt during the simulation" and "How would you describe the main character in the simulation?" Responses were analyzed by the subjects' race to evaluate whether the treatment worked as predicted (among White subjects) and whether the treatment accurately depicted experiences of the out-group (among Black subjects). Many Black respondents

explicitly noted that the treatment was realistic: One respondent noted, "I relived the same anger that I have endured in the past"; another said, "I felt like I was in a dream that I continue to be in. I know the outcome of the dream because it happens so frequently." A 79% majority of White responses indicated they experienced empathy. For instance, one wrote they experienced "Living in another man's shoes" while another said "I was very disappointed in the way Andre was treated. I felt like I was him and decided I would be looking for another job right away. I could feel my blood pressure going up. I am so sorry for Andre." The content of these responses also indicate that the intervention reduces prejudice by engaging subjects to encourage empathy, rather than through some other mechanism (such as providing counter-stereotypical information). Together, this indicates the treatment evoked empathy consistent with expectations (*H1*).

Prejudice Results

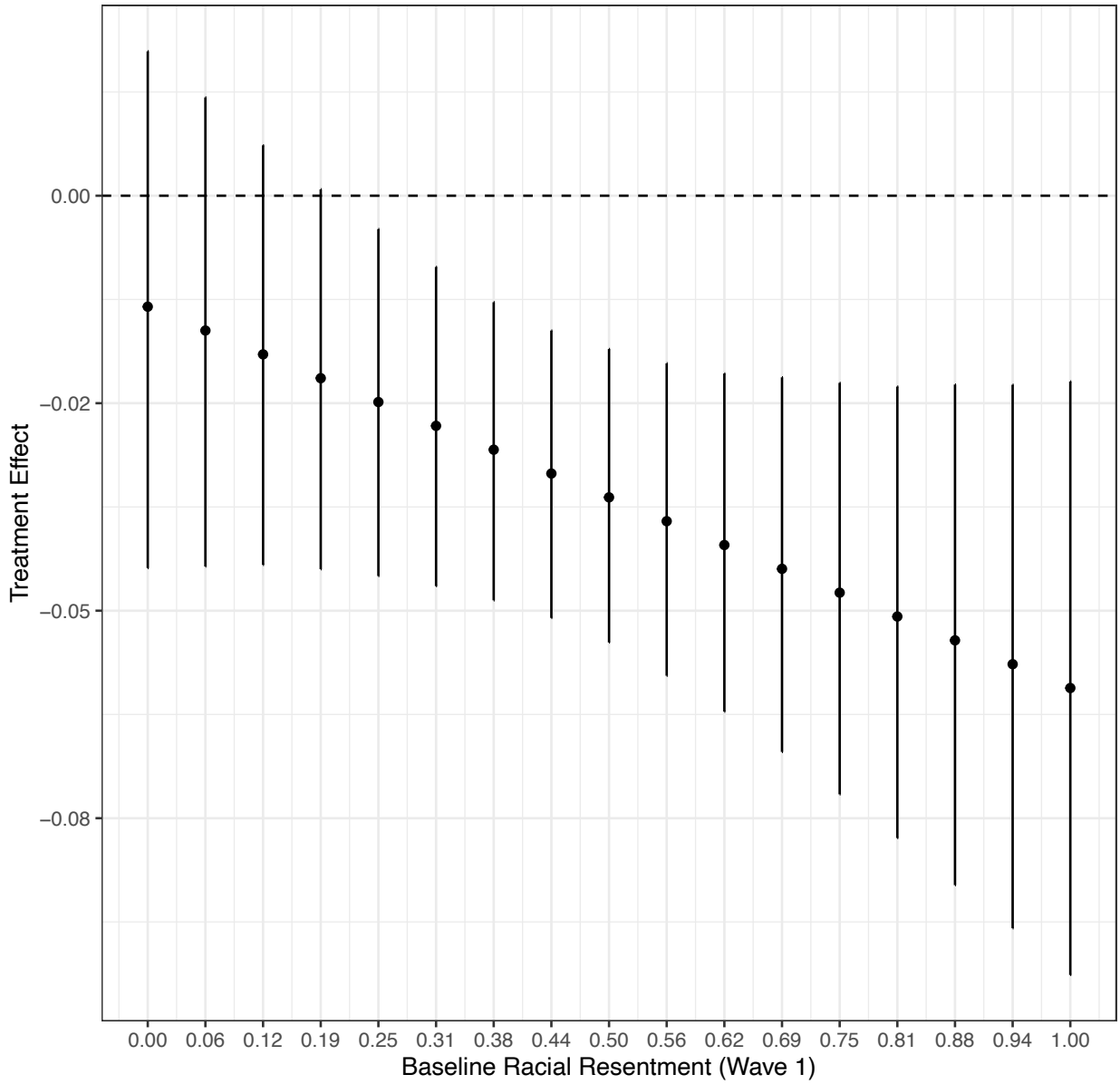
To determine whether the treatment reduced prejudice, I calculated treatment effects for racial resentment, negative affect toward Black people, and belief in anti-Black stereotypes. Negative affect and belief in anti-Black stereotypes were computed as the difference between ratings given to White and Black people in order to eliminate individual variations in how these measures are used and capture attitudes toward Black people *relative* to White people (Piston 2010; Wilcox, Sigelman, and Cook 1989). All prejudice measures were rescaled from 0 to 1, with 1 always indicating the most prejudicial views toward Black people. Estimation used OLS regression and included age indicator variables to account for randomization by age (Gerber and Green 2012). Computation of average treatment effects (ATEs) for racial resentment and negative affect included baseline measures of prejudice, and conditional average treatment effects (CATEs) included interactions between treatment assignment and baseline prejudice. For

anti-Black stereotypes—where financial constraints prohibited collection of baseline measures—I present CATEs by party. To understand the substantive magnitude of effects, I compare effect sizes to regressions that include covariates for party, ideology, race/ethnicity, and gender. Regression tables are in Appendix B (p. 2-4).

Control participants provide a baseline for how public opinion changed in June relative to July due to George Floyd's death. These data indicate that prejudice in the control was significantly lower in June than in July: control participants demonstrated an average increase in resentment of 0.022 ($t(406) = 3, p = 0.004$) and an average increase in negative affect of 0.01 ($t(400) = 3, p = 0.007$). This rise in prejudice among control participants between waves suggests that treatment effects are biased downward.

Despite the downward bias, the treatment significantly reduced racial resentment by about 0.034 points ($p = 0002$), consistent with *H2*. As shown in Appendix Table A2 (p. 2), this reduction was substantively meaningful: it was greater than the net effect of being nonwhite.

Figure 5. CATEs on Racial Resentment by Baseline Resentment



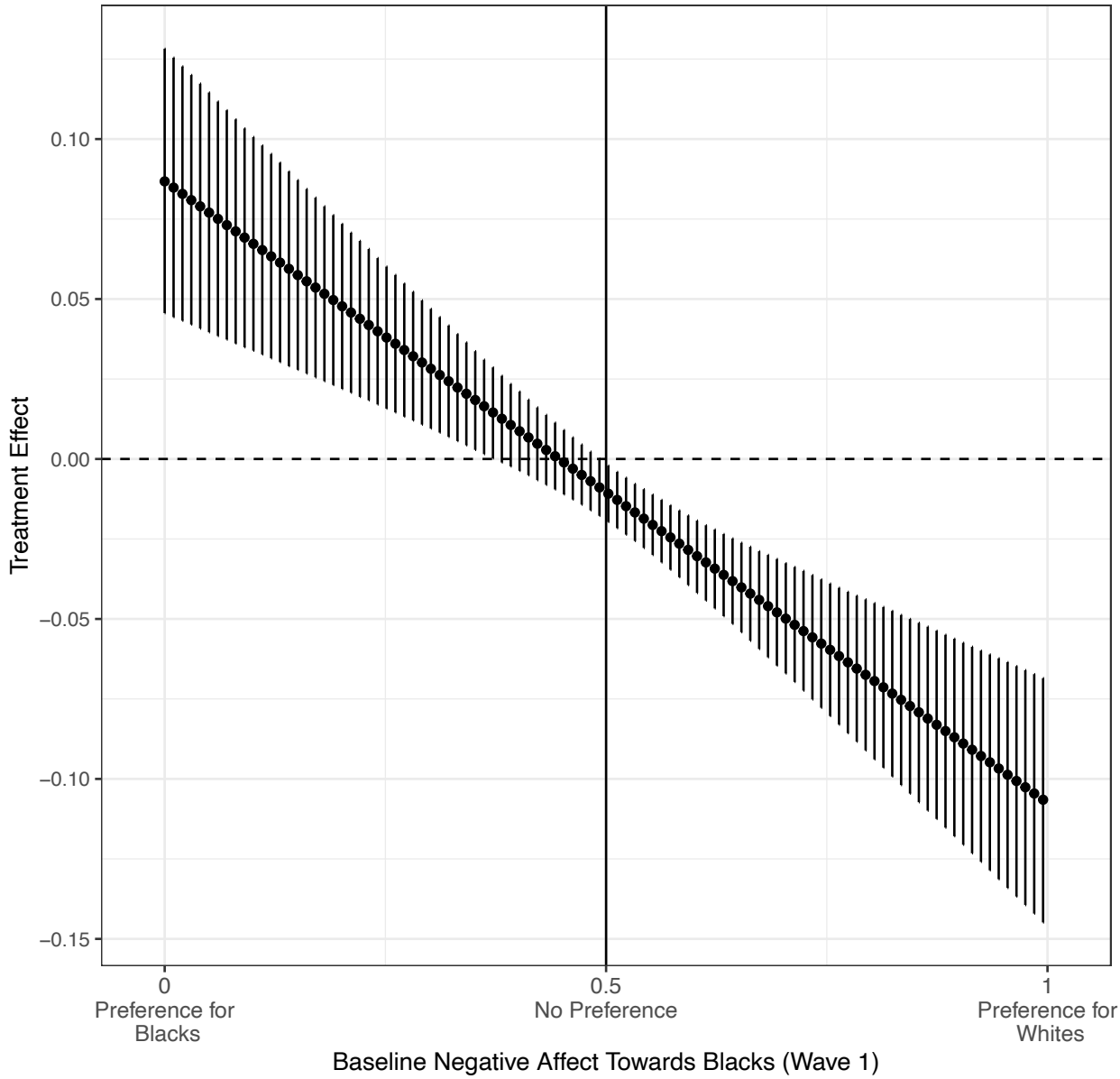
Notes: OLS estimates using Appendix Table A2 model 3. Error bars are 95% confidence intervals.

As expected in *H3*, rather than merely increasing sympathy among those already sympathetic, the treatment reduced resentment among those with the most resentful baseline views. As shown in Figure 5, the largest effects were among those with the highest baseline resentment. Insignificant effects were recorded only among those with the lowest baseline resentment, likely due to a floor effect. Substantively, the treatment effect for those with the most

resentful views (about -0.05 for those with baseline resentment of 0.81) was roughly equivalent to the net effect of being a Republican (see Appendix Table A2, p. 2).

Proving additional support for *H2*, the treatment significantly reduced negative affect toward Blacks by about 0.013 points, greater than the impact of a two-unit shift in ideology (see Appendix Table A3, p. 2-3). Effects by baseline negative affect are in Figure 6. The treatment exerted a significant effect among all but those with a very weak preference for Black people, and had the strongest effect among those with strong preferences toward Whites, reducing anti-Black affect by more than 0.10 points. This is a major effect that is roughly double the estimated impact of moving from "extremely liberal" to "extremely conservative" in ideology. Interestingly, the treatment also weakened prejudice among those with the strongest preference toward Black people (values near 0). In other words, the treatment moved essentially all individuals toward no preference toward either group. This provides added support for *H3.*

Figure 6. CATEs on Negative Affect by Baseline Negative Affect



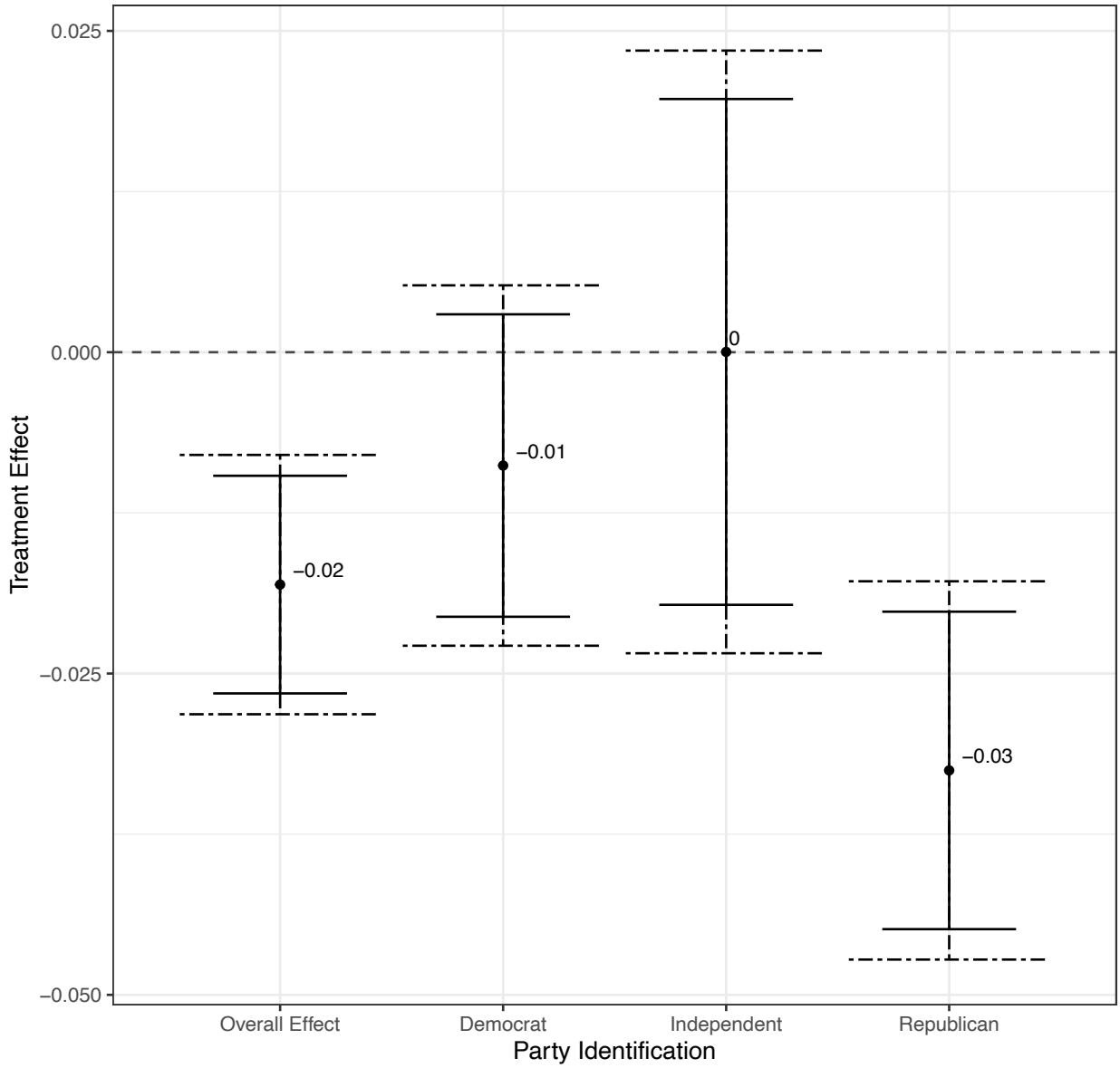
Notes: OLS estimates using Appendix Table A3 model 3. Error bars are 95% confidence intervals.

ATEs for belief in stereotypes were computed based on the individual items (beliefs that Black people are lazier, more violent, and less intelligent) as well as a composite variable (*Belief in Stereotypes*) that combined these three measures. The treatment significantly reduces all three anti-Black stereotypes individually and as measured through the composite (see Figure 7), consistent with *H2*. The magnitude of the treatment effect is similar to the net effect of

Republican partisanship on belief in lazy and violent anti-Black stereotypes and roughly double the net effect of being male for the unintelligent stereotype (see Appendix Table A4, p. 3-4). Financial constraints prohibited collection of baseline measures of stereotypes, therefore I proxy using partisanship, as Republicans express greater belief in anti-Black stereotypes on average. CATEs by party, shown in Figure 7, demonstrate that the effects are driven by Republicans, among whom the treatment has the greatest effect of decreasing anti-Black stereotypes.[7] This is consistent with *H3*.

[7] ATEs for all prejudice measures are similar when nonwhites are excluded.

Figure 7. Treatment Effects on Belief in Stereotypes Overall and by Party



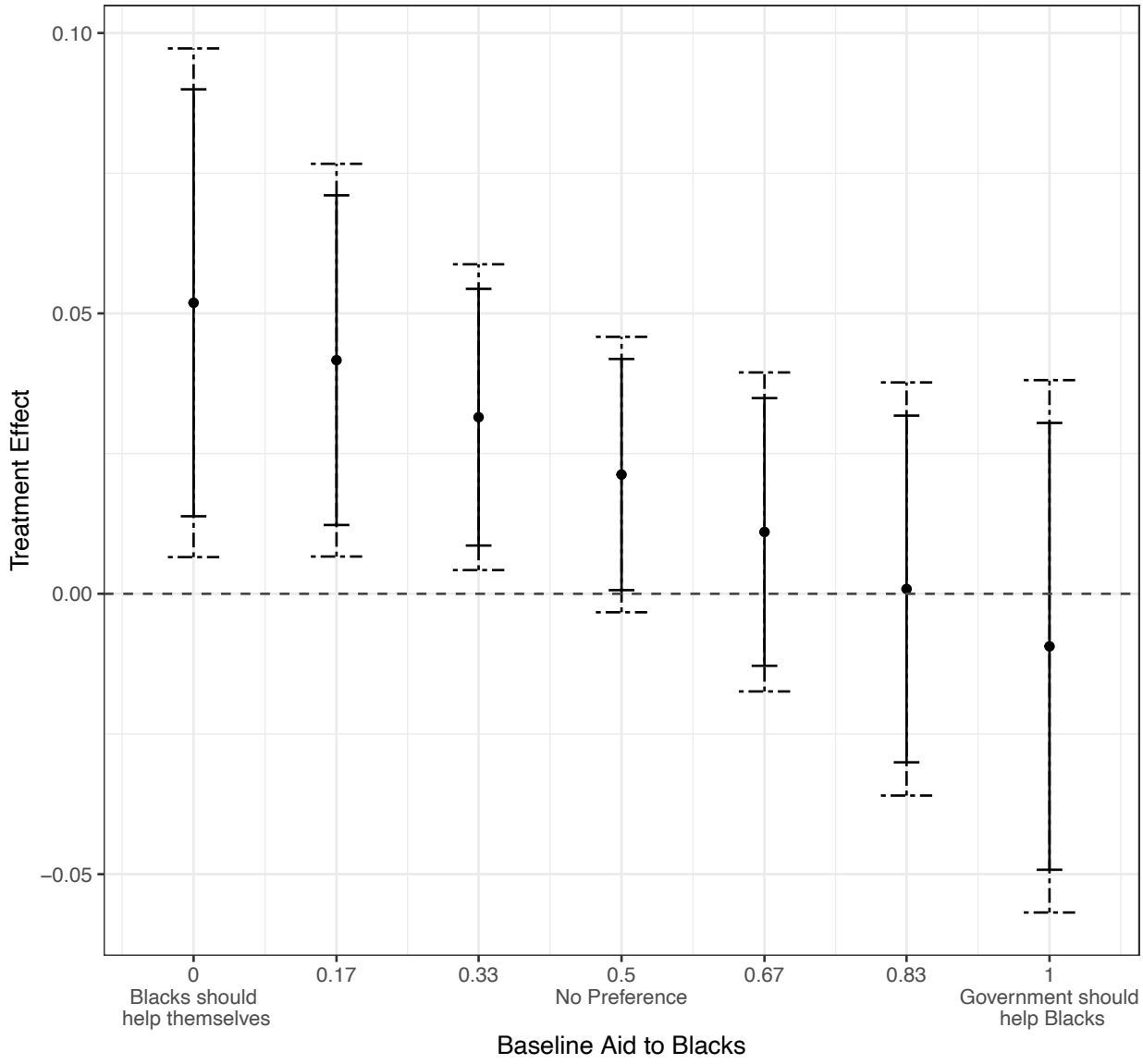
Notes: OLS estimates. Solid error bars are 90% confidence intervals. Dashed error bars are 95% confidence intervals.

Policy Results

Consistent with the increase in prejudice in the control condition, I found a significant *decrease* in support for government assistance to Black people between waves in the control ($M = -0.042, t(357) = -4, p < 0.001$), suggesting treatment effects for policy attitudes will also be biased downward.

To determine whether the treatment increased support for government aid to Black people, I estimated two OLS regressions, coding the response options between 0 and 1—higher numbers indicate greater agreement with the statement. Both regressions included the treatment variable, baseline support, and age to account for block randomization. A second regression also included covariates for increased precision and to better understand the magnitude of effects. Regression tables are in Appendix B (p. 4-5). Consistent with *H4*, the treatment significantly increases the belief that "Government should help Blacks," with an effect size larger than the net effect of being nonwhite and larger than a one-unit shift in ideology (see Appendix Table A5, p. 4-5).

Figure 8. CATE on Support for Government Aid to Blacks by Baseline Attitude.



Notes: OLS estimates using Appendix Table A5 model 3. Solid error bars are 90% confidence intervals. Dashed error bars are 95% confidence intervals.

CATEs by baseline attitudes are in Figure 8. Consistent with expectations, the largest effects are among those with the lowest baseline support. For the roughly 12 percent who indicated that "Blacks should help themselves," the treatment increases support by the largest amount: about 0.05. This effect is larger than the net effect of party identification. The treatment

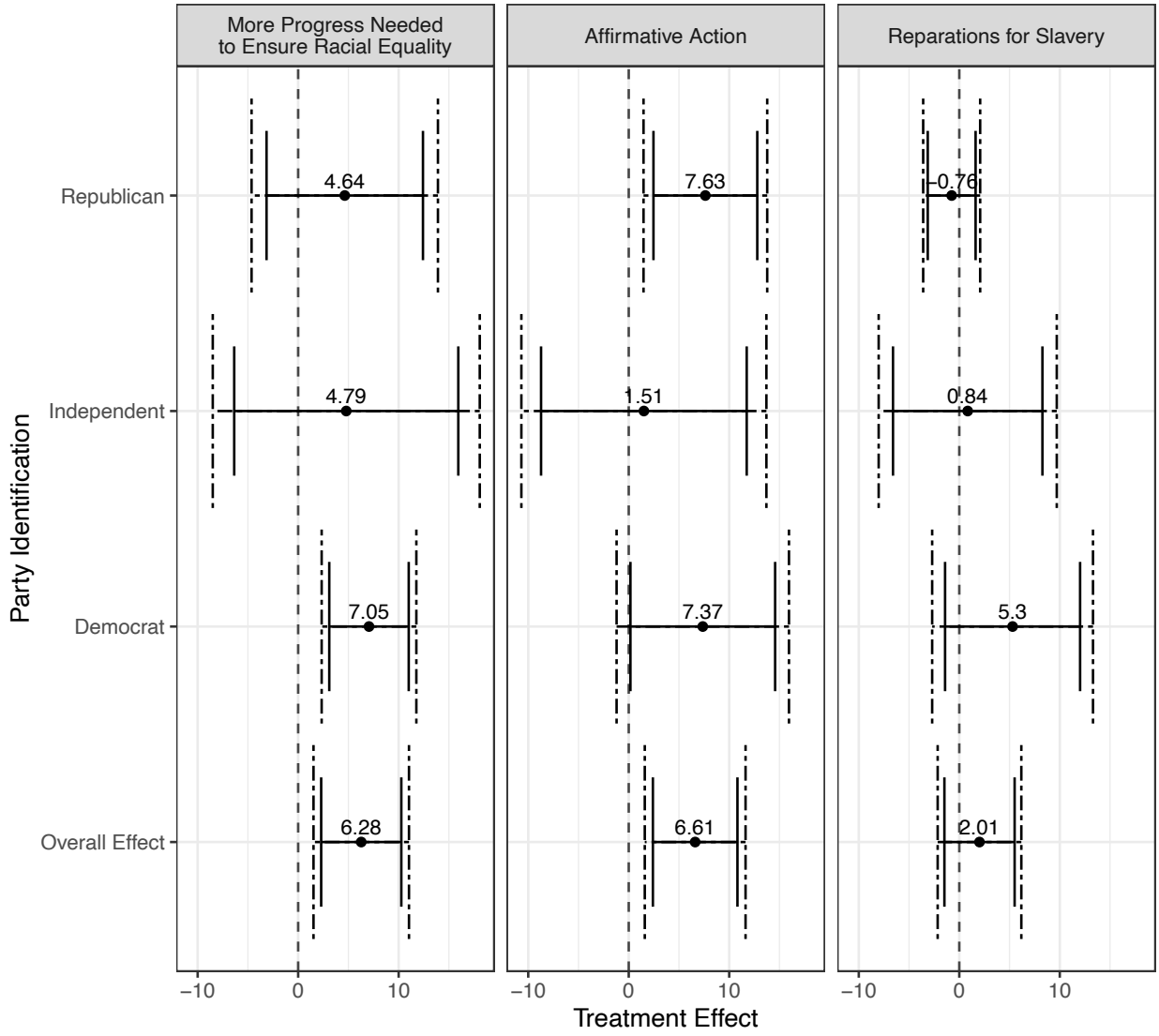
significantly boosts support for government aid to Blacks among all those with baseline scores below 0.5, about 41 percent of the sample.

To determine whether reducing prejudice increases support for additional changes are needed to ensure racial equality, affirmative action, and reparations, I coded indicator variables with 1 for agreement, and used probit regression. Regressions include treatment and age indicator variables. To increase the precision of estimates, I include covariates for party, ideology, gender, and race/ethnicity. Conditional effects by party also include interactions between party and treatment variables. Tables are in the Appendix (A6 and A7, p. 5-6); effects are in Figure 9.

Consistent with *H4*, the treatment increases the probability of supporting more changes to ensure racial equality by roughly 6.3 percentage points. This is a large effect similar to the net effect of being nonwhite and slightly larger than a one-unit shift in ideology. Effects computed without covariates are slightly larger (6.4 points).

The treatment increases support among Democrats by the largest amount, roughly 7.05 points, with statistically insignificant effects for Independents and Republicans. Effects without covariates are indistinguishable, although standard errors are larger.

Figure 9. Treatment Effects on Support for Changes to Ensure Racial Equality, Affirmative Action, and Reparations.



Notes: Treatment effects are the differences in the predicted probability of supporting the policy between the Treatment and Control. Results calculated from probit regressions in Appendix Tables A6 & A7. Solid error bars are 90% confidence intervals. Dashed error bars are 95% confidence intervals. Confidence intervals calculated using simulation holding covariates at their observed values.

Also consistent with *H4*, the treatment increases support for affirmative action by nearly seven points; however, it does not significantly alter support for reparations (inconsistent with *H4*). Substantively, the treatment effect on support for affirmative action is larger than the net effect of a one-unit shift in ideology. This effect is strongest among Republicans—about 7.6 percentage points. Results without covariates are similar, although the effect for Republicans is

even larger (9 points, p=0.008); Democrats are slightly weaker and insignificant (7 points, p=0.12).

While not a formal hypothesis, EPR theory suggests that the reduction in prejudice caused by the treatment will mediate the policy effects. A mediation design would be necessary to test for this, however a causal mediation analysis presented in Appendix C (p. 7-9) provides suggestive evidence that the policy effects are due to reducing prejudice.

Discussion

More than sixty years ago, Gordon Allport suspected that treatments based on activity would effectively reduce prejudice, writing: "Action is ordinarily better than mere information. Programs do well therefore to involve the individual in some project … When he does something, he becomes something … It will be learned in muscle, nerve, and gland best through participation" (1954, 509).

This article presented results from a dual-wave national survey experiment demonstrating that active participation navigating the experience of racism reduces three measures of prejudice: racial resentment, negative stereotypes, and negative affect. The treatment had the greatest effect of reducing resentment and negative affect on those with the highest baseline prejudice. Surprisingly, the treatment also reduced negative affect toward White people, indicating that the treatment led to more egalitarian racial attitudes overall. Although I lacked baseline measure of stereotypes, conditional results showing the largest treatment effects among Republicans suggest the largest effects were among those who held the strongest baseline anti-Black stereotypes. Effect sizes were comparable or larger than the impact of partisanship, ideology, race/ethnicity, and gender.

Results indicated that prejudice among control participants was lower in June than in July. This suggests that the death of George Floyd led to a temporary decrease in prejudice among the American public, consistent with research finding temporary attitudinal changes following killings by police in the 1990s (Sigelman et al. 1997; Tuch and Weitzer 1997). Substantively, this indicates that the treatment effects reported in this study are likely smaller than they might have been otherwise.

The treatment increased support for government aid to Blacks, additional changes to ensure racial equality, and affirmative action. These results are even more convincing given the significant decrease in support for government aid to Blacks in the control condition, suggesting treatment effects for policy attitudes were also likely biased downward. Conditional analyses demonstrated the largest effects among those with the lowest baseline support for aid to Blacks, among Republicans for affirmative action, and among Democrats for additional changes to ensure equality.

Reducing prejudice did not impact support for reparations. This policy has received very little support among the American people—a 2019 poll found just 29% supported reparations (Williams and Nasir 2019). Even among those who think our country has not done enough to ensure racial equality, polls have found that a majority (51%) think reparations would be *ineffective* at combatting inequality (Horowitz et al. 2020). Thus, it is understandable that reducing prejudice did not appreciably impact attitudes here.

Future research should investigate the impact of prejudice reduction on additional policies (such as support for policing reforms) and assess the durability of effects. Although financial constraints prevented durability testing in the present study, it is likely that the effects

are long-lasting, considering that Simonovits et al. (2018) found a similar intervention to have reduced anti-Roma prejudice in Hungary for at least one month afterward.

Beyond providing support for the causal interpretation of the relationship between individual prejudice and support for racial policies posited by many researchers, these results illuminate the relationship between individual and systemic racism. Recent work has argued that focusing on individual attitudes is misguided because the real problem is racist systems and racist policies (Kendi 2019; Wilkerson 2020). Yet this study shows that individual attitudes and preferences toward systemic reforms are causally linked: reducing individual prejudice increased support for policies addressing systemic racism. Given the important link between public opinion and democratically elected governments (Downs 1957; Mayhew 1974), these results suggest that reducing individual prejudices would increase public support for policies to further redress inequities.

It can be tempting to mistake the persistence of a problem as evidence of immutability. Yet an intervention that took subjects roughly ten minutes to complete had substantial effects on reducing racism and altering political attitudes motivated by prejudice. These results are encouraging and hopefully, more research will aim to improve American democracy by reducing the role of prejudice in our politics.

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