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Experimental Effects of "Opportunity Gap" and "Achievement Gap" Frames

David M Quinn
University of Minnesota

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David M Quinn
University of Minnesota - Twin Cities
dquinn@umn.edu

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Abstract

Racial equity in education is often framed around “closing the achievement gap,” but many scholars argue this frame perpetuates deficit mindsets. The “opportunity gap” (OG) frame has been offered as an alternative to focus attention on structural injustices. In a preregistered survey experiment, I estimate the effects of framing racial equity in education around “achievement gaps” (AGs) vs OGs. I find US adult respondents on MTurk gave higher priority to “closing the racial opportunity gap” versus “closing the racial achievement gap” (ES = .11 SD). When randomly assigned to read an OG frame before being asked to explain the Black/White “achievement gap,” respondents were less likely to endorse cultural or individual-level explanations, compared with respondents only shown AG statistics (ES = -.10 SD). I find no evidence the OG frame affected respondents’ racial stereotypes or policy preferences.

Experimental Effects of "Opportunity Gap" and "Achievement Gap" Frames

Racial injustice in education takes many forms. There are questions of distributive justice in the allocation of educational resources (Jimenez-Castellano, Farrie, and Quinn 2022; Reich 2013), corrective justice to address historical moral and material debts in education (Ladson-Billings 2006; Schouten 2012), procedural justice to ensure equal decision-making power (Brighouse, Ladd, Loeb, and Swift 2018; Young 1990), and dignitary justice achieved through equal status in social relations (Darby and Rury 2018; Laden 2013; Milner 2020). Additionally, because schools are causally inter-connected with so many other social subsystems (Jimenez-Castellano et al. 2022; Reskin 2012), racial injustices in education receive attention for their role in an "opportunity chain" (Howe 1992: 460) perpetuating inequality more broadly. As with any dense social issue of this sort, frames play an important role in helping people make sense of the complexity. Frames facilitate our sense-making of events and experiences (Goffman 1974) by emphasizing specific causes, solutions, or implications. Frames can also motivate action, and thus have material consequences for overcoming injustices (Benford and Snow 2000; Chong and Druckman 2007).

In policy, research, and media, the predominant frame for racial justice in education over the past several decades has been the "achievement gap" frame (Ladson-Billings 2006). While people often apply this frame with the intention of pursuing justice, many scholars argue this framing is detrimental (e.g., Carey 2014; Chambers 2009; Hilliard 2003; Ladson-Billings 2006; Royal 2012). By focusing on student outcomes rather than the deeper structural inequalities that shape them, the "achievement gap" frame may lead people to adopt cultural or individual-level explanations that perpetuate racist stereotypes while encouraging short-term solutions unlikely to address root causes (Ladson-Billings 2006). Some critics argue we should instead frame the

issue around "opportunity gaps" (e.g., Milner 2013) by highlighting the injustices that racially minoritized students have been subjected to throughout United States history.

In this article, I contribute to the small but growing body of experimental evidence on the effects of frames related to racial equity in education[1] (Comstock 2024; Quinn 2020; Quinn 2023; Quinn, Desruisseaux, and Nkansah-Amankra 2019; Quinn and Desruisseaux 2022). The present preregistered survey experiment expands this literature by evaluating effects of the "opportunity gap" frame. As hypothesized, the "racial opportunity gap" frame elicits higher issue priority levels compared with the "racial achievement gap" frame. When "racial achievement gaps" are framed within the context of "opportunity gaps," respondents are less likely to endorse individual-based explanations for the inequalities in educational outcomes. However, I find null framing effects on structural explanations for disparities, racial stereotypes, and endorsements of specific education policies.

BACKGROUND

Framing Theory

The concept of framing has been theorized in various ways across academic disciplines (Lecheler and de Vreese 2019), and no single consensus definition exists (Benford and Snow 2000; Chong and Druckman 2007; Lecheler and de Vreese 2019; Levin, Schneider, and Gaeth 1998; Nelson, Oxley, and Clawson 1997; Scheufele and Tewksbury 2007). In this article, I emphasize the distinction between attribute frames and communication frames. An attribute frame refers to the label used for a phenomenon or object (Hardisty, Johnson, and Weber 2010; Levin et al. 1998). Different labels with different associations or emphases can elicit different attitudes toward a shared referent. For example, in one study, Republicans expressed less

support for a policy when it was labeled a "carbon tax" compared with when the same policy was labeled a "carbon offset" (Hardisty et al. 2010).

Communication frames are broader than labels. They establish the context within which an issue or phenomenon is placed. Different communication frames present policy issues from different points of view, each driven by different values or highlighting different expected policy implications (Chong and Druckman 2007; Lecheler and de Vreese 2019). For example, policies aiming to promote the development of green energy can be framed as a moral obligation to future generations, a job-creation opportunity, a racial justice issue, a strategy for energy independence from other countries, a quality-of-life issue, and so on (Donaghy et al. 2023; Lakoff 2010).

When it comes to racial justice in education, communication frames set the object of focus. Should we focus on educational inputs and processes (e.g., funding allocations, instructional quality, decision-making procedures, etc.) or on educational outputs (e.g., test scores, graduation rates, etc.). In contrast, attribute frames are relevant when considering the labels we should use within a given communication frame. For example, what are the effects of using terms such as "at-risk" or "drop-out" to describe students (Rios 2012; Toldson 2019a/2019b)? Or, more directly related to the present study, what is the effect of calling distributional differences in test scores "achievement gaps" versus "inequality in learning outcomes," or some other label?

The "Achievement Gap" (AG) Frame

As an attribute frame, the Black/White "achievement gap" (AG) refers to differences between Black and White students on educational outcomes such as test scores and graduation rates. When invoked, the term is often establishing, or taking for granted, that these gaps should

be the object of focus for racial equity in education. For example, it is often repeated that the "achievement gap" is the "civil rights issue of our day" (e.g., NBC News 2014). When used as a means of organizing our thinking about racial justice in education, the AG takes on the broader role of a communication frame. In this capacity, it has been argued the AG frame shapes the work of policymakers, educators, and researchers, and influences how the public thinks about educational equity (Carey 2014).

The core critique of the AG frame is that it is a deficit-based frame (e.g., Hilliard 2003; Ladson-Billings 2006; Perry 2003; Royal 2012; Shukla et al. 2022). "Deficit thinking" describes the habit of "[holding] students from historically oppressed populations responsible for the challenges and inequalities they face" (Patton Davis and Mueses 2019: 119). As Ladson-Billings (2006) famously argued, the AG framing advances deficit thinking by focusing attention on between-group differences in student performance when the focus should be on the structural forces that lead to these disparities. In this way, the AG frame "constructs students as defective and lacking" and suggests the "onus of underachievement" (Ladson-Billings 2007: 321) is on students and their families. As such, the frame does not point us to the underlying structural root causes of educational inequality – rather, its prescription is to "[admonish students] that they need to catch up" (Ladson-Billings 2007: 321). In so doing, the frame obscures the role racism plays in constructing these "gaps" (Kuchirko and Nayfeld 2021; Lewis et al 2008).

While critics of the AG frame do not necessarily deny that non-structural factors inside the home can mediate student learning (Ladson-Billings 2013; Milner 2011/2012), they argue it is "shortsighted and incomplete to target them as the only causes" (Ladson-Billings 2013: 13). By focusing on student-level outcomes without the context of structural injustices, the AG frame plays into, and may perpetuate, racist stereotypes of Black, Latine, and Native American students

as academically incapable (Darby and Rury 2018; Hilliard 2003; Ladson-Billings 2006). Additionally, the AG frame's practice of comparing Black, Latine, and Native American students to White students can reinforce an assumption of White superiority by centering White performance as the benchmark for others (e.g., Carey 2014; Cross 2007; Gutierrez 2008; Ladson-Billings 2006; Love 2004; Milner 2012).

Experimental research has supported some of these critiques. In a previous web-based experiment, I found evidence the "racial achievement gap" communication frame magnifies racial stereotypes (Quinn 2020). Participants were randomly assigned to view (a) a clip of a local TV news story reporting on differences by race in middle schoolers' proficiency rates on the state standardized test, (b) a counter-stereotypical promotional video from the Harlem Children's Zone, or (c) a control lesson on the Pythagorean Theorem from Khan Academy. Compared with the counter-stereotypical video and the control video, respondents who viewed the AG news story reported more exaggerated racial stereotypes of Black Americans as being high school drop-outs (ES=.38 sd; ES=.14 on an implicit bias measure). However, I found no evidence the AG news story affected the priority respondents placed on "closing the racial achievement gap." This suggests the AG frame may have negative effects on racial stereotypes without having the effect on policy agenda-setting that often ostensibly motivates such AG news stories.

In addition to testing the effects of the AG as a communication frame, we should consider its effects as an attribute frame. In principle, the use of a single term such as "achievement gap" does not by itself ground a discourse in a deficit framework – such terms can be used within broader anti-deficit communication frames (Patton Davis and Mueses 2019). At the same time, when specific terms or labels are regularly used within a deficit communication frame, the terms

themselves can develop connotations of deficit thinking (Aikman and Robinson-Pant 2016; Patton Davis and Mueses 2019). It is an empirical question as to whether "achievement gap" as a standalone term primes deficit thinking.

My co-authors and I tested the AG as an attribute frame. We hypothesized the phrase "closing the racial achievement gap" would elicit lower priority levels compared with the conceptually synonymous, but less fraught, phrase "ending racial inequality in educational outcomes." We found evidence supporting this hypothesis in two survey experiments – one with a national sample of teachers (n=1,549; ES= -.11 sd; Quinn et al. 2019) and another with a sample of MTurk respondents (n=500; ES= -.32 sd; Quinn and Desruisseaux 2022). In the teacher sample, the effect was moderated by implicit racial stereotypes: the effect was small and not statistically significant for teachers who did not hold implicit racial stereotypes of Black students as being less competent than White students, but the effect was larger and significant for respondents who held anti-Black/pro-White stereotypes (Quinn and Desruisseaux 2022). In the Mturk sample, AG language led respondents to express stronger racist stereotypes on explicit self-report measures (Quinn and Desruisseaux 2022). These results are consistent with the AG attribute frame priming racial stereotypes due to its association with deficit mindsets.

The "Opportunity Gap" (OG) Frame

Citing the above critiques of the AG frame, scholars argue framing racial injustices as "opportunity gaps" (OG) is more productive (e.g., Carter and Welner 2013; Milner 2013/2020). The OG frame draws on the widespread appeal of the ideal of "equal opportunity" and the tradition that US public schools are meant to provide this equal opportunity (Coleman 1968; Hochschild and Scrovronick 2003; Ladson-Billings 2006). Milner (2020) defines opportunity gaps as "input-related practices and policies that are process driven and can result in students'

academic, cognitive, social, affective, emotional, behavioral, and psychological challenges." (p. 10). According to Carter and Welner (2013), "the 'opportunity gap' frame…shifts our attention from outcomes to inputs – to the deficiencies in the foundational components of societies, schools, and communities that produce significant differences in educational and ultimately socioeconomic outcomes." (p.3). Unlike the AG frame, which focuses attention on symptoms, the OG frame highlights causes (Carter and Welner 2013). These causes include a great number of other "gaps" that impact the "opportunity to learn gap" (Hilliard 2000), including "the teacher-quality gap, the teacher-training gap, the challenging-curriculum gap, the digital-divide gap, the wealth and income gap, the employment-opportunity gap, the affordable-housing gap, the health care gap, the nutrition gap, the school-integration gap, and the quality child-care gap" (Irvine 2010: xii).

In contrast to the AG frame, which nearly always has the same intended referent (distributional differences between groups on educational outcomes), the OG frame can be interpreted in various ways. As Irvine's (2010) list makes clear, many of the factors that comprise the OG reside outside of schools and beyond the traditional scope of education policy and practice. And as Milner's (2020) definition makes clear, the "inputs" are not just resources, but include non-distributive aspects of justice. In Milner's (2020) framework, teachers address opportunity gaps by rejecting race-evasiveness, understanding cultural conflicts, recognizing the myth of meritocracy (and how situations beyond students' control influence their success), disrupting low expectations and deficit mindsets, and considering how students are influenced by their social context. Opportunity gaps can also be understood as including issues of representation in curriculum (Jeffers 2019; Milner 2012) and ethnocentrism more broadly (Edmonds et al. 1973).

This complexity of OGs was a vexing issue for James Coleman and colleagues when planning their "Equality of Educational Opportunity" study; the researchers concluded that no single concept of equal opportunity existed and therefore strove to provide information relevant to a variety of conceptions (Coleman 1968). Coleman categorized conceptions of equal opportunity by race into "school resource input" conceptions and "school effects" conceptions. The "input" conceptions defined OGs by (1) the community's input to the school (per pupil expenditures, etc.), (2) the racial composition of the schools, or (3) intangible factors such as teacher morale and expectations. The "effects" conceptions defined OGs by (4) equality of results given the same individual input or (5) equality of results given different individual inputs. Under the latter definition, racial equality in opportunity and achievement are essentially indistinguishable operationally, as the "difference in achievement at grade 12 [between Black and White students] is, in effect, the degree of inequality of opportunity, and the reduction of that inequality is a responsibility of the school" (Coleman 1968: 22). The range of possible interpretations of the OG suggests that framers should be mindful of specificity when precision is required.

A potential desirable effect of the expansiveness of the OG frame is that it may open a broader discussion about policy goals and the value (and meaning) of equal opportunity (Carter and Welner 2013). For example, while it has been argued the AG frame predictably leads to policies around high-stakes testing and accountability (Carter and Welner 2013; Ladson-Billings 2006), the OG frame has the potential to direct attention to policies addressing a wider range of root causes for educational disparities.

AGs within the OG Frame

In the face of arguments for focusing on OGs instead of AGs, some scholars worry that eliminating educational outcome comparisons across racialized groups would be misguided. These scholars argue racially disaggregated outcome data are an essential component of a feedback loop for equity-focused policy efforts (Carter and Welner 2013; Darby and Rury 2018). Furthermore, as Darby and Rury (2018) argue, "eschewing the concept of achievement, or other methodical assessments of academic outcomes, runs the serious risk of…permitting deep-seated assumptions about racial differences in ability to persist or even grow" (p.11). In other words, scholars are concerned that shifting our collective attention away from achievement gaps (as outputs) to opportunity gaps (as inputs) may render equity efforts less effective. These concerns raise the question of whether and how researchers, educators, and policymakers might attend to racial inequalities in educational outcomes without perpetuating deficit mindsets.

It has been argued that acknowledging disparities in educational outcomes does not inherently entail accepting deficit mindsets, so long as the disparities are invoked as part of a project that "critiques larger structural inequities, centers the voices of communities of color, and advances anti-deficit perspectives" (Patton Davis and Mueses 2019:126). Accordingly, one approach may be to embed outcome inequalities within the broader communication frame of opportunity gaps. Firstly, the foregrounding of structural injustices provides anti-deficit motivation for making the between-group outcome comparisons (rather than allowing the comparisons to imply that Black students should be more like White students). Secondly, by supplementing the AG frame with what it lacks – namely, an anti-deficit focus on OGs and structures – this "OG + AG" framing approach may neutralize the deficit thinking otherwise primed by AG frames.

Summary and Hypotheses

In brief, the literature discussed thus far suggests the AG frame's effects will differ from the OG frame (regardless of its specific form) and the effects of an "OG + AG" frame will differ from the AG frame alone. In this study, I test several pre-registered hypotheses about these effects. First, because the OG draws on the American ideal of equal opportunity, it may have more resonance with many Americans. Framing racial inequity as an "opportunity gap" may lead Americans to place higher priority on the issue compared with when inequity is framed as an "achievement gap."[2]

Secondly, the OG frame escapes some key critiques of the AG frame by focusing on structures rather than on students (Milner 2012). Explicitly embedding outcome inequalities within an OG communication frame may enable attention to outputs without perpetuating deficit mindsets (Patton Davis and Mueses 2019). More concretely, the OG frame may make people more likely to endorse structural explanations for inequalities, such as racial bias and differences in school quality, and less likely to endorse student-level or cultural explanations for inequalities in educational outcomes, such as differences in student ability or motivation or the extent to which parents value education. Relatedly, by shifting away from deficit-based explanations (Milner 2012), the OG frame may be less likely to perpetuate negative racial stereotypes. If these two hypotheses are correct, they suggest the AG frame plays into, and contributes to, the social construction of Black students as undeserving of policy benefits (Ingram and Schneider 2015). This leads to the hypothesis that the OG frame will be more effective at eliciting support for policies addressing racial inequality in education. Finally, because prior work (Quinn et al. 2019; Quinn and Desruisseaux 2022) found evidence AG framing effects differ by respondents' race and implicit bias levels, OG framing effects may differ by respondent demographics.

Hypotheses. To summarize, this study follows a preregistration plan to test the following hypotheses:

H1: Compared to an "achievement gap" issue frame, an "opportunity gap" issue frame will lead respondents to (**H1a**) place higher priority on Black/White educational inequalities; compared to an "AG only" frame, an "OG + AG" frame will lead respondents to (**H1b**) give higher levels of support to equity-focused education policies, (**H1c**) express lower levels of anti-Black/pro-White racial stereotypes, (**H1d**) more strongly endorse structural explanations for Black/White inequalities in educational outcomes and less strongly endorse explanations based on cultural or individual-traits.

H2: The framing effects from H1 will be moderated by respondents' political orientations (**H2a**) and demographic characteristics (**H2b**).

METHODS

I conducted a web-based randomized survey experiment with US adults on Amazon's Mturk platform, via CloudResearch. Mturk samples are more representative than in-person convenience samples (Berinsky, Huber, and Lenz 2012) and as representative as unweighted samples from polls conducted by CBS (Kuziemkio et al 2015). All methods described in this section were specified prior to data collection in a pre-registration document (pre-registration url: https://osf.io/658xa/).

Sample

The target analytic sample size for the two survey conditions was n=2000 (approximately 1000 respondents per condition), yielding power of .80 to detect an effect of 0.125 SD for a two-condition comparison with no covariate ($\alpha = .05$). To improve the likelihood of meeting this sample target, I recruited a total of 1200 per condition to allow for a 17% reduction in sample

size from each condition due to straight-lining responses, excessively speedy responses, and failed attention check (as specified in the pre-registration).

Prior to recruiting participants for the survey, I specified the following requirements for respondents on the CloudResearch platform: (a) located in the United States, (b) 95% task approval rate on Mturk with at least 1000 tasks (to ensure data quality), and (c) did not participate in any of the piloting conducted for this survey. In addition, I used the following CloudResearch features: (a) block multiple submissions from the same IP address, (b) block suspicious geocodes, (c) use only CloudResearch approved participants. Finally, before being routed to the full survey, respondents were required to pass a two-item screener (for which they were paid 5 cents) comprised of multiple-choice cloze-sentences to ensure English reading comprehension (see online Appendix A). Respondents who answered both items correctly were routed to the full survey (for which they were paid an additional $1.45).

Analytic sample restrictions. Prior to testing my hypotheses, I applied several analytic sample restrictions to the full sample, all of which were outlined prior to data collection in the preregistration document. First, the amount of time each respondent spent on each survey screen was recorded. I used item-wise deletion to prevent inclusion of respondents who sped through portions of the survey. Following Greszki, Meyer, and Schoen (2015), when respondents spent less than 50% of the median time respondents of their age (younger than 65 vs. 65+) by education-level group (no HS degree, HS degree, some college, Bachelor's and above) spent on each given survey screen, that batch of the respondent's items were dropped from the relevant analyses.

Given that research is mixed regarding the effect of attention-checks on respondents' downstream survey behavior (Hauser and Schwarz 2015; Kung, Kwok, and Brown 2018), I

included a single attention check after all substantive survey items were completed; the attention check read, "On this item, select as your answer 'somewhat support' regardless of your responses to other items," with 7 answer choices, from "strongly oppose" to "strongly support." I dropped all respondents who failed the attention check.

Finally, I established measure-specific rules for excluding straight-lining responders (respondents who gave the same rating for all items in certain indices), detailed in the preregistration document.

Measures

Survey development and piloting. The survey included previously validated scales and new items developed and piloted for this project. I submitted the first draft for review by content experts and a survey methods expert. After incorporating multiple rounds of revision and feedback into the survey, I conducted cognitive pretests using an approach modelled after the Response Process Evaluation method (Wolf et al. 2019) with respondents recruited from Mturk. I then piloted the original measures to collect initial evidence of factor analytic properties and Cronbach's alpha. All measures met the psychometric requirements outlined in pre-registration.

Experimental frame comparison 1: AG vs. OG. After first answering a set of moderator items (described below), respondents were randomly assigned to an "opportunity gap" framing condition or an "achievement gap" framing condition. These initial frames served as the main framing manipulation to test the preregistered hypotheses. The first frame in the AG framing condition read:

> *Data from the US Department of Education show there is an **achievement gap** between Black and White students in education.*
>
> *On average, Black students:*

- *score lower on standardized tests*
- *have lower grades*
- *are less likely to graduate high school*
- *are less likely to attend or graduate college*

The first frame in the OG framing condition followed a similar structure to the AG frame above, but replaced "achievement gap" with "opportunity gap" and replaced the AG bullet points with the following:

On average, Black students are more likely to:

- *attend "high-poverty" schools*
- *live below the poverty line*
- *have uncertified teachers*
- *have low-quality curriculum*

I operationalize OGs with these examples because (1) as explained in the item, they have been empirically shown to differ between Black and White students, and (2) they are frequently cited as examples of the OG in the literature (e.g., Darling-Hammond 2013; Irvine 2010; Ladson-Billings 2007; Milner 2011/2020).

Gap prioritization (outcome, H1a). Immediately following the first frame, respondents answered a set of three "prioritization" items from which I created a mean-index. As an example, one item read, "How much of a priority do you think it should be to close the Black/White [achievement/opportunity] gap in education?" with a 1-5 response scale where 1= "not a priority," 5= "essential priority" (adapted from Valant and Newark 2016). As anticipated from piloting, all items had a loading of .89 or above in an exploratory factor analysis (EFA; Cronbach's $\alpha = .95$). See online Appendix A for the full set of items and survey flowchart.

Experimental frame comparison 2: AG vs. OG + AG. After answering the prioritization items, respondents viewed a second informational screen tailored to their initial AG/OG framing condition. The purpose of this second pair of frames was to test H1b-H1d. Specifically, this second frame comparison enables a test of whether framing the AG within the context of the OG tempers any negative effects of the AG communication frame when used in isolation. Respondents in the AG condition saw the following text:

> *Researchers have measured Black/White achievement gaps and found them to be large. For example:*
>
> - *On national achievement tests,* ***Black students score two to three years behind White students*** *of the same age, on average.*
> - ***89% of White students*** *today graduate high school in four years, compared to* ***78% of Black students****.*
> - ***64% of White students*** *who attend college graduate within 6 years, compared to* ***40% of Black students*** *who attend*

Respondents in the OG condition read similar text, with the difference that the OG condition opened with the alternative language:

> *Researchers have found* ***"opportunity gaps" lead to*** *large Black/White* ***"achievement gaps"*** *in education.*

The subsequent text was identical to that in the AG condition.

Education policy preferences (outcome, H1b). I created a mean-index from items eliciting respondents' support for various education policies (order randomized), such as teacher bonuses for student performance (adapted from Valant and Newark, 2016; Cronbach's $\alpha = .85$). On the response scale, 1 represents "strongly oppose" and 7 represents "strongly support." As

expected from piloting, an EFA with these items resulted in one factor with an eigenvalue above one (2.96). Following the preregistration plan, I use items with a loading of .6 or above: offer bonuses to high effective teachers working in schools with mostly Black students, offer free academic summer school in schools with mostly Black students, create programs to recruit and retain more Black teachers, and offer free Pre-K programs in areas with mostly Black students. Following the pre-registration plan, I removed responses from participants who straight-lined all 8 policy items.

Racial stereotypes (outcome, H1c). I measure racial stereotypes using an index of items based on the General Social Survey (Smith et al. 2019). Respondents were asked to rate Black and White Americans on 3 bipolar traits (intelligent/unintelligent; hardworking/lazy; competent/incompetent; order randomized) on a 7-point scale, with 7 indicating a belief that "almost all" of the given racialized group exhibit the negative pole of the trait, 1 indicating a belief that "almost all" exhibit the positive pole of the trait, and 4 indicating no tendency either way (see online Appendix A). As expected, in separate EFAs broken down by the racialized group inquired about in the item, items had loadings of .7 or higher (.75 being the lowest); mean indices had Cronbach's α of .87 for White and .89 for Black. I created a stereotype index by subtracting respondents' average score across traits for Black Americans from their average score for White Americans (such that negatively-signed values indicate a pro-White bias; Cronbach's $\alpha = .83$).

Gap-explanations (outcome, H1d). In a set of items adapted from Valant and Newark (2016), I asked respondents how important they thought a variety of factors were in explaining Black/White "achievement gaps" (order randomized). Some related to structural factors (e.g., differences in teacher quality; discrimination and racism in society) and others related to cultural

factors or individual traits (e.g., differences in students' abilities, differences in parent involvement). On this scale, 1 indicates the respondent believes the factor to be "not at all important" as an explanation and 5 represents "extremely important." As described in the preregistration document, I conducted an EFA on the set of items using oblique rotation, removing responses from straight-line responders on all 11 items. As expected from piloting, I found 2 factors with eigenvalues above 1: one for structural explanations (differences in school quality; differences in family income; teachers' racial biases; differences in teacher quality; differences in school funding; discrimination and racism in society), and one for cultural/individual explanations (differences in students' motivation, differences in parent involvement in their kids' education; differences in how much parents value education; differences in students' abilities). Each item had a loading with an absolute value of .6 or greater on its primary factor and less than .6 on its secondary factor. I created two indices for these sets of explanations (Cronbach's α for structural = .86; individual/cultural = .82).

Political orientation index (moderator). The first set of items in the survey related to political orientations. These items were included for use as a baseline covariate to improve statistical power, and for use as a baseline moderator variable. Respondents were asked, "How important, if at all, is each of the following issues to you?" They were then shown 10 policy issues (taken from a Pew survey, with order randomized) with a scale of 1 ("not at all important") to 5 ("extremely important"). As anticipated from piloting, an EFA using oblique rotation showed the following items loading on one factor (with loading of .6 or higher): climate change, economic inequality, race and ethnic inequality, and coronavirus outbreak. I combined these items into a mean index (Cronbach's $\alpha = .83$), such that higher values on the scale

represent more importance placed on liberal policy issues. In accordance with the preregistration plan, I removed straight-line responders (on all 10 items).

Demographics (moderators). For use as moderators, I queried respondents on their education level, race and ethnicity, political party affiliation, and household income (see Table 1 for categories of each factor variable).

ANALYSIS

I use OLS regression as the primary method for answering my research questions.

For Hypotheses H1a-d, the question predictor of interest is a binary indicator variable denoting random assignment to the OG survey condition; in H2a&b, the test of interest is whether the effect of the binary indicator differs across levels of the relevant moderator.

Following the preregistration plan, I use the political orientation index as a covariate to improve the precision of the effect estimates (see online Appendix B for sensitivity analyses, where results are largely robust).

RESULTS

In Table 1, I present descriptive statistics by framing condition with comparisons to national US estimates from the American Community Survey where applicable. Compared with the general US population, respondents were more likely identify as female (58%) or White (76%) and less likely to identify as Black (7%), Hispanic/Latinx (4%), or multi-racial (8%). Across the 38 binary demographic indicator variables, differences between OG and AG conditions were small and only one was statistically significant at α = .05 (Asian, with 4% and 7% of respondents in the OG and AG conditions respectively; race overall does not significantly differ across conditions by χ^2 test, p=.11). At baseline, conditions were balanced on the "liberal policy index" covariate.[3]

<Table 1>

Main Effects of OG (H1a-H1d)

In Table 2, I present the main effects of OG (and "OG + AG") vs. AG framing. In Column 1, we see that on average, respondents gave higher priority to "closing the racial opportunity gap" compared with "closing the racial achievement gap." As indicated by the model intercept, respondents gave an average rating of 3.63 (on the 5-point scale) to closing the AG (adjusting for the mean-centered liberal policy index), or approximately half-way between "medium priority" and "high priority." On average, respondents rated closing the OG slightly higher, by .11 points (or .10 sd).

<Table 2>

In column 2, we see that presenting the OG frame to respondents prior to presenting AG statistics ("OG + AG") reduced the extent to which respondents endorsed cultural or individual-trait explanations for the AG, compared with respondents who only saw the AG statistics. Specifically, the OG frame reduced scores on the individual explanations index by .096 points (from the AG condition mean of 3.53 on the 5-point scale, as seen by the intercept; ES is also .096 sd).

As seen in columns 3-5, however, the "OG + AG" frame did not impact the extent to which respondents endorsed structural explanations for the AG statistics (column 3), respondents' levels of support for equity-focused education policies (column 4), or their self-reported explicit racial stereotypes (column 5).

Moderation and Subgroup Effects (H2a-H2b)

In Table 3, I present the moderation analyses associated with H2a, using the liberal policy index moderator. No interaction is statistically different from zero.

<Table 3>

In Table 4, I present subgroup analyses for each outcome, broken down separately by (a) respondent ethnoracial group (as mutually exclusive subsamples), (b) political party, (c) education level, and (d) income category. Close attention should be paid to these sample sizes, as some are relatively small. In the table, the introductory row for each factor variable gives the p-value testing the null hypothesis of equal effects across that factor's subgroups.

<Table 4>

In the first column of Table 4, we see, descriptively, a fair bit of variation in the estimates of OG framing effects on respondents' priority ratings. Effect estimates are not statistically different across subgroups, however, so caution should be exercised with inference. The significant positive effect of OG framing on priority seems to be driven by White respondents (ES=.14, p<.001). Breaking the priority results down by political party, it seems the effect on priority is driven by Democrats (ES=.14, p<.01) rather than Republicans (ES=.05, n.s.) or Independents (ES=.11, n.s.).

Although the pooled OG effect on individual-based explanations is statistically significant (Table 2), none of the estimates broken down by racialized group is statistically different from zero (though all are negatively-signed; see "Indiv. Explan Index" column of Table 4). Breaking down effects by political party, however, it may be the case that the OG effect on individual explanations is driven by Independents (ES=-.16, p<.05).

No subgroup showed a significant effect estimate for the structural explanations index or the education policy index (consistent with the pooled estimate in Table 2).

On the explicit stereotype index, the OG framing had significant positively-signed effect estimates for Hispanic/Latinx respondents (ES=.56, p<.05, n=53) and respondents with annual

household incomes between 100-150k (ES=.22, $p<.05$, n=233). For both subgroups, the AG condition had negatively-signed mean stereotype index scores, indicating a pro-White bias; in both cases, the positively-signed OG effect overcame the pro-White bias (giving the OG group positively-signed mean scores).

DISCUSSION

In a preregistered survey experiment, I find the "opportunity gap" (OG) frame has some of the hypothesized effects compared with the "achievement gap" (AG) frame. First, respondents gave higher priority to closing the racial opportunity gap compared with closing the racial achievement gap. This suggests that in political discourse, OG frames may be more effective at building support for equity-focused efforts. However, framing ("AG" vs. "OG + AG") had null effects on respondents' support for specific policies. This could be because specific policies assume specific theories of action (Mettler and Soss 2004), and respondents must share the policy's assumptions if they are to endorse the policy. That is, a frame that increases priority levels for a policy goal might only impact support for a specific policy among people who believe the policy's theory of action. This study was not designed to detect such potential heterogeneity.

When shown an OG frame before being asked to explain causes of "achievement gaps," respondents were less likely to endorse individual-based explanations (compared with only seeing an AG frame). At the same time, the OG frame had a null effect on respondents' endorsement of structural explanations for AGs. This pattern is consistent with a story in which participants, prior to frame exposure, understand AGs as arising from both structural and non-structural factors. The AG frame calls both types of explanations to mind, whereas the OG frame nudges nonstructural explanations out of mind. Consequently, we see weaker

endorsement for individual explanations when the OG frame appears, but no difference in endorsements for structural explanations.

I find no evidence the OG frame affects respondents' explicit racial stereotypes, compared with the AG frame. By contrast, past work using similar measures showed the AG as an attribute frame magnified explicit racial stereotypes compared with the "inequality in educational outcomes" attribute frame (Quinn and Desruisseaux 2022). What might explain this difference? One possibility is the prior attribute framing effect was more a function of the "inequality" attribute frame lowering racial stereotypes compared with respondents' (unobserved) baseline stereotypes, rather than the AG attribute frame increasing stereotypes. If so, perhaps the OG frame may reduce stereotypes compared with respondents' baseline if it does not appear with AG statistics or AG language (unlike the present survey). Another possibility is that of cross-sample effect heterogeneity by respondents' baseline bias levels. Recall that attribute framing effects were moderated by respondents' implicit bias levels in Quinn and Desruisseaux (2022). In the present sample, average bias levels were relatively low, with means of -.03 and -.02 in the AG and OG conditions, compared with means of -.48 and -.30 in the AG and inequality conditions in the Quinn and Desruisseaux (2022) sample.[4] The null effect in the present sample may reflect the lack of, or reduction of, an effect among respondents with lower bias levels.

Limitations and Future Research

As discussed, the OG frame can take various forms depending on how "opportunity" is conceived. There are distributive and non-distributive aspects of opportunity (Young 1990), and different ways in which "equal opportunity" can be understood (Coleman 1968; Howe 1989; Jencks 1988; Levinson, Geron, and Brighouse 2022). In this experiment, my frame

operationalized the OG as inequalities in educational inputs, or inequalities in access to high-quality educational experiences. This has at least two interpretive implications.

First, researchers do not all agree on the magnitude of each input's impact on overall learning outcomes. The OG frame in this study may have led respondents to imagine a stronger consensus over the relative effect sizes of each input, which may have in turn influenced their responses. However, the goal of this study was to test the effects of an authentic OG frame and the inputs I included in this survey's frame are frequently highlighted in the OG literature (e.g., Darling-Hammond 2013; Irvine 2010; Ladson-Billings 2007; Milner 2011/2020). Because the OG literature is primarily qualitative and conceptual, its goal is not to quantitatively compare the relative contributions of various factors to outcome disparities. Indeed, AG critics sometimes consider such multivariate models part of the AG "gap-gazing" tradition (albeit a less damaging form of it [Gutierrez 2008]). Future work could test OG frames that explicitly discuss empirical findings regarding which inputs may have the largest impacts on student learning.

Secondly, within an input-based conception of OGs, framing effects may differ depending on which inputs are emphasized. For example, some OG frame proponents may have preferred not to highlight school factors such as teacher quality, worrying this unfairly blames educators for deeper structural injustices (Carey 2014; Ladson-Billings 2013). The effects of frames that draw from other conceptions of OGs, such as more process-driven rather than input-driven conceptions (e.g., Coleman 1968; Milner 2020), will be worth exploring.

Most outcomes in the present study compared the AG frame to the OG + AG frame (the exception being the "priority" outcome). While the OG + AG frame condition was included to test whether the OG frame might neutralize negative effects of the AG frame, a trade-off with this design is that it does not provide much evidence regarding the effects of the OG frame on its

own, isolated from the AG frame. Additionally, testing the effect of the OG + AG communication frame required holding constant the AG attribute frame across the AG and OG + AG conditions. Consequently, this study does not test whether combining the OG communication frame with the "inequality in outcomes" attribute frame has different effects from those seen here.

Numerous other framing conditions could be imagined and tested in the future. Importantly, this study only examined Black-White AG frames, but the AG frame is applied to a great many other between-group comparisons. Understanding the effects of various versions of the frame – e.g., with different combinations of communication and attribute frames, different AG statistics, different input examples – will be important for providing specific recommendations to framers. Finally, the online opt-in nature of the sample raises questions about the extent to which results may generalize to people who do not participate in such surveys. We also cannot know the extent to which these framing effects may differ by one's role in the education process. Perhaps frames differentially influence attitudes for policymakers, teachers, education leaders, and the general public.

Choosing a Frame

When choosing a frame for educational inequity, the first relevant question is whether the context requires a communication frame, an attribute frame, or both. The experimental evidence collected thus far does not suggest any advantage to using the AG communication frame in isolation: The present study suggests people care less about closing AGs than closing OGs, and prior evidence (Quinn 2020) suggests the AG communication frame magnifies racial stereotypes. Yet as discussed above, scholars (e.g., Carter and Welner 2013; Darby and Rury 2018) have argued that addressing educational inequality requires measuring between-group outcome

disparities as part of a feedback loop for improving equity efforts. The present study suggests we might be able to measure and discuss these disparities without perpetuating deficit mindsets, if we place the AG frame within the OG communication frame.

Given the positive effects of the OG frame on people's attitudes, should the term "achievement gap" be retired entirely in favor of the term "opportunity gap"? Some have already drawn this conclusion. For example, Teach For America, which had been steeped in AG discourse since its founding, responded to critics in 2018 by announcing that it would stop talking of the "achievement gap" and talk instead of the "opportunity gap" (Mooney 2018). Prior survey experiments (Quinn et al. 2019; Quinn and Desruisseaux 2022) give reason to expect that striking the phrase "achievement gap" would have positive effects on equity-prioritization among both TFA teachers and non-teachers exposed to TFA's messaging. In this context, switching from language of "achievement" to language of "opportunity" embodies Coleman's (1968) fifth definition of equal opportunity, in which closing the racial opportunity gap entails closing the racial achievement gap. For an organization like TFA which is engaged in Carter and Welner's (2013) aforementioned feedback loop (measuring AGs, taking steps to address the OGs leading to those AGs, then repeating the cycle), it would be equally accurate to describe their process as working to close the "opportunity gap" or the "achievement gap" because they are operationally synonymous. When the terms are interchangeable like this, we should choose the term that is more likely to have positive effects on people's attitudes: we should choose "opportunity gap." It would remain an open question, however, as to whether a reframing like TFA's would impact the organization's educational approach or student learning.

What about contexts in which the term "achievement gap" refers to specific between-group differences in test scores or educational attainment – is it sensible to relabel these as

"opportunity gaps," or would that simply muddy the distinction between inputs and outputs? For example, the "California Distinguished Schools Program," recognizes schools for "closing the achievement gap" (CA Dept of Education 2024). Because the program commends schools based on student academic outcomes, referring to this program as recognizing schools for "closing the opportunity gap" could cause confusion over how schools are selected. At the same time, there is an argument to be made for changing terminology even in cases like this. One motivation for doing so might be to signal the adoption of Coleman's (1968) fifth definition of "equal opportunity," in which closing the OG entails closing the AG. A second reason would be to emphasize that educational outcomes themselves are "enabling goods" for other life opportunities. As Howe (1989) argued, "[the] point of equalizing educational outcomes (for children) is simply to ensure that they are adequately prepared to evaluate and pursue the social outcomes to which their mature choices will lead" (Howe, 1989:335). If we recognize that educational outcomes bestow life opportunities, then gaps in educational outcomes represent life opportunity gaps. Hence, "closing the opportunity gap" requires "closing the achievement gap."

We need direct evidence on the impact of relabeling AGs as OGs to inform these discussions. Given the potential for introducing confusion, studies on this relabeling effect will need to examine the effects on perceived meaning across different contexts. If there are positive attribute framing effects for relabeling AGs as OGs, these effects may be historically or contextually contingent given that attribute framing effects driven by connation are subject to change as labels acquire new associations (Pinker 2002). In theory, OG as an attribute frame could acquire similar negative associations as the AG, if it is not explicitly attached to a broader anti-deficit framework. Indeed, Love (2023) has argued that instead of "gaps" (achievement or opportunity), we should speak of "harms" to make an anti-racist stance explicit.

Finally, while AG and OG proponents may agree on the benefits of certain framing effects – such as reducing stereotypes – they may differentially value other goals. For example, while AG proponents may be happy to accept the OG frame if it is equally effective at reducing AGs, some OG frame proponents may not be satisfied with this outcome alone. One critique of the AG frame is that it too narrowly focuses on attainment measures such as test scores (Ladson-Billings 2006). Some OG proponents may desire a frame that advances non-academic outcomes such as communities' sense of ownership and participation in schools (Ewing 2018), students' preparedness for democratic life (Allen 2016), or the unique joys of childhood that are not available during adulthood (Brighouse et al. 2018).

CONCLUSION

This study adds to the small but growing experimental literature showing that racial equity frames in education matter. Evidence from prior research showed that AG attribute frames and communication frames negatively affect people's attitudes. The present study shows the OG frame may avoid some of these drawbacks. In studying the effects of frames on people's attitudes, it is important not to forget that it is the work of redressing the injustices themselves that must be of primary interest. The importance of communication and attribute frames derives from their potential to materially shape policy and practice, as mediated by people's attitudes.

RESEARCH ETHICS

This study was approved by the author's Institutional Review Board (University of Southern California). The experiment was preregistered at https://osf.io/658xa/ on August 14, 2021.

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ENDNOTES

[1] I use the term “racial equity” to describe the undoing of oppressive social relations that construct racialized groups (e.g., Darby and Rury 2018; Young 1990). I use the terms “racial inequality” or “racial disparities” descriptively, to refer to between-group differences in the distribution of educational inputs or outcomes that result from oppressive social relations.

[2]Comstock (2024) found no statistically significant difference in the priority ratings teachers gave to “closing the racial opportunity gap” versus “closing the racial achievement gap,” but explains that statistical power may be insufficient to detect the effect (n=270).

[3]In constructing Table 1, I follow the sample restrictions described in the study preregistration. For baseline or demographic variables in Table 1, I do not apply restrictions related to specific outcome variables, but I do follow outcome-specific restrictions (for straight-lining and screen time). While the baseline variables exhibit balance, it is worth noting that the overall sample sizes differ across conditions, indicating that the OG condition was more likely to lose respondents due to the preregistered analytic sample restrictions (differences ranging from 0.7 to 3.5 percentage points across outcomes).

[4]I have reversed the sign of the stereotype index from that reported in Quinn and Desruisseaux (2022) to maintain consistent interpretation with the present study.

Table 1. Descriptive Statistics by Survey Condition and Balance Tests. Comparisons to National US Estimates from the American Community Survey (ACS) Shown where Available.

	"OG" and "OG+AG"		"AG"			ACS 2022
	Mean	N	Mean	N	*p*	
Female	0.59	975	0.57	998	0.605	50.4%
Male	0.40	975	0.41	998	0.938	49.6%
Non-binary	0.01	975	0.02	998	0.177	
Another gender	0.00	975	0.00	998	0.188	
No HS degree	0.00	975	0.01	998	0.334	10.4%
HS degree	0.11	975	0.13	998	0.319	26.1%
Some college	0.31	975	0.31	998	0.812	27.9%
Bachelor's +	0.58	975	0.56	998	0.316	35.7%
Age: 18-29	0.18	975	0.19	998	0.872	
Age: 30-39	0.34	975	0.33	998	0.484	
Age: 40-49	0.22	975	0.22	998	0.958	
Age: 50-65	0.21	975	0.23	998	0.326	
Age: 65+	0.05	975	0.04	998	0.450	17.3%
Asian	0.04	974	0.07	998	0.008	5.9%
Black	0.07	974	0.07	998	0.768	12.2%
Hispanic/Latinx	0.03	974	0.04	998	0.885	19.1%
Multi-racial	0.09	974	0.07	998	0.117	12.5%
Native American or AK Native	0.00	974	0.01	998	0.063	1.0%
Native Hawaiian or Pac. Islander	0.00	974	0.00	998	0.312	.2%
White	0.76	974	0.75	998	0.401	60.9%
Another race	0.00	974	0.00	998	0.972	7.3%
Educator	0.11	975	0.11	998	0.858	
Future educator	0.03	975	0.03	998	0.933	
Former educator	0.11	975	0.11	998	0.977	
Never educator	0.75	975	0.76	998	0.891	
Democrat	0.42	975	0.46	998	0.113	
Republican	0.23	975	0.23	998	0.820	
Independent	0.32	975	0.30	998	0.221	
Another party	0.03	975	0.02	998	0.405	
Income: <35k	0.22	975	0.23	998	0.640	23.3%
Income: 35 to less than 50k	0.19	975	0.20	998	0.754	10.7%
Income: 50 to less than 75k	0.21	975	0.20	998	0.626	16.2%
Income: 75 to less than 100k	0.17	975	0.16	998	0.403	12.8%
Income: 100 to less than 150k	0.14	975	0.14	998	0.804	16.9%
Income: 150 to less than 250k	0.06	975	0.05	998	0.601	

Income: 250 to less than 500k	0.01	975	0.01	998	0.081
Income: >= 500k	0.00	975	0.00	998	0.328
Liberal policy index	3.69	975	3.71	998	0.606
	(1.02)		(1.04)		
Outcomes					
Priority index	3.73	952	3.64	962	0.064
	(1.09)		(1.09)		
Gap-explanation index (individual explanations)	3.32	842	3.42	883	0.051
	(1)		(0.99)		
Gap-explanation index (structural explanations)	3.56	842	3.53	883	0.548
	(1.05)		(1.1)		
Education policy index	5.56	802	5.56	829	0.985
	(1.28)		(1.26)		
White stereotype mean	3.09	836	3.05	880	0.524
	(1.05)		(1.05)		
Black stereotype mean	3.10	836	3.08	880	0.730
	(1.14)		(1.16)		
Stereotype index (Wht-Blk)	-0.02	836	-0.03	880	0.774
	(0.94)		(0.95)		

Note. P-value is for test of null hypothesis of equal means across conditions. SD in parentheses. Variables without SDs are binary indicators. "OG" = "Opportunity Gap," "AG"= "Achievement Gap." Priority index = mean index for three items with 5-point scales rating priority of closing the Black/White opportunity/achievement gap (1=not a priority; 5=essential). Gap-explanation indices take mean response on five-point scale asking respondents to rate how important various factors are for "explaining why there is a Black/White achievement gap in education" (1= "not at all important"; 5= "extremely important"). Education policy index = mean response on 7-point scale on which respondents rated their opposition/support for various education policies aimed at reducing the "Black/White achievement gap" (1= "strongly oppose"; 7= "strongly support"). For stereotype items, respondents rated Black Americans and White Americans on 3 bipolar traits (hardworking/lazy; intelligent/unintelligent; competent/incompetent), each with a 7-point scale on which 7 = the respondent believes that "almost all" of the given racialized group tends to exhibit the negative pole of the trait, 1= "almost all" exhibit the positive pole. Black (White) mean index = mean score respondents gave across 3 traits for Black (White) Americans. Stereotype index takes difference in items such that higher positive values = larger anti-Black/pro-White stereotypes. See Appendix A for full survey items.

Table 2. OLS Regression Models Estimating Framing Main Effects (H1a-H1d).

	(1) Priority	(2) Individual Explanations	(3) Structural Explanations	(4) Ed Policy Index	(5) Stereotype Index
Opp Gap / "OG+AG"	0.114***	-0.0957*	0.0361	0.0205	0.0169
	(0.0345)	(0.0460)	(0.0372)	(0.0489)	(0.0437)
Liberal Policy Index (std)	0.777***	-0.285***	0.743***	0.789***	0.274***
	(0.0171)	(0.0228)	(0.0184)	(0.0244)	(0.0217)
Constant	3.634***	3.418***	3.526***	5.554***	-0.0327
	(0.0243)	(0.0321)	(0.0260)	(0.0343)	(0.0305)
N	1914	1725	1725	1631	1716
R^2	0.521	0.085	0.486	0.391	0.085

Note. Standard errors in parentheses. Sample sizes differ across outcomes due to application of the pre-registered analytic sample restrictions. "Opp Gap/ 'OG+AG'" = binary indicator for assignment to condition with "Opportunity Gap" frame (Priority outcome) or "Opportunity Gap + Achievement Gap" frame (remaining outcomes; "AG-only" frame is reference group). "Liberal Policy Index (std)" = standardized (mean=0, sd=1) mean index of respondents' importance ratings on set of policy issues where higher ratings = more liberal position. Priority = mean index for three items with 5-point scales rating priority of closing the Black/White opportunity/achievement gap (1=not a priority; 5=essential). "Individual explanations" and "Structural explanations" are indices taking mean response on five-point scale rating how important various factors are for "explaining why there is a Black/White achievement gap in education" (1= "not at all important"; 5= "extremely important"). Ed policy index = mean response on 7-point scale on which respondents rated their opposition/support for various education policies aimed at reducing the "Black/White achievement gap" (1= "strongly oppose"; 4= "neither support nor oppose"; 7= "strongly support"). For stereotype items, respondents rated Black Americans and White Americans on 3 bipolar traits (hardworking/lazy; intelligent/unintelligent; competent/incompetent), each with a 7-point scale on which 7 = the respondent believes that "almost all" of the given racialized group tends to exhibit the negative pole of the trait, 1= "almost all" exhibit the positive pole. Stereotype index takes difference in item means such that higher positive values = larger anti-Black/pro-White stereotypes. See Appendix A for full survey items.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 3. OLS Regression Models Estimating Moderation of Framing Effects (H2a)

	(1) Priority	(2) Individual Explan	(3) Structural Explan	(4) Ed Policy Index	(5) Stereotype Index
Opp Gap / "OG+AG"	0.115***	-0.0956*	0.0361	0.0205	0.0168
	(0.0345)	(0.0460)	(0.0372)	(0.0489)	(0.0437)
Liberal Policy Index (std)	0.763***	-0.258***	0.736***	0.790***	0.291***
	(0.0238)	(0.0313)	(0.0253)	(0.0337)	(0.0299)
OG*Policy Index	0.0283	-0.0557	0.0154	-0.00131	-0.0366
	(0.0341)	(0.0456)	(0.0369)	(0.0488)	(0.0435)
Constant	3.634***	3.417***	3.526***	5.554***	-0.0328
	(0.0243)	(0.0321)	(0.0260)	(0.0343)	(0.0305)
N	1914	1725	1725	1631	1716
R^2	0.521	0.086	0.486	0.391	0.086

Note. Standard errors in parentheses. Sample sizes differ across outcomes due to application of the pre-registered analytic sample restrictions. "Opp Gap/ 'OG+AG'" = binary indicator for assignment to condition with "Opportunity Gap" frame (Priority outcome) or "Opportunity Gap + Achievement Gap" frame (remaining outcomes; "AG-only" frame is reference group). "Liberal Policy Index (std)" = standardized (mean=0, sd=1) mean index of respondents' importance ratings on set of policy issues where higher ratings = more liberal position. "OG*Policy Index" = interaction between previous two variables. Priority = mean index for three items with 5-point scales rating priority of closing the Black/White opportunity/achievement gap (1=not a priority; 5=essential). "Individual explanations" and "Structural explanations" are indices taking mean response on five-point scale rating how important various factors are for "explaining why there is a Black/White achievement gap in education" (1= "not at all important"; 4= "neither support nor oppose"; 5= "extremely important"). Ed policy index = mean response on 7-point scale on which respondents rated their opposition/support for various education policies aimed at reducing the "Black/White achievement gap" (1= "strongly oppose"; 7= "strongly support"). For stereotype items, respondents rated Black Americans and White Americans on 3 bipolar traits (hardworking/lazy; intelligent/unintelligent; competent/incompetent), each with a 7-point scale on which 7 = the respondent believes that "almost all" of the given racialized group tends to exhibit the negative pole of the trait, 1= "almost all" exhibit the positive pole. Stereotype index takes difference in item means such that higher positive values = larger anti-Black/pro-White stereotypes. See Appendix A for full survey items.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4. Framing Effect Estimates by Subgroup (H2b).

	Priority		Indiv explan index		Struct explan Index		Edu policy index		Stereotype index	
	OG effect	AG mean	OG effect	AG mean	OG effect	AG mean	OG effect	AG mean	OG effect	AG mean
					Race					
p	0.174		0.659		0.776		0.848		0.160	
Asian	0.27~	3.37	-0.24	3.64	0.08	3.53	0.23	5.20	0.19	-0.33
	(0.14)		(0.22)		(0.19)		(0.20)		(0.18)	
N	102		90		90		89		87	
Black	0.05	4.05	-0.17	3.72	0.02	4.01	0.02	5.60	0.04	0.31
	(0.12)		(0.19)		(0.12)		(0.18)		(0.18)	
N	133		114		114		104		120	
Hispanic/Latinx	-0.09	3.67	-0.28	3.58	0.17	3.53	0.13	5.25	0.56*	-0.42
	(0.20)		(0.28)		(0.21)		(0.28)		(0.28)	
N	65		54		54		51		53	
White	0.14***	3.61	-0.05	3.35	0.05	3.48	-0.00	5.60	-0.02	-0.05
	(0.04)		(0.05)		(0.04)		(0.06)		(0.05)	
N	1442		1317		1317		1247		1308	
Multi-racial	-0.14	3.77	-0.18	3.41	-0.10	3.64	0.00	5.59	-0.05	0.19
	(0.13)		(0.15)		(0.14)		(0.19)		(0.16)	
N	155		137		137		129		136	
					Political party					
p	0.293		0.676		0.446		0.615		0.846	
Democrat	0.14**	3.62	-0.08	3.25	0.09~	3.59	0.04	5.67	-0.00	0.00
	(0.04)		(0.07)		(0.05)		(0.06)		(0.06)	
N	836		767		767		726		757	
Republican	0.05	3.63	-0.13~	3.90	-0.03	3.41	-0.06	5.41	0.06	-0.39
	(0.08)		(0.08)		(0.09)		(0.14)		(0.11)	

N	440		386		386		362		390	
Independent	0.11	3.66	-0.16*	3.49	0.03	3.51	0.07	5.52	0.02	0.00
	(0.07)		(0.08)		(0.07)		(0.09)		(0.07)	
N	593		535		535		507		533	
	Education level									
p	0.888		0.918		0.885		0.565		0.820	
HS degree or less	0.12	3.59	-0.05	3.51	0.12	3.48	-0.12	5.45	0.08	-0.19
	(0.11)		(0.14)		(0.11)		(0.15)		(0.13)	
N	234		210		210		191		211	
Some college	0.08	3.68	-0.15~	3.50	0.05	3.57	0.10	5.46	0.06	-0.04
	(0.06)		(0.09)		(0.07)		(0.09)		(0.08)	
N	593		515		515		490		515	
Bachelor's degree	0.13*	3.62	-0.06	3.40	0.02	3.52	0.01	5.58	-0.03	0.02
	(0.06)		(0.08)		(0.06)		(0.08)		(0.07)	
N	667		610		610		572		608	
Bachelor's +	0.14~	3.61	-0.12	3.31	0.02	3.49	-0.01	5.70	0.01	-0.03
	(0.07)		(0.09)		(0.08)		(0.10)		(0.09)	
N	420		390		390		378		382	
	Income category									
p	0.133		0.990		0.610		0.806		0.342	
Income <35k	0.16*	3.59	-0.15	3.31	0.07	3.50	0.01	5.51	-0.01	-0.07
	(0.08)		(0.10)		(0.08)		(0.10)		(0.09)	
N	446		395		395		368		398	
Income 35-50k	0.05	3.66	-0.08	3.45	-0.08	3.57	-0.01	5.59	-0.04	-0.01
	(0.07)		(0.10)		(0.08)		(0.11)		(0.10)	
N	376		338		338		318		341	
Income 50-75k	0.19*	3.59	-0.05	3.38	0.07	3.53	-0.01	5.51	0.07	-0.03
	(0.07)		(0.10)		(0.08)		(0.10)		(0.10)	
N	398		354		354		341		352	
Income 75-100k	-0.09	3.80	-0.08	3.38	-0.04	3.59	-0.05	5.67	-0.04	0.03

	(0.09)		(0.11)		(0.10)		(0.13)		(0.10)	
N	305		281		281		268		281	
Income 100-150k	0.19*	3.62	-0.09	3.55	0.08	3.53	0.10	5.57	0.22*	-0.15
	(0.09)		(0.10)		(0.10)		(0.13)		(0.11)	
N	269		243		243		230		233	
Income >150k	0.31*	3.47	-0.20	3.54	0.25	3.39	0.16	5.47	-0.08	0.09
	(0.15)		(0.18)		(0.16)		(0.23)		(0.17)	
N	120		114		114		106		111	

Note. Estimates from separate OLS regression models by subgroup (with mean-centered policy index covariate). Estimates in "AG mean" column are taken from the model intercept; the OG coefficient and its standard error are shown in the "OG effect" column. P-value rows show p-value for test of null hypothesis of equal effects for a given column variable across levels of the row factor variable. Significance tests conducted in separate models, with post-hoc test of joint significance of the interaction terms between the OG indicator and the level indicators (in models that also include the relevant main effects). Priority = mean index for three items with 5-point scales rating priority of closing the Black/White opportunity/achievement gap (1=not a priority; 5=essential). "Indiv explan index" and "Struct explan index" are indices taking mean response on five-point scale rating how important various factors are for "explaining why there is a Black/White achievement gap in education" (1= "not at all important"; 5= "extremely important"). Edu policy index = mean response on 7-point scale on which respondents rated their opposition/support for various education policies aimed at reducing the "Black/White achievement gap" (1= "strongly oppose"; 4= "neither support nor oppose"; 7= "strongly support"). For stereotype items, respondents rated Black Americans and White Americans on 3 bipolar traits (hardworking/lazy; intelligent/unintelligent; competent/incompetent), each with a 7-point scale on which 7 = the respondent believes that "almost all" of the given racialized group tends to exhibit the negative pole of the trait, 1= "almost all" exhibit the positive pole. Stereotype index takes difference in item means such that higher positive values = larger anti-Black/pro-White stereotypes. See Appendix A for full survey items.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Appendix A. Survey Items

As noted in the main text, I conducted cognitive pretests during the survey development modelled after the Response Process Evaluation method. In this phase, many respondents submitted short-answer responses that were irrelevant to the task at hand (e.g., unrelated text pasted from the web) and/or incoherent, suggesting potential lack of comprehension of the survey material. During subsequent item piloting, I therefore tested an initial paid screener that respondents were required to pass before being routed to the full survey (for which they were awarded bonus pay). The responses from participants who passed the screener were consistently higher quality compared to the general pool of responses. In the main survey experiment, I therefore also required participants to pass a screener before entering the survey sample.

The experimental manipulations in this survey – the contrasting issue frames – require that respondents can read and understand English at approximately the reading level of a mainstream newspaper. As a screener, I therefore had potential respondents complete two cloze sentences taken from recent news stories, one from the New York Times and one for the Los Angeles Times. In the HIT recruitment post, this process and compensation scheme were explained to potential respondents. The screener items read:

Which answer choice best fills in the blank in each sentence?

1. *The U.S. Consumer Price Index, a key measure of inflation, rose _____ for a third month through June*[1].

   Rapidly

   Angrily

   Jealously

   Down

   Around

2. *Lawsuits are seeking potential class-action _____ from Dow Chemical and its successor company over a bug killer linked to brain damage in children*[2]

   purchases

   hospitals

   turnaround

   vaccination

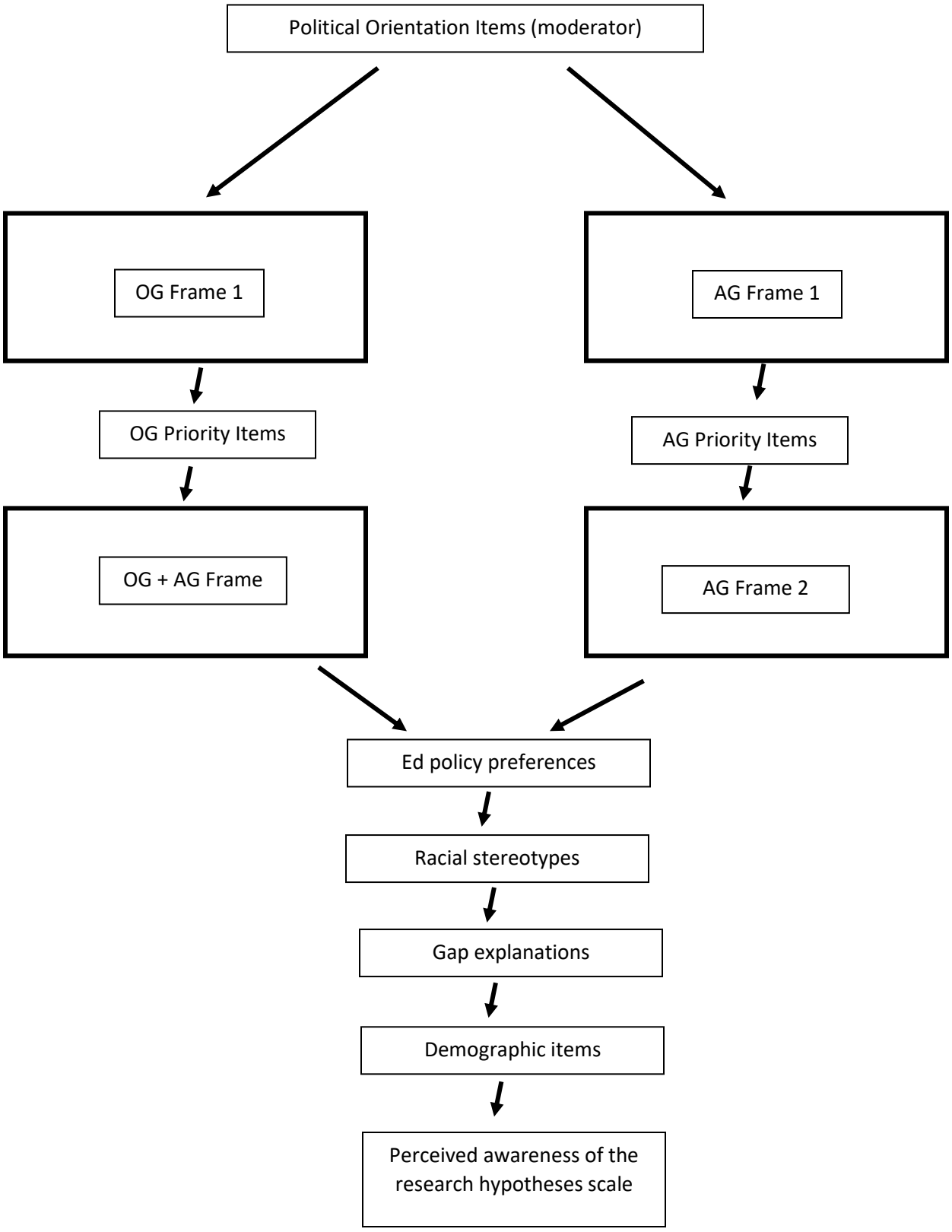
   damages

Respondents who answered both items correctly were routed to the full survey. I include the full sets of relevant items below (shown in order of appearance in survey); see the preregistration document for survey routing logic.

[1] New York Times (July 13, 2021). Accessed from: https://www.nytimes.com/live/2021/07/13/business/economy-stock-market-news

[2] LA Times (July 13, 2021). Accessed from: https://www.latimes.com/california/story/2021-07-13/california-lawsuits-says-pesticide-caused-kids-brain-damage

Appendix A. Survey Flowchart



Appendix A. Survey Items.

Political Orientation Index
In the first set of questions, we would like to know how important a variety of policy issues are to you.

How important, if at all, is each of the following issues to you?

Q12 The economy

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q13 Climate change

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q14 The amount we pay in taxes

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q15 The quality of our public schools

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q16 Economic inequality

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q17 Immigration

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q18 Race and ethnic inequality

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q19 Violent crime

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q20 Coronavirus outbreak

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q21 Health care

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Frame 1

Data from the US Department of Education show there is an **achievement gap** between Black and White students in education. On average, Black students: • score lower on standardized tests • have lower grades • are less likely to graduate high school • are less likely to attend or graduate college For the next set of questions, think about how important the **Black/White achievement gap in education** is compared to all of the important issues facing our country today.	Data from the US Department of Education show there is an **opportunity gap** between Black and White students in education. On average, Black students are more likely to: • attend "high-poverty" schools • live below the poverty line • have uncertified teachers • have low-quality curriculum For the next set of questions, think about how important the **Black/White opportunity gap in education** is compared to all of the important issues facing our country today.

Gap-priority

How much of a priority do you think it should be to close the **Black/White achievement gap** in education?

- ○ Not a priority (1)
- ○ Low priority (2)
- ○ Medium priority (3)
- ○ High priority (4)
- ○ Essential priority (5)

Q26 How important is it that our political leaders are committed to closing the **Black/White achievement gap** in education?

- ○ Not important (1)
- ○ A little important (2)
- ○ Somewhat important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q27 How urgent is it that we close the **Black/White achievement gap** in education?

- ○ Not urgent (1)
- ○ A little urgent (2)
- ○ Somewhat urgent (3)
- ○ Quite urgent (4)
- ○ Extremely urgent (5)

Frame 2

Researchers have measured Black/White achievement gaps and found them to be large. For example: • On national achievement tests, **Black students score two to three years behind White students** of the same age, on average. • **89% of White students** today graduate high school in four years, compared to **78% of Black students**. • **64% of White students** who attend college graduate within 6 years, compared to **40% of Black students** who attend On the next screen, you will be asked whether you support or oppose specific policies that have been proposed to reduce the achievement gap between Black and White students. Each proposal may require public funding from higher taxes.	Researchers have found **"opportunity gaps" lead to** large Black/White **"achievement gaps"** in education. For example: • On national achievement tests, **Black students score two to three years behind White students** of the same age, on average. • **89% of White students** today graduate high school in four years, compared to **78% of Black students**. • **64% of White students** who attend college graduate within 6 years, compared to **40% of Black students** who attend On the next screen, you will be asked whether you support or oppose specific policies that have been proposed to reduce the achievement gap between Black and White students. Each proposal may require public funding from higher taxes.

Education Policy Preferences
Please show whether you would support or oppose each proposal to reduce the Black/White achievement gap.

Q32 Offer highly effective teachers bonus money if they work in schools with mostly Black students

- ○ Strongly oppose (1)
- ○ Somewhat oppose (2)
- ○ Slightly oppose (3)
- ○ Neither support nor oppose (4)
- ○ Slightly support (5)
- ○ Somewhat support (6)
- ○ Strongly support (7)

Q33 Provide government funds to assist Black students in paying for private school tuition

- ○ Strongly oppose (1)
- ○ Somewhat oppose (2)
- ○ Slightly oppose (3)
- ○ Neither support nor oppose (4)
- ○ Slightly support (5)
- ○ Somewhat support (6)
- ○ Strongly support (7)

Q34 Create free academic summer school programs that serve schools with mostly Black students

- ○ Strongly oppose (1)
- ○ Somewhat oppose (2)
- ○ Slightly oppose (3)
- ○ Neither support nor oppose (4)
- ○ Slightly support (5)
- ○ Somewhat support (6)
- ○ Strongly support (7)

Q35 Increase the number of charter schools available in school districts with mostly Black students

- ○ Strongly oppose (1)
- ○ Somewhat oppose (2)
- ○ Slightly oppose (3)
- ○ Neither support nor oppose (4)
- ○ Slightly support (5)
- ○ Somewhat support (6)
- ○ Strongly support (7)

Q36 Create programs to recruit and retain more Black teachers

- ○ Strongly oppose (1)
- ○ Somewhat oppose (2)
- ○ Slightly oppose (3)
- ○ Neither support nor oppose (4)
- ○ Slightly support (5)
- ○ Somewhat support (6)
- ○ Strongly support (7)

Q37 Offer free pre-kindergarten programs in areas with mostly Black students

- ○ Strongly oppose (1)
- ○ Somewhat oppose (2)
- ○ Slightly oppose (3)
- ○ Neither support nor oppose (4)
- ○ Slightly support (5)
- ○ Somewhat support (6)
- ○ Strongly support (7)

Q38 In schools that serve mostly Black students, offer free parenting classes that teach new parents how to build students' literacy and math skills at home

- ○ Strongly oppose (1)
- ○ Somewhat oppose (2)
- ○ Slightly oppose (3)
- ○ Neither support nor oppose (4)
- ○ Slightly support (5)
- ○ Somewhat support (6)
- ○ Strongly support (7)

Q39 In schools that serve mostly Black students, pay teachers more if their students demonstrate larger gains on state tests

- ○ Strongly oppose (1)
- ○ Somewhat oppose (2)
- ○ Slightly oppose (3)
- ○ Neither support nor oppose (4)
- ○ Slightly support (5)
- ○ Somewhat support (6)
- ○ Strongly support (7)

Racial Stereotypes

Q43 Are **White Americans** mostly **hardworking** or **lazy**?

- ○ Almost all are hardworking (1)
- ○ Moderate majority are hardworking (2)
- ○ Slight majority are hardworking (3)
- ○ No tendency to one or other (4)
- ○ Slight majority are lazy (5)
- ○ Moderate majority are lazy (6)
- ○ Almost all are lazy (7)

Page Break

Q45 Are **Black Americans** mostly **hardworking** or **lazy**?

- ○ Almost all are hardworking (1)
- ○ Moderate majority are hardworking (2)
- ○ Slight majority are hardworking (3)
- ○ No tendency to one or other (4)
- ○ Slight majority are lazy (5)
- ○ Moderate majority are lazy (6)
- ○ Almost all are lazy (7)

Page Break

Q47 Are **White Americans** mostly **intelligent** or **unintelligent**?

- Almost all are intelligent (1)
- Moderate majority are intelligent (2)
- Slight majority are intelligent (3)
- No tendency to one or other (4)
- Slight majority are unintelligent (5)
- Moderate majority are unintelligent (6)
- Almost all are unintelligent (7)

Page Break

Q49 Are **Black Americans** mostly **intelligent** or **unintelligent**?

- Almost all are intelligent (1)
- Moderate majority are intelligent (2)
- Slight majority are intelligent (3)
- No tendency to one or other (4)
- Slight majority are unintelligent (5)
- Moderate majority are unintelligent (6)
- Almost all are unintelligent (7)

Page Break

Q51 Are **White Americans** mostly **competent** or **incompetent**?

- ○ Almost all are competent (1)
- ○ Moderate majority are competent (2)
- ○ Slight majority are competent (3)
- ○ No tendency to one or other (4)
- ○ Slight majority are incompetent (5)
- ○ Moderate majority are incompetent (6)
- ○ Almost all are incompetent (7)

Page Break

Q53 Are **Black Americans** mostly **competent** or **incompetent**?

- ○ Almost all are competent (1)
- ○ Moderate majority are competent (2)
- ○ Slight majority are competent (3)
- ○ No tendency to one or other (4)
- ○ Slight majority are incompetent (5)
- ○ Moderate majority are incompetent (6)
- ○ Almost all are incompetent (7)

Gap-explanations

Q55 How important do you think each of these factors is in explaining why there is a Black/White achievement gap in education?

Q56 Differences in school quality

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q57 Differences in family income

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q58 Teachers' racial biases

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q59 Differences in teacher quality

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q60 Differences in school funding

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q61 Discrimination and racism in society

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q62 Differences in students' motivation

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q63 Differences in parental involvement in their kids' education

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q64 Differences in how much parents value education

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q65 Differences in students' abilities

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Q66 Genetic differences

- ○ Not at all important (1)
- ○ Slightly important (2)
- ○ Moderately important (3)
- ○ Quite important (4)
- ○ Extremely important (5)

Perceived Awareness of the Research Hypothesis Scale

Q117 Please indicate how much you agree or disagree with each of the following statements.

Q118 I knew what the researchers were investigating in this research

- ○ Strongly disagree (1)
- ○ Moderately disagree (2)
- ○ Slightly disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Slightly agree (5)
- ○ Moderately agree (6)
- ○ Strongly agree (7)

Q119 I wasn’t sure what the researchers were trying to demonstrate in this research

- ○ Strongly disagree (1)
- ○ Moderately disagree (2)
- ○ Slightly disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Slightly agree (5)
- ○ Moderately agree (6)
- ○ Strongly agree (7)

Q120 I had a good idea about what the hypotheses were in this research

- ○ Strongly disagree (1)
- ○ Moderately disagree (2)
- ○ Slightly disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Slightly agree (5)
- ○ Moderately agree (6)
- ○ Strongly agree (7)

Q121 I was unclear about exactly what the researchers were aiming to prove in this research

- ○ Strongly disagree (1)
- ○ Moderately disagree (2)
- ○ Slightly disagree (3)
- ○ Neither agree nor disagree (4)
- ○ Slightly agree (5)
- ○ Moderately agree (6)
- ○ Strongly agree (7)

Appendix B. Sensitivity Analyses

Table B1. Models Without Applying Pre-registered Sampling Restrictions.

	(1) Priority	(2) Individual Explan	(3) Structural Explan	(4) Ed Policy Index	(5) Stereotype Index
Opp Gap	0.0942*	0.0622	-0.0374	0.0162	0.00537
	(0.0449)	(0.0499)	(0.0414)	(0.0440)	(0.0392)
Constant	3.658***	5.218***	3.442***	3.591***	-0.0176
	(0.0317)	(0.0353)	(0.0292)	(0.0311)	(0.0277)
N	2402	2398	2396	2396	2395
R^2	0.002	0.001	0.000	0.000	0.000

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B2. Ordered Logit Models (main effects)

	(1) Priority	(2) Individual Explan	(3) Structural Explan	(4) Ed Policy Index	(5) Stereotype Index
Opp Gap	0.261**	-0.159~	0.0740	0.0522	0.0435
	(0.0816)	(0.0837)	(0.0840)	(0.0867)	(0.0931)
Liberal Policy Index (std)	1.776***	-0.500***	1.631***	1.404***	0.603***
	(0.0551)	(0.0426)	(0.0547)	(0.0540)	(0.0485)
N	1914	1725	1725	1631	1716

Standard errors in parentheses
~ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table B3. Ordered Probit Models (main effects)

	(1) Priority	(2) Individual Explan	(3) Structural Explan	(4) Ed Policy Index	(5) Stereotype Index
Opp Gap	0.165***	-0.106*	0.0346	0.0255	0.0255
	(0.0477)	(0.0486)	(0.0490)	(0.0503)	(0.0515)
Liberal Policy Index (std)	1.004***	-0.286***	0.924***	0.789***	0.347***
	(0.0290)	(0.0246)	(0.0293)	(0.0287)	(0.0266)
N	1914	1725	1725	1631	1716

Standard errors in parentheses
~ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table B4. Median Regression Models (main effects)

	(1) Priority	(2) Individual Explan	(3) Structural Explan	(4) Ed Policy Index
Opp Gap	0.121**	-0.0833	0.0833~	0
	(0.0429)	(0.0743)	(0.0452)	(0.0559)
Liberal Policy Index (std)	0.866***	-0.340***	0.794***	0.802***
	(0.0212)	(0.0368)	(0.0224)	(0.0279)
Constant	3.662***	3.431***	3.579***	5.735***
	(0.0302)	(0.0519)	(0.0316)	(0.0392)
N	1914	1725	1725	1631

Standard errors in parentheses
~ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table B5. Ordered Logit Models (moderation)

	(1) Priority	(2) Individual Explan	(3) Structural Explan	(4) Ed Policy Index	(5) Stereotype Index
Opp Gap	0.261**	-0.165*	0.0736	0.0522	0.0439
	(0.0816)	(0.0838)	(0.0840)	(0.0867)	(0.0931)
Liberal Policy Index (std)	1.715***	-0.447***	1.611***	1.411***	0.622***
	(0.0672)	(0.0577)	(0.0674)	(0.0691)	(0.0649)
OG*Policy Index	0.130	-0.113	0.0427	-0.0148	-0.0410
	(0.0823)	(0.0825)	(0.0834)	(0.0884)	(0.0910)
N	1914	1725	1725	1631	1716

Standard errors in parentheses
~ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table B6. Ordered Probit Models (moderation)

	(1) Priority	(2) Individual Explan	(3) Structural Explan	(4) Ed Policy Index	(5) Stereotype Index
Opp Gap	0.168***	-0.106*	0.0350	0.0254	0.0253
	(0.0478)	(0.0486)	(0.0490)	(0.0504)	(0.0515)
Liberal Policy Index (std)	0.969***	-0.261***	0.909***	0.791***	0.359***
	(0.0370)	(0.0334)	(0.0371)	(0.0374)	(0.0359)
OG*Policy Index	0.0722	-0.0541	0.0336	-0.00358	-0.0254
	(0.0482)	(0.0483)	(0.0489)	(0.0504)	(0.0511)
N	1914	1725	1725	1631	1716

Standard errors in parentheses
~ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Table B7. Median Regression Models (moderation)

	(1) Priority	(2) Individual Explan	(3) Structural Explan	(4) Ed Policy Index
Opp Gap	0.0570	-0.129~	0.0644	0.0287
	(0.0440)	(0.0682)	(0.0478)	(0.0545)
Liberal Policy Index (std)	0.837***	-0.292***	0.785***	0.816***
	(0.0304)	(0.0464)	(0.0326)	(0.0376)
OG*Policy Index	0.0698	-0.0486	0.0500	-0.0227
	(0.0436)	(0.0677)	(0.0475)	(0.0544)
Constant	3.684***	3.476***	3.583***	5.717***
	(0.0310)	(0.0476)	(0.0334)	(0.0382)
N	1914	1725	1725	1631

Standard errors in parentheses
~ $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Perceived Awareness of the Research Hypothesis Scale (PARH)

To test for potential demand effects, I conducted sensitivity analyses using the PARH scale (Rubin 2016; see Appendix B for items). In Table C7, I include the mean-based index created from the PARH items (with the second and fourth items reverse-coded) as a control variable in the OLS regression model while estimating framing effects. As seen in Columns 1 (all respondents with non-missing PARH data) and 2 (all respondents with non-missing PARH data who did not speed through AG/OG frames) of C7, there was no significant difference between conditions in the extent to which respondents believed they knew what the research was investigating. As seen in columns 3-7 of Table C7, the main effects reported in the main text are replicated while controlling for the PARH scale. As seen in Table C8, none of the outcome variables showed interactions between framing condition and PARH.

Table B8. OLS Regression Models Controlling for Demand Effects.

	(1) PARH	(2) PARH	(3) Priority	(4) Individual Explan	(5) Structural Explan	(6) Ed Policy Index	(7) Stereotype Index
Opp Gap	-0.0134	-0.0197	0.121***	-0.106*	0.0302	0.0413	0.0142
	(0.0193)	(0.0204)	(0.0354)	(0.0468)	(0.0381)	(0.0499)	(0.0449)
Liberal Policy Index (std)			0.769***	-0.288***	0.742***	0.782***	0.278***
			(0.0176)	(0.0232)	(0.0189)	(0.0250)	(0.0224)
PARH			0.0316	0.0452	0.0653	0.0626	-0.0736
			(0.0414)	(0.0544)	(0.0443)	(0.0584)	(0.0523)
Constant	0.246***	0.250***	3.625***	3.420***	3.513***	5.526***	-0.0189
	(0.0136)	(0.0143)	(0.0270)	(0.0355)	(0.0289)	(0.0380)	(0.0340)
N	1964	1758	1830	1655	1655	1567	1649
R^2	0.000	0.001	0.512	0.088	0.484	0.387	0.087

Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table B9. OLS Regression Models: Interacting Condition with PARH.

	(1) PARH	(2) PARH	(3) Priority	(4) Individual Explan	(5) Structural Explan
Opp Gap	0.130**	-0.0837	0.0277	0.0406	0.0531
	(0.0407)	(0.0539)	(0.0438)	(0.0573)	(0.0516)
PARH	0.0508	0.0896	0.0604	0.0612	0.00301
	(0.0584)	(0.0754)	(0.0614)	(0.0812)	(0.0726)
Opp Gap*PARH	-0.0389	-0.0927	0.0102	0.00304	-0.160
	(0.0830)	(0.109)	(0.0888)	(0.117)	(0.105)
Liberal Policy Index (std)	0.769***	-0.286***	0.742***	0.782***	0.280***
	(0.0176)	(0.0233)	(0.0189)	(0.0250)	(0.0224)
Constant	3.621***	3.409***	3.514***	5.526***	-0.0380
	(0.0288)	(0.0379)	(0.0308)	(0.0405)	(0.0363)
N	1830	1655	1655	1567	1649
R^2	0.512	0.088	0.484	0.387	0.088

References (Appendices)

Rubin, Mark. 2016. “The perceived awareness of the research hypothesis scale: Assessing the influence of demand characteristics.” *Figshare.* doi: 10.6084/m9.figshare.4315778