

# The Effect of Black–White Income Inequality on Perceived Interracial Psychological Outcomes via Perceived Interracial Competition

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This research examined the influence of Black–White income inequality on negative interracial psychological outcomes and the role of perceived interracial competition as a mediational mechanism. The research utilized three different designs across three preregistered experiments to assess the proposed processes. Study 1 ( $N = 846$ ) used a measurement-of-mediation design and found that participants assigned to the high racial income gap condition reported more perceived interracial competition, discrimination, avoidance, and anxiety relative to those in the low racial income gap condition. Effects were mediated by increased perceptions of interracial competition. Studies 2a ( $n = 827$ ) and 2b ( $n = 841$ ) used an experimental-causal-chain design and replicated the effect of the racial income gap condition on increased perceptions of interracial competition (Study 2a) and showed that participants in the high perceived interracial competition condition—the manipulated mechanism—exhibited greater perceived discrimination, anxiety, and mistrust relative to those in the low perceived interracial competition condition (Study 2b). Study 3 ( $N = 1,583$ ) diversified the sample by recruiting similar numbers of Black ( $n = 796$ ) and White ( $n = 787$ ) participants and used a moderation-of-process design by simultaneously manipulating the racial income gap and perceived interracial competition. Competition moderated effects: Inequality effects were stronger for those in the high competition condition. Implications for theory development are discussed.

## Public Significance Statement

When Black and White people in the United States are led to believe that they live in a ZIP-code where White people make more than Black people on average (i.e., large racial income gap), their perceptions of discrimination, avoidance, anxiety, and mistrust between these groups increase. This relationship is in part due to heightened perceptions of Black–White competition; the belief that Black and White people are competing with one another.

**Keywords:** Black–White income gap, income inequality, intergroup competition, perceived discrimination, race

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Disparities between Black and White Americans persist in the United States (e.g., Bertrand & Mullainathan, 2004; Bialik & Cilluffo, 2017; Gittleman & Wolff, 2004; J. Knowles et al., 2001; Kraus et al., 2017). For example, Black Americans have worse

educational outcomes (Hanushek et al., 2019; National Center for Education Statistics, 2011; A. Vanneman et al., 2009), health outcomes (e.g., Gibbons et al., 2004; Hertz et al., 2005; Williams et al., 2003), and fewer employment opportunities (Gezici &

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Study design and analyses were preregistered and can be found using the following links (Study 1 – <https://aspredicted.org/cv7qt.pdf>; Study 2a – <https://aspredicted.org/75p66.pdf>; Study 2b – <https://aspredicted.org/ps5wc.pdf>; Study 3 – <https://aspredicted.org/fk8xi.pdf>). The data described in this article are openly available on Jeremy P. Jamieson's lab website (<https://socialstresslab.wixsite.com/urochester/research>) and in the Open Science Framework at <https://doi.org/10.17605/OSF.IO/YFGCH>. Data for this research were collected as part of Jonathan Gordils's dissertation. Findings were presented at the annual meeting for the Society of Personality & Social Psychology (SPSP) in San Francisco.

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Ozay, 2020; Williams & Mohammed, 2009). Notably, there exists a sizable income gap between Black and White Americans, whereby Black Americans earn just over half (56%) of what White Americans earn (Manduca, 2018).

Across the social sciences, multiple lines of research suggest several upstream antecedents of the racial income gap, such as educational inequality, unemployment differences, government policies, and rising income inequality in general (Jaret et al., 2003; Manduca, 2018; McKernan et al., 2013; T. M. Shapiro & Kenty-Drane, 2005). Further, several societal ramifications have been posited as a result of the income gap, including debt accrual, food insufficiency, housing scarcity, mental health problems, violent crime, and suicide (P. M. Blau & Golden, 1986; Burr et al., 1999; Chun et al., 2020; McKernan et al., 2013; Monte & Perez-Lopez, 2022; Peterson & Krivo, 1993; Phelan & Link, 2015). Despite the rising magnitude and severity of this social issue, past work on interracial income inequality has been correlational and predominantly focused on macro-to-macro associations, such as racial income inequality and crime (J. R. Blau & Blau, 1982; Parker & McCall, 1999). Far less is known about *how* interracial income inequality translates into micro-level outcomes. Put simply, there remains a dearth of experimental research on the person-level effects of racial income inequality and underlying mechanisms.

This lack of research is notable because person-level research is crucial for understanding how a macro-level factor like racial income inequality “gets into people’s heads” to produce micro-level outcomes. Toward this end, we adopted a mechanistic, process-oriented approach to investigate the experimental effect of Black–White income inequality on interracial psychological outcomes. We posited and tested perceptions of race-based intergroup (i.e., interracial) competition as a key psychological mechanism for how the Black–White racial income gap impacts important outcomes, namely perceived discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust.

## **Black–White Income Gap and Perceptions of Interracial Competition**

While extant literature has documented important work on perceived Black–White economic inequality (e.g., Callaghan et al., 2021; Davidai & Walker, 2022; Kraus et al., 2017, 2019, 2022; Onyeador et al., 2021), to date, determining how the Black–White income gap directly impacts (i.e., via experimental manipulation) interracial psychological outcomes has received no empirical attention. To begin to answer such questions, it is imperative to acknowledge that work on objective racial inequality and perceived racial inequality are distinct from one another (for a review, see Peters & Jetten, 2023). Focusing on the former, research on general income inequality (i.e., the unequal distribution of income across individuals) can be leveraged to understand how unequal distributions of resources may affect psychological outcomes. Notably, empirical work has linked general income inequality to important outcomes (e.g., prejudice, intergroup anxiety, and avoidance; Caluori et al., 2021; Connor et al., 2019; Gordils et al., 2020) and to competition (i.e., the zero-sum vying for valued resources; Deutsch, 1973; Kelley & Thibaut, 1969), and has highlighted competition as a focal mechanism explaining the effects of general income inequality (e.g., Elgar et al., 2017; Mishra et al., 2015; Sommet et al., 2019, 2023).

Central to the experience of inequality is the process of social comparison. At the individual level, when basic needs are met and no objective measure of “having enough” exists (as is the case for income), social comparison is used to assess what is “sufficiently well-off” (Festinger, 1954; Fiske, 2010). That is, individuals use information about others to gauge their position in status hierarchies (Jetten et al., 2017; Payne et al., 2017, Study 4). At high levels of income inequality, the influence of relative income information increases in kind (Cheung & Lucas, 2016). Moreover, income inequality discourages reciprocity, engenders positional competition, and increases perceptions that others are competitive (Kawachi et al., 1997; Kawachi & Subramanian, 2014; Sommet et al., 2019, 2023).

Social comparison processes are not limited to the interpersonal level. People not only compare themselves to others, but they also make comparisons at the intergroup level based on social group memberships (M. B. Brewer & Weber, 1994; Brown & Pehrson, 2019; Esses et al., 2001; Garcia et al., 2013; Major, 1994). Moreover, social comparisons operate both explicitly (Jost et al., 2004) and implicitly (e.g., Gilbert et al., 1995; Greenwald & Banaji, 1995; Zell & Krizan, 2014). While individuals may have difficulty accurately reporting on objective income disparities (Kraus et al., 2017; Norton & Ariely, 2011), information from the environment that signals economic differences (e.g., Sands & de Kadt, 2020) and stratification of groups (e.g., housing and vocations; Bigler et al., 2003; Elenbaas & Killen, 2016; Newheiser & Olson, 2012) nonetheless impacts psychological processes.

For racial income inequality in particular, the Black–White income gap can be construed as a resource stress—the perception that access to resources is limited for certain groups (Esses et al., 1998). In high resource stress contexts, the presence of a relevant, comparative outgroup (i.e., a different racial group) fosters perceptions of intergroup competition. Specifically, “us versus them” thinking (M. B. Brewer, 2001) can emerge when groups feel deprived of important outcomes compared to others and seek to improve their relative social position (Crosby, 1976; Mummendey et al., 1999; Ten Velden et al., 2009; R. D. Vanneman & Pettigrew, 1972). However, competition can also manifest when advantaged groups become concerned about losing social capital and standing (Anier et al., 2016; Dambrun et al., 2006; Moscatelli et al., 2014). Thus, we posit that the presence of a sizable racial income gap between Black and White people leads to perceptions of competition between racial groups, and does so for both Black and White perceivers (see Jetten et al., 2017).

## **Implications of Interracial Competition**

Classic models of intergroup processes (e.g., realistic group conflict theory, intergroup threat theory, and social identity theory) postulate that intergroup competition (both actual and perceived) engenders outgroup threat and negative outcomes (Campbell, 1965; Sherif, 1966; Stephan et al., 2016; Stephan & Stephan, 2000; Tajfel & Turner, 2001; Turner, 1975). Outgroup threat—the perception that outgroup members are able to cause ingroup harm (Stephan et al., 2009)—includes cognitive components, such as zero-sum beliefs (i.e., gains/losses for one group produce corresponding gains/losses for another group) and affective components, such as feelings of anxiety and prejudice that intergroup members form in response to outgroup antagonism (Van Oudenhoven et al.,

2006). Further, ingroup members exhibit motivation to quell threats from outgroups, which can take the form of ingroup favoritism (Greenwald & Pettigrew, 2014; Jost & Banaji, 1994), outgroup derogation (Pratto & Lemieux, 2001), and behavioral avoidance (Dovidio et al., 2010; Esses et al., 2005; Tajfel et al., 1971) to name a few.

Discrimination, for example, bolsters positive self-regard by either demoting competing outgroups (Hewstone et al., 2002; Tajfel & Turner, 2001) or reserving benefits for ingroups (Brewer, 2016; Hamley et al., 2020). Behavioral avoidance creates distance between social groups to reduce the salience of competition (Esses et al., 1998), but is also related to reduced intergroup contact and the perpetuation of stereotyping and prejudice (Chen & Graham, 2015; Pettigrew & Tropp, 2006). Perceiving outgroup members as competitive also positively predicts intergroup anxiety (Islam & Hewstone, 1993; Wilder & Shapiro, 1989) and mistrust of outgroup members (Campbell, 1965; Sherif, 1966). Importantly, the impact of intergroup competition on these negative intergroup outcomes is not limited to individual-level processes, but can also influence the degree to which individuals perceive the occurrence of these action tendencies in their social environment. In fact, perceiving intergroup competition has been shown to engender perceptions of discrimination, behavioral avoidance, intergroup anxiety, and mistrust (Gordils, Elliot, & Jamieson, 2021). While numerous studies document correlations among perceived competition and negative intergroup outcomes (Curșeu et al., 2007; Sidanius et al., 2007; Stephan et al., 2002), experimental support is scant. Additionally, whether these processes operate specifically in an interracial context, and whether perceptions of competition causally facilitate the downstream effects of inequality remain unexplored. Importantly, to acquire a full picture of the effects and implications of racial income inequality, empirical work that addresses the person-level effects are imperative. Moreover, documenting mechanistic evidence will allow for a better understanding of how race-based income inequality impacts Black and White racial groups.

Race is a particularly salient and prominent social group category in the United States (Richeson & Sommers, 2016). In fact, many of the aforementioned intergroup findings can be applied to interracial relations between Black and White groups. As census data predicts one in three Americans will be a race other than White by 2060 (Vespa et al., 2018), research on interracial processes is increasingly relevant for understanding how ethnic/racial groups orient to and interact with one another. In the context of Black–White competition, past work has documented that perceived interracial competition is related to lower levels of support for affirmative action programs, higher levels of racial bias and stereotyping, and ingroup favoritism and outgroup derogation (Beaton & Tougas, 2001; Krosch & Amodio, 2014; Sidanius et al., 2007; Stephan & Stephan, 2000). Moreover, perceptions of interracial competition predict interracial anxiety, conflict, and negative racial attitudes, with Black individuals reporting higher levels of these outcomes compared to White individuals (Stephan et al., 2002).

Despite the tenable relationship between income inequality and competition broadly, and racial income inequality and interracial competition specifically, questions regarding whether the proposed mechanism (i.e., perceived interracial competition) is a necessary process for effects to unfold remains unknown. Using the multimethod mediation approaches presented herein, we examine not

only if perceived interracial competition is an important mechanism of the proposed model, but also whether its presence is needed for racial income inequality to “get in heads” and produce person-level effects.

## The Present Research

The aim of the present research was twofold. First, we examined whether manipulating information pertaining to structural Black–White income inequality impacts perceptions of interracial competition, and negative interracial outcomes: perceptions of discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust. Second, we examined whether the effects of the racial income gap manipulation were mediated by perceived interracial competition. Using the guiding framework espoused by Jachimowicz et al. (2022) that centers research on inequality using four guiding questions—(a) What kind of inequality?, (b) What level of analysis?, (c) What part of the distribution?, and (d) What comparison group?—the present work focuses specifically and intentionally on (a) objective income inequality at (b) the ZIP-code level emphasizing (c) the mean level of the entire income distribution for (d) White and Black individuals in the United States.

To document mechanistic processes, we triangulated mediation using multiple methods: measurement-of-mediation (Study 1; for details, see Baron & Kenny, 1986; for an example, see Harth et al., 2008), experimental-causal-chain (Studies 2a and 2b; for details, see Spencer et al., 2005; for an example, see de Melo et al., 2014), and moderation-of-process (Study 3; for details, see Spencer et al., 2005; for an example, see Piff, 2014). All studies were preregistered.

Study 1 tested the causal role of the racial income gap on interracial psychological outcomes and the role of perceived interracial competition as a mediator. The racial income gap was manipulated using a novel false feedback paradigm: Participants were informed of the ostensible Black–White income gap in their local area (i.e., ZIP-code). Participants randomly assigned to the high racial income inequality condition were hypothesized to perceive more interracial competition, discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust relative to those assigned to the low racial income inequality condition.

Study 2a followed the same procedure as Study 1, while Study 2b, which conceptually replicates a long line of research (Esses et al., 2001; Gordils, Elliot, & Jamieson, 2021; Krosch & Amodio, 2014; Rios et al., 2018; Stephan & Stephan, 2000), manipulated perceptions of interracial competition using a normative feedback method: Participants were informed of perceptions of ongoing interracial competition ostensibly from others in their local area (i.e., ZIP-code). Participants randomly assigned to the high perceptions of competition condition were hypothesized to perceive more discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust relative to those assigned to low perceptions of competition.

Study 3 tested (a) whether perceived interracial competition moderates the effect of the racial income gap on psychological outcomes, (b) the causal role of racial income inequality and perceived interracial competition on outcomes, and (c) the generalizability of effects across Black and White individuals. To do so, we employed a 2 (high/low racial income gap)  $\times$  2 (high/low perceived interracial competition)  $\times$  2 (Black/White racial group) design,

combining the procedures from Studies 1 and 2b. Using the false census and normative feedback manipulations, Black and White participants were randomly informed of both the ostensible objective Black–White income gap *and* subjective perceptions of inter-racial competition. Crossing the manipulations exposed participants to one of four cells—(a) high racial income gap/high perceived interracial competition, (b) low gap/low interracial competition, (c) high gap/low interracial competition, and (d) low gap/high interracial competition. This dual-experimental approach afforded us the opportunity to draw precise, mechanistic conclusions regarding the processes underlying effects. That is, the independent effects of each manipulation and interaction could be examined to determine the centrality of perceived interracial competition in explaining the effects of racial income inequality on outcomes.

Participants in the congruent conditions (e.g., high gap/high interracial competition and low gap/low perceived competition) were hypothesized to exhibit effects like the preceding studies. For the incongruent conditions (e.g., high gap/low interracial competition and low gap/high interracial competition), participants in the low inequality/high competition condition were hypothesized to exhibit stronger effects given past research linking competition to negative outcomes. Including these incongruent conditions enabled us to investigate the *degree* to which racial income inequality and perceived interracial competition mutually influence each other, and whether they are both necessary for producing effects.

Regarding moderation-of-process, the effects of the racial income gap condition were hypothesized to be stronger when participants were informed that high levels of perceived interracial competition exist in their local area. Additionally, regarding whether predicted effects of the manipulation would manifest similarly for both Black and White participants, there are several lines of reasoning that offer divergent speculations.

On the one hand, extant work related to social dominance theory (Sidanius et al., 1992) would suggest that an advantaged group member (i.e., White individual) may construe inequality as a reflection of desired group superiority and ingroup economic prosperity (Pratto et al., 1994; Unal & Chen, 2022), may be more sensitive to cues related to intergroup competition (Bahamondes et al., 2022), and thus may be affected by the intended manipulations differently from disadvantaged group members (i.e., Black individuals). Moreover, work on framing societal disparities as dominant group privilege (i.e., White) versus nondominant group disadvantage (e.g., Black) may also shift the degree to which inequality is internalized, with past work documenting variability in the manner in which White individuals frame race-based inequality (e.g., Cooley, Brown-Iannuzzi, Lei, & Cipolla III, 2019; Lowery et al., 2007; Phillips & Lowery, 2015). Similarly, other work suggests that advantaged and disadvantaged group members set asymmetric standards of injustice when judging racial wage inequality, which influence their desire to rectify the disparity (Miron et al., 2011).

On the other hand, system justification theory (Jost & Banaji, 1994) would suggest that both privileged and disadvantaged groups are motivated to believe the hierarchically structured society of the United States is legitimate and fair (Essex et al., 2005). In the context of inequality, those that legitimize the unequal economic landscape are more likely to perceive less inequality (Du &

King, 2022). Advantaged group members are motivated to regard the economic system as fair, as this necessarily justifies their social position on the economic ladder and is congruent with maintaining a positive self and group image. Disadvantaged group members are similarly motivated to rationalize the system, although this motivation stems from wanting to reduce the discomfort of the cognitive dissonance related to their socio-economic circumstances (Jost et al., 2004; Osborne & Sibley, 2013; cf. Owuamalam et al., 2019). As such, both groups (i.e., Black and White people) may be affected by the manipulation, albeit via differing pathways. Similarly, in the context of intergroup competition, disadvantaged groups are motivated to improve their social position (Crosby, 1976; Mummendey et al., 1999; Ten Velden et al., 2009; R. D. Vanneman & Pettigrew, 1972), and advantaged groups are motivated to defend and maintain social standing (Anier et al., 2016; Dambrun et al., 2006; Moscatelli et al., 2014; cf. Jetten et al., 2017), suggesting that group differences at the outcome level may not be supported. In the present work, we grounded our predictions based on recent findings (see Gordils, Elliot, & Jamieson, 2021) and predicted that effects of the manipulations would manifest similarly for both Black and White participants.

Moreover, we hypothesized that there would be a main effect for race: Black participants would report higher levels of perceived interracial competition and each of the four focal negative outcomes (see Stephan et al., 2002).

Sample sizes were determined a priori for all studies. All data were collected before analyses were conducted, and analyses were planned a priori.

## Study 1

Study 1 tested the effect of racial income gap on perceived interracial competition and four focal negative interracial outcomes (perceived discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust) using a measurement-of-mediation design.

### Method

#### *Transparency and Openness*

All manipulations, data exclusions, and variables analyzed were reported for all studies, and the data are freely available for download online (<https://doi.org/10.17605/osf.io/yfgch>). Study design and analyses were preregistered (<https://aspredicted.org/cv7qt.pdf>).

#### *Sample Size Estimation*

An a priori power analysis revealed that 788 participants (394 per between-subjects condition) were needed to detect a small condition effect ( $d = 0.20$ ), given a targeted power of .80 ( $p = .05$ ). To account for expected attention check failures, we sought to oversample by a minimum of 10%.

### *Participants*

The sample was 866 U.S. residents. Twelve (1.4%) individuals failed the attention check and eight (0.9%) completed the study extremely quickly/slowly (under 2 min or over 60 min); these were excluded a priori, leaving a final sample of  $N = 846$ : 495 females,

351 males; 738 White, 108 Black/African American;  $M_{\text{age}} = 40.87$ ,  $SD_{\text{age}} = 12.02$  (range = 18–83).<sup>1</sup> All data were collected on Amazon's Mechanical Turk platform (Chandler et al., 2019).

### Procedure

Procedures were approved by the university's Research Subjects Review Board and participants provided consent online prior to participation. A false census information feedback approach was used to manipulate the local-area racial income gap. Participants first were asked to enter their ZIP-code, which initiated a "calculating" screen for four seconds, followed by a display of their ostensible ZIP-code level census statistics. ZIP-code was used because research suggests that individuals are more accurately aware of sociodemographic information at the local versus national level (Johnston & Newman, 2016; Sommet et al., 2019). Participants received feedback about census statistics of their local area, in addition to two images: (a) a graph depicting the racial income gap, and (b) a graphic representing the proportion of money Black individuals make for every \$100 White individuals make (i.e., if Black individuals on average make \$74.25 for every \$100 White individuals make, then approximately 25% of a \$100 bill was removed to symbolically represent the gap; see Figure 1 for the full manipulation).

After the racial income gap, participants completed a manipulation check and self-report measures of perceived interracial competition and the target negative interracial outcomes: perceptions of discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust. Participants were fully debriefed at the conclusion of the study.

### Measures

Descriptive statistics and intercorrelations are provided in Table 1.

#### Perceived Racial Income Inequality (Manipulation Check).

A four-item scale, adapted from the perceived income inequality scale by Sommet et al. (2019), measured perceived racial income inequality. The scale consists of the following: "In my ZIP code...": (a) "there is a huge gap between Blacks and Whites," (b) "those in the top 1% of income earners are more likely to be White than Black," (c) "the income disparity between Blacks and Whites is large," and (d) "there is a huge economic gap between Blacks and Whites" (1 = *not at all*, 7 = *completely*).

**Perceived Interracial Competition.** Murayama and Elliot's (2012) five-item perceived competition scale was adapted to fit the race-based focus of the study. The items were as follows: "In my ZIP code...": (a) "Blacks and Whites seem to value competition with each other," (b) "it seems that Blacks and Whites are competing with each other," (c) "Blacks and Whites seem to share the feeling that competing with each other is important," (d) "it seems that Blacks are competing with Whites and Whites are competing with Blacks," and (e) "I feel that Blacks and Whites are being compared with one another" (1 = *not at all*, 7 = *completely*).

**Perceived Discrimination.** The nine-item Everyday Discrimination Scale (Williams et al., 1997) was adapted. Original instructions read: "In your day-to-day life how often have any of the following things happened to you because of your race?"; the adapted scale read: "In your ZIP code, how often do the following things happen to people because of their race?" The events were: (a) "Being treated with less courtesy than others," (b) "Being treated with less respect

than others," (c) "Receiving poorer service than others in restaurants or stores," (d) "People acting as if he/she is not smart," (e) "People acting as if they are afraid of him/her," (f) "Others feeling they are better than him/her," (g) "Others thinking that he/she is dishonest," (h) "Being called names or insulted," and (i) "Being threatened or harassed" (1 = *never*, 7 = *frequently*). An attention check item was included within this scale; specifically, participants read an item asking them to select "2."

**Perceived Behavioral Avoidance.** Lackey's (2012) 11-item behavioral avoidance scale was adapted to fit the scope of the present work. The items are as follows: "In my ZIP code...": (a) "Black and White people avoid having conversations with each other," (b) "Black and White people avoid having friendships with each other," (c) "Black and White people avoid spending leisure time with each other," (d) "Black and White people avoid having romantic relationships with each other," (e) "Black and White people avoid having each other as neighbors," (f) "Black and White people avoid shopping in stores with each other," (g) "Black and White people avoid attending events with each other," (h) "Black and White people avoid working with each other," (i) "if Black and White people had to interact with each other, they would end the interaction as soon as possible," (j) "if Black and White people had a choice, they would rather not interact with each other," and (k) "if Black and White people can avoid interacting with each other, they do" (1 = *strongly disagree*, 7 = *strongly agree*).

**Perceived Intergroup Anxiety.** Four items were adapted from Amodio's (2009) state affect measure "In my ZIP code...": (a) "Black and White people feel nervous about interacting with each other," (b) "Black and White people seem to feel uneasy about interacting with each other," (c) "Black and White people feel tense about interacting with each other," and (d) "Black and White people feel bothered about interacting with each other"; 1 = *strongly disagree*, 7 = *strongly agree*.

**Perceived Interracial Mistrust.** Four items were adapted from the original six-item general trust scale (Yamagishi & Yamagishi, 1994); "In my ZIP code...": (a) "Black and White people are basically honest with each other," (b) "Black and White people view each other as trustworthy," (c) "Black and White people view each other as basically good and kind," and (d) "Black and White people are trustful of each other"; 1 = *not at all*, 7 = *completely*. We reverse-scored responses such that higher values corresponded to higher mistrust; this was done to be consistent with the other negative psychological outcome variables.

### Mediation (via Measurement-of-Mediation)

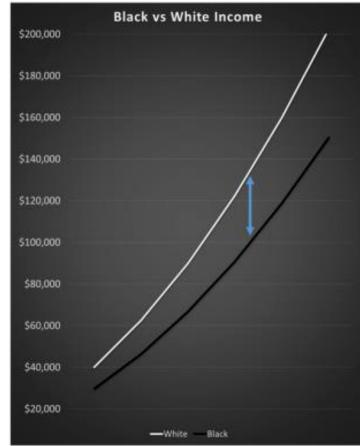
To test whether condition predicts the interracial psychological outcomes via changes in perceptions of interracial competition ( $a * b$  path), we used mediation procedures with Model 4 of the SPSS macro PROCESS Version 2.15 using the percentile bootstrap method (100,000 resamples) for each of the outcome variables (Hayes, 2013; Yzerbyt et al., 2018).

<sup>1</sup> Based on the preregistration, participants that completed the study too quickly (i.e., under 2 min) were removed from analyses *a priori*. Five participants took too long to complete the study (i.e., over an hour), but their exclusion from analyses was not specified in the preregistration for Study 1. Nonetheless, these five participants were removed from analyses *a priori*. Findings remain the same regardless of their inclusion or exclusion.

**Figure 1**

*Display Screen for the High (Top) and Low (Bottom) Racial Income Gap Conditions Based Ostensibly on Previously Entered ZIP-Code Information*

Below are the ZIP-code level statistics for your ZIP-code provided by the U.S. Census Bureau's 2017 American Community Survey. On average, for every \$100 a White person makes, a Black person makes \$74.25.



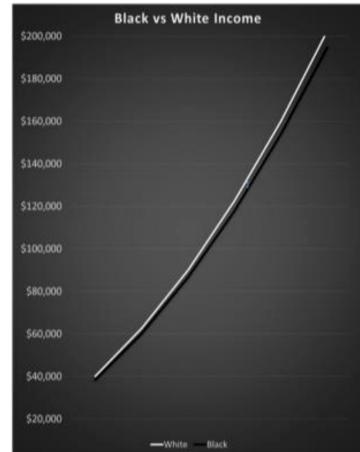
When a White person makes \$50,000, a Black person on average makes \$37,125.

When a White person makes \$100,000, a Black person on average makes \$74,250.

This represents a statistically significant Black-White income difference in your ZIP-code.

**Blacks make less income than Whites in your ZIP-code.**

Below are the ZIP-code level statistics for your ZIP-code provided by the U.S. Census Bureau's 2017 American Community Survey. On average, for every \$100 a White person makes, a Black person makes \$96.25.



When a White person makes \$50,000, a Black person on average makes \$48,125.

When a White person makes \$100,000, a Black person on average makes \$96,250.

This represents no statistically significant Black-White income difference in your ZIP-code.

**Blacks make as much as Whites in your ZIP-code.**

*Note.* See the online article for the color version of this figure.

## Results

### Manipulation Check

Confirming the effectiveness of the manipulation, participants in the high racial income gap condition perceived more racial income inequality ( $M = 5.41$ ) compared to those in the low racial income

gap condition ( $M = 2.85$ ),  $t(830) = 24.60$ , [2.35, 2.76],  $p < .001$ ,  $d = 1.69$ .

### Intergroup Competition

Consistent with hypotheses, participants in the high racial income gap condition perceived more Black-White competition ( $M = 3.05$ )

**Table 1**

*Study 1: Descriptive Statistics and Intercorrelations for Perceived Racial Income Inequality, Interracial Competition, and Race-Based Psychological Outcomes*

Variable	Descriptive statistics			Pairwise intercorrelations					
	$\alpha$	$M$	$SD$	1	2	3	4	5	6
Perceived racial income inequality	.95	4.13	1.98	—					
Perceived interracial competition	.92	2.94	1.54	.18*	—				
Perceived discrimination	.97	3.47	1.55	.48*	.26*	—			
Perceived behavioral avoidance	.97	2.44	1.44	.33*	.36*	.56*	—		
Perceived intergroup anxiety	.97	2.85	1.58	.40*	.33*	.68*	.77*	—	
Perceived interracial mistrust	.96	3.49	1.49	.26*	.06	.41*	.40*	.46*	—

\* $p < .001$ .

compared to those in the low racial income gap condition ( $M = 2.82$ ),  $t(831) = 2.22$ , [0.03, 0.44],  $p < .027$ ,  $d = 0.15$ .

### Effects of Racial Income Gap Manipulation on Perceived Negative Interracial Outcomes

Supporting hypotheses, participants in the high racial income gap condition perceived more discrimination,  $t(844) = 5.33$ , [0.35, 0.76],  $p < .001$ ,  $d = 0.37$ ; behavioral avoidance,  $t(837) = 3.29$ , [0.13, 0.52],  $p = .001$ ,  $d = 0.23$ ; intergroup anxiety,  $t(844) = 3.76$ , [0.19, 0.62],  $p < .001$ ,  $d = 0.26$ ; and interracial mistrust,  $t(844) = 4.81$ , [0.29, 0.69],  $p < .001$ ,  $d = 0.33$ ; than those in the low racial income gap condition (see Figure 2).

### Indirect Effects

See Figure 3a–c for a summary of the results. Consistent with hypotheses, perceived interracial competition mediated the effect of racial income gap condition on perceived discrimination, *indirect effect* = .02, [0.002, 0.04] (Figure 3a), behavioral avoidance, *indirect effect* = .03, [0.003, 0.05] (Figure 3b), and perceived intergroup anxiety, *indirect effect* = .02, [0.003, 0.05] (Figure 3c). No significant indirect effect was found for interracial mistrust, *indirect effect* = .003, [−0.002, 0.01].

### Effect of Race

Consistent with past work, Black participants perceived more racial income inequality,  $t(844) = -2.98$ , [−1.00, −0.21],  $p = .003$ ,  $d = 0.31$  and interracial competition,  $t(844) = -4.43$ , [−1.00, −0.39],  $p < .001$ ,  $d = 0.45$ ; relative to White participants. Moreover, Black participants reported greater perceptions of discrimination,  $t(844) = -2.81$ , [−0.76, −0.14],  $p = .005$ ,  $d = 0.28$ ; behavioral avoidance,  $t(127) = -4.08$ , [−1.06, −0.37],  $p < .001$ ,  $d = 0.46$ ; intergroup anxiety,  $t(129) = -3.31$ , [−0.98, −0.25],  $p = .001$ ,  $d = 0.36$ ; and interracial mistrust,  $t(844) = -3.92$ , [−0.90, −0.30],  $p < .001$ ,  $d = 0.39$ ; compared to White participants.<sup>2</sup>

### Discussion

Supporting hypotheses, the Black–White income gap manipulation impacted perceptions of interracial competition, which reinforces the notion that racial income inequality is a causal antecedent of perceived competition between Black and White individuals. This finding demonstrates a causal link between racial income inequality and perceived

interracial competition and supports the notion that as the Black–White income gap increases at the local level, race-based economic stratification becomes more salient, and in turn engenders perceptions of competition between racial groups in one's immediate social environment (Gordils et al., 2020). Additionally, the manipulation also predicted negative psychological outcomes. Those in the more unequal condition reported increases in perceived discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust. Indirect effect analyses suggested that perceptions of interracial competition are a mechanism by which racial income inequality impacts downstream interracial outcomes. Taken together, believing one lives in an area of high Black–White economic inequality increases perceptions of competition between racial groups and promotes perceptions of negative intergroup outcomes.

While Study 1 is a step forward in understanding the causal implications of Black–White inequality, limitations should be considered. Specifically, while causal and temporal precedence can be established for the manipulation, the same cannot be said for the mechanism proposed. That is, given the design of Study 1, the relationship between perceived interracial competition and the four outcomes of interest is limited to correlational interpretations. To directly address this, Studies 2a and 2b employed an experimental-causal-chain approach to elucidate the relationships between racial income inequality and perceived race-based competition, as well as the link between the proposed mechanism and the focal negative intergroup outcomes.

### Studies 2a and 2b

Studies 2a and 2b tested the effect of racial income gap on perceived interracial competition (2a) and tested the effect of perceived interracial competition on perceived discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust (2b). In doing so, we replicated the findings of Study 1 (A→B), then we established causality of the mediator (B→C).

### Method

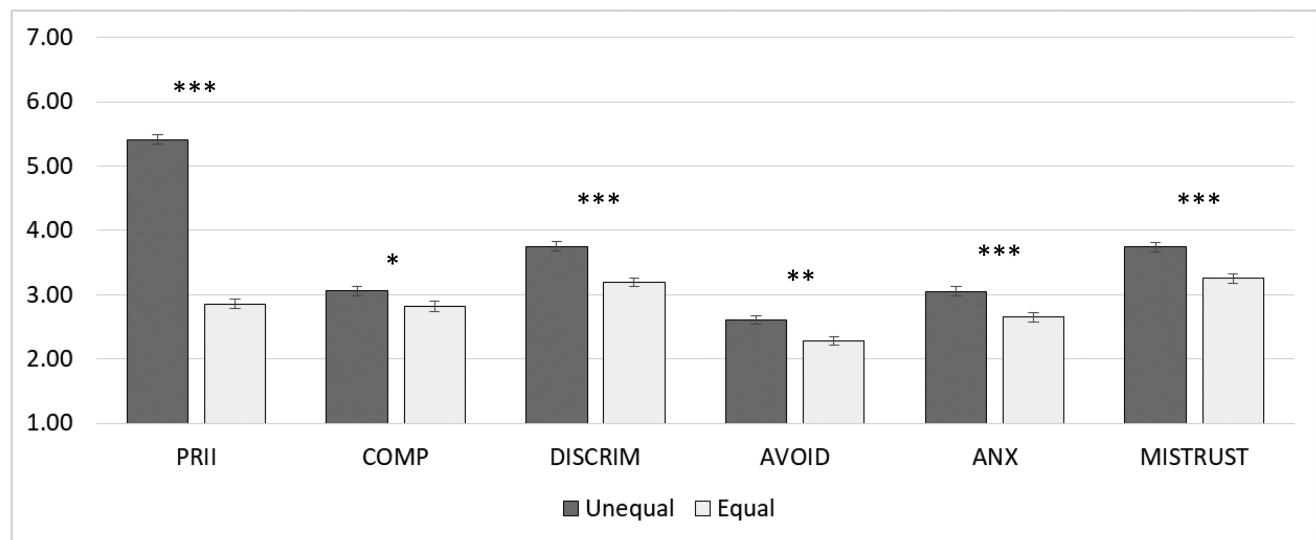
#### Transparency and Openness

See <https://aspredicted.org/75p66.pdf> (2a) and <https://aspredicted.org/ps5wc.pdf> (2b) for preregistrations.

<sup>2</sup> While these findings are consistent with past work and the preregistered hypotheses of the other studies, analyzing the race main effect was not pre-registered for Study 1.

**Figure 2**

*Perceived Racial Income Inequality (PRII), Perceived Interracial Competition (COMP), and the Four Primary Outcomes (Perceived Discrimination [DISCRIM], Behavioral Avoidance [AVOID], Intergroup Anxiety [ANX], and Interracial Mistrust [MISTRUST]) as a Function of Racial Income Gap Condition (High Racial Income Inequality [Unequal] vs. Low Racial Income Inequality [Equal])*



Note. Error bars represent  $\pm 1$  SE.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

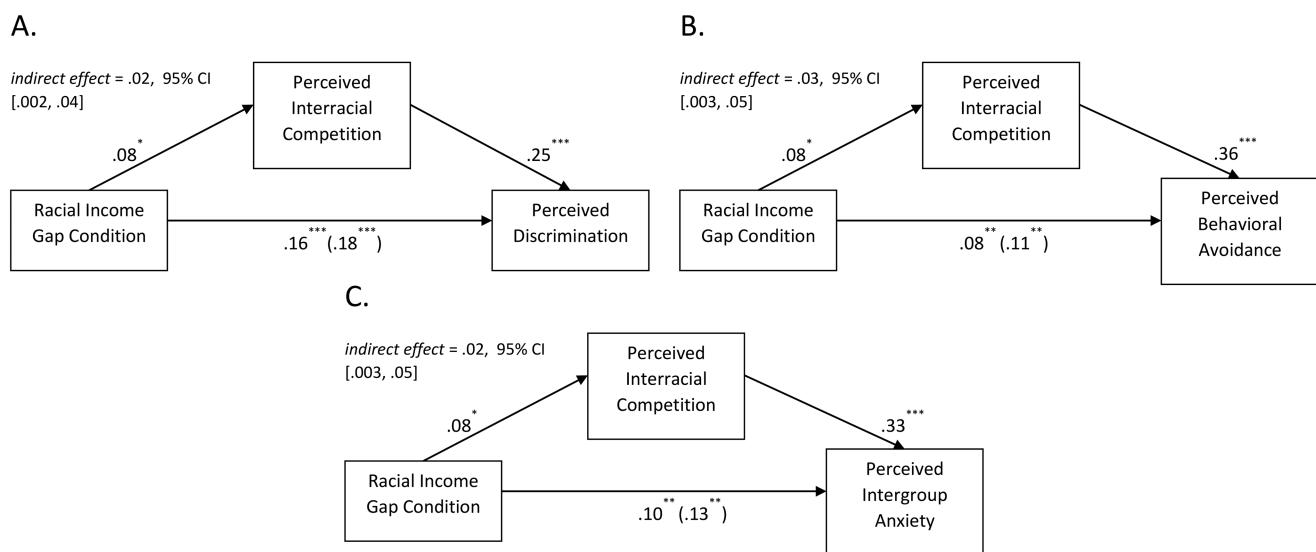
### Sample Size Estimation

An a priori power analysis revealed that 788 participants (394 per between-subjects condition) were needed to detect a small condition

effect ( $d = 0.20$ ), given a targeted power of .80 ( $p = .05$ ). To account for expected attention check failures, we sought to oversample by a minimum of 10%. As such, a minimum of 867 participants were recruited for each of the two studies, for a total of 1,734 participants.

**Figure 3**

*Examining the Indirect Role of Perceived Interracial Competition on the Effect of Racial Income Gap Condition on (A) Perceived Discrimination, (B) Perceived Behavioral Avoidance, and (C) Perceived Intergroup Anxiety*



Note. For ease of interpretation, standardized betas are depicted; parentheses separate the direct effect ( $c'$  path; outside) from the total effect ( $c$  path; inside). \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

## Participants

As in Study 1, adult U.S. residents of at least 18 years of age were recruited via Amazon's Mechanical Turk, and participants were compensated \$0.25–\$0.50. Participant recruitment was restricted to only include those who racially self-identify as White or Black.

**Study 2a.** For Study 2a, the recruited sample was 872 U.S. residents. Twenty-eight (3.2%) individuals failed the attention check and 17 (1.9%) completed the study extremely quickly/slowly, which resulted in a final sample of  $N = 827$ : 487 females, 335 males, five preferred not to answer; 689 White, 138 Black/African American;  $M_{\text{age}} = 39.00$ ,  $SD_{\text{age}} = 13.04$  (range = 18–92).

**Study 2b.** For Study 2b, the recruited sample was 868 U.S. residents. Twenty-one (2.4%) individuals failed the attention check and six (0.7%) completed the study extremely quickly/slowly, leaving a final sample of  $N = 841$ : 531 females, 303 males, seven preferred not to answer; 703 White, 138 Black/African American;  $M_{\text{age}} = 38.70$ ,  $SD_{\text{age}} = 13.00$  (range = 18–79).

## Procedure

Study 2a followed the same procedure as Study 1, with the exception that no negative interracial psychological outcomes were assessed in Study 2a. For Study 2b, however, a normative feedback approach was used to manipulate perceptions of interracial competition. This approach has been used to manipulate group attitudes and perceptions in other areas (Falomir-Pichastor et al., 2004; Smith & Louis, 2008). Participants were first asked to enter their ZIP-code, which initiated a "calculating" screen for four seconds, followed by a display of their ostensible ZIP-code level statistics. Here, participants received feedback about their local area, followed by a number line denoting the averaged self-reported rating of perceived interracial competition for their ZIP-code (anchors ranging from 1 to 7; see Figure 4). After the perceived competition manipulation, participants completed a manipulation check and self-report measures of the target negative interracial outcomes: perceptions of discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust. Participants were fully debriefed at the conclusion of the study.

## Measures

Descriptive statistics and intercorrelations are provided in Table 2. Studies 2a and 2b used the same scales used in Study 1. Specifically, for Study 2a, participants completed the perceived racial income inequality scale (manipulation check) and the perceived interracial competition scale (outcome). In Study 2b, participants completed the perceived interracial competition scale (manipulation check) and the four outcome scales: perceived discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust.

## Results: Study 2a

### Manipulation Check

Replicating the effectiveness of the manipulation, participants in the high racial income gap condition perceived more racial income inequality ( $M = 5.37$ ) compared to those in the low racial income gap condition ( $M = 2.72$ ),  $t(800) = 25.82$ , [2.45, 2.86],  $p < .001$ ,  $d = 1.80$ .

### Intergroup Competition

As predicted, and replicating Study 1, participants in the high racial income gap condition perceived more Black–White competition ( $M = 3.09$ ) compared to those in the low racial income gap condition ( $M = 2.71$ ),  $t(805) = 3.58$ , [0.17, 0.58],  $p < .001$ ,  $d = 0.25$ .

### Effect of Race

In line with preregistered hypotheses, Black participants perceived more racial income inequality,  $t(219) = -5.36$ , [-1.21, -0.56],  $p < .001$ ,  $d = 0.47$  and interracial competition,  $t(825) = -3.67$ , [-0.79, -0.24],  $p < .001$ ,  $d = 0.34$ ; relative to White participants.

## Results: Study 2b

### Manipulation Check

Participants in the high perceived interracial competition condition perceived more Black–White competition ( $M = 3.50$ ) compared to those in the low perceived interracial competition condition ( $M = 2.26$ ),  $t(778) = 12.23$ , [1.04, 1.44],  $p < .001$ ,  $d = 0.84$ .

### Effects of Perceived Interracial Competition Manipulation on Perceived Negative Interracial Outcomes

As predicted, participants in the high perceived interracial competition condition perceived more discrimination,  $t(839) = 3.28$ , [0.13, 0.52],  $p = .001$ ,  $d = 0.23$ ; intergroup anxiety,  $t(839) = 3.87$ , [0.20, 0.60],  $p < .001$ ,  $d = 0.27$ ; and interracial mistrust,  $t(839) = 3.08$ , [0.12, 0.52],  $p = .002$ ,  $d = 0.21$ ; than those in the low perceived interracial competition condition. However, contrary to hypotheses, no significant main effect emerged for perceived behavioral avoidance,  $t(839) = 1.50$ , [-0.04, 0.32],  $p = .133$ ,  $d = 0.10$  (see Figure 5).

### Race Effects

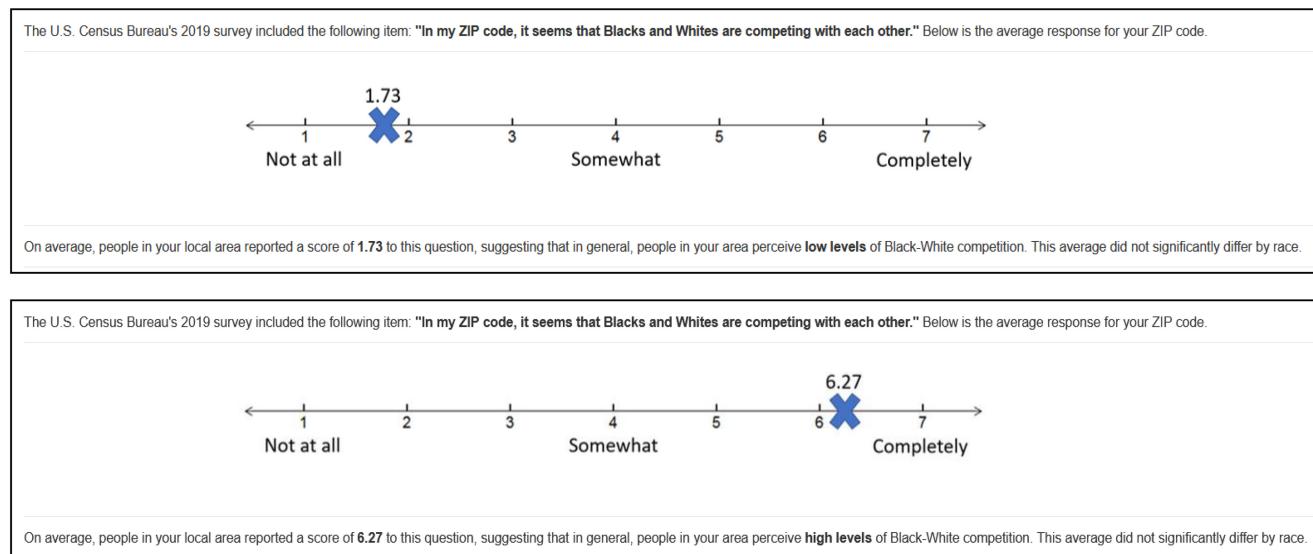
As predicted, Black participants perceived more interracial competition,  $t(839) = -3.44$ , [-0.80, -0.22],  $p < .001$ ,  $d = 0.31$ ; relative to White participants. Further, Black participants reported greater perceptions of discrimination,  $t(839) = -4.30$ , [-0.83, -0.31],  $p < .001$ ,  $d = 0.40$ ; behavioral avoidance,  $t(839) = -3.29$ , [-0.66, -0.17],  $p = .001$ ,  $d = 0.30$ ; intergroup anxiety,  $t(184) = -3.92$ , [-0.87, -0.29],  $p < .001$ ,  $d = 0.38$ ; and interracial mistrust,  $t(839) = -7.14$ , [-1.24, -0.70],  $p < .001$ ,  $d = 0.67$ ; compared to White participants.

## Discussion

Replicating the findings of Study 1, the racial income gap manipulation shifted perceptions of interracial competition, with those in the high inequality condition expressing greater perceptions of Black–White competition. Further, supporting the claim that perceived interracial competition is a mechanism by which the income gap functions, the competition manipulation impacted perceptions of the outcomes in the hypothesized direction. These data suggest that beliefs that racial groups are competing with one another can shift perceptions of discrimination, anxiety, and mistrust. Moreover, Study 2b conceptually replicates

**Figure 4**

Display Screen for the Low (Top) and High (Bottom) Perceived Interracial Competition Condition Based Ostensibly on Previously Entered ZIP-Code Information



*Note.* See the online article for the color version of this figure.

and extends a long line of existing research by providing experimental evidence for downstream ramifications of perceived Black–White competition (Esses et al., 2001; Gordils, Elliot, & Jamieson, 2021; Krosch & Amodio, 2014; Rios et al., 2018; Stephan & Stephan, 2000).

Additionally, consistent with the literature (Nunnally, 2012; Stephan et al., 2002), the findings from Studies 1, 2a, and 2b suggest perceptions of competition and interracial outcomes differ as a function of self-reported racial group membership. Specifically, Black participants perceived more Black–White competition, and perceived more discrimination, intergroup anxiety, behavioral avoidance, and interracial mistrust than White participants.

### Study 3

Although the previous studies support hypotheses that the racial income gap affects downstream negative interracial perceptions and that this effect is mediated by perceptions of interracial competition, external validity was limited. Samples were not equally representative of the competing groups, namely Black and White respondents. Additionally, of the limited number of studies that have manipulated intergroup competition, most focus on an ingroup perceiving negative outgroup attitudes, disregarding the beliefs and general perceptions of both relevant parties (e.g. Butz & Yogeeswaran, 2011; Diaz et al., 2011; Morrison & Ybarra, 2008). Given existing disparities between these racial groups (e.g., Gradić, 2014; Monteith et al., 1998; Riek et al., 2006), it is important that experimental research recruits diverse samples to address questions involving model generalizability.<sup>3</sup>

On the one hand, as Black–White inequality highlights group stratification, and intergroup competition involves the participation and engagement of both ingroups and outgroups, it is possible that both inequality and perceived competition may similarly influence Black

and White people. On the other hand, these effects may differ as a function of racial group membership because Black people experience worse outcomes compared to White people across numerous social, psychological, and economic indicators. In a similar vein, because high-status groups (e.g., White people) have more to lose from shifting status relations (Wilkins et al., 2015), White people may be more likely to be affected by perceptions of interracial competition. Past research, however, suggests that White individuals feel less competitive threat from Black individuals compared to other racial groups (Bobo & Hutchings, 1996). To date, only two studies have recruited large samples with balanced racial representation to examine the effect of perceived Black–White competition and the correlation between objective racial income inequality and negative intergroup outcomes. The findings suggest that the effects of racial income inequality and perceived interracial competition *may* not differ as a function of race (Gordils, Elliot, & Jamieson, 2021; Gordils et al., 2020). Nonetheless, no study has examined effects of racial income inequality and competition simultaneously. To address lingering questions tied to racial groups' responses to inequality and competition, Study 3 recruited a large sample with a similar distribution of Black and White participants to examine whether the proposed model manifests across racial groups. This design allows for tests of main effects of participant race on outcomes, as well as interactions between conditions and racial group membership.

The aims of Study 3 were threefold. First, Study 3 employed a moderation-of-process approach to reinforce the claim that perceived

<sup>3</sup> While it would be ideal to recruit equal numbers of Black and White participants for the first three studies, the decision to only do so for Study 3 was based on practicality and recruitment limitations. Specifically, online platforms have a limited pool of participants that identify as Black. Because Study 3 manipulates both conditions, of the three studies conducted, recruiting equal numbers of Black and White participants would be most beneficial here compared to Studies 1, 2a, and 2b.

**Table 2**

*Study 2: Descriptive Statistics and Intercorrelations for Perceived Racial Income Inequality and Interracial Competition (2a) and Perceived Interracial Competition and Race-Based Psychological Outcomes (2b)*

Variable	Descriptive statistics			Pairwise intercorrelations				
	<i>α</i>	<i>M</i>	<i>SD</i>	1	2	3	4	5
<b>Study 2a</b>								
Perceived racial income inequality	.94	4.10	1.98	—				
Perceived interracial competition	.91	2.91	1.51	.20*	—			
<b>Study 2b</b>								
Perceived interracial competition	.94	2.88	1.59	—				
Perceived discrimination	.96	3.34	1.44	.38*	—			
Perceived behavioral avoidance	.96	2.35	1.36	.42*	.60*	—		
Perceived intergroup anxiety	.97	2.72	1.49	.44*	.72*	.80*	—	
Perceived interracial mistrust	.96	3.48	1.50	.27*	.56*	.51*	.60*	—

\**p* < .001.

interracial competition is a process by which the racial income gap affects downstream perceptions. Second, utilizing a 2 (racial income gap: high/low) × 2 (perceived interracial competition: high/low) × 2 (race: Black/White) design, Study 3 tested whether the previous effects hold for both Black and White individuals by recruiting similar samples of each group. Lastly, by testing the interaction between both the racial income gap and perceived interracial competition conditions, we not only examined moderation-of-process, but also examined whether both conditions are necessary for yielding negative downstream perceptions.

## Method

### Transparency and Openness

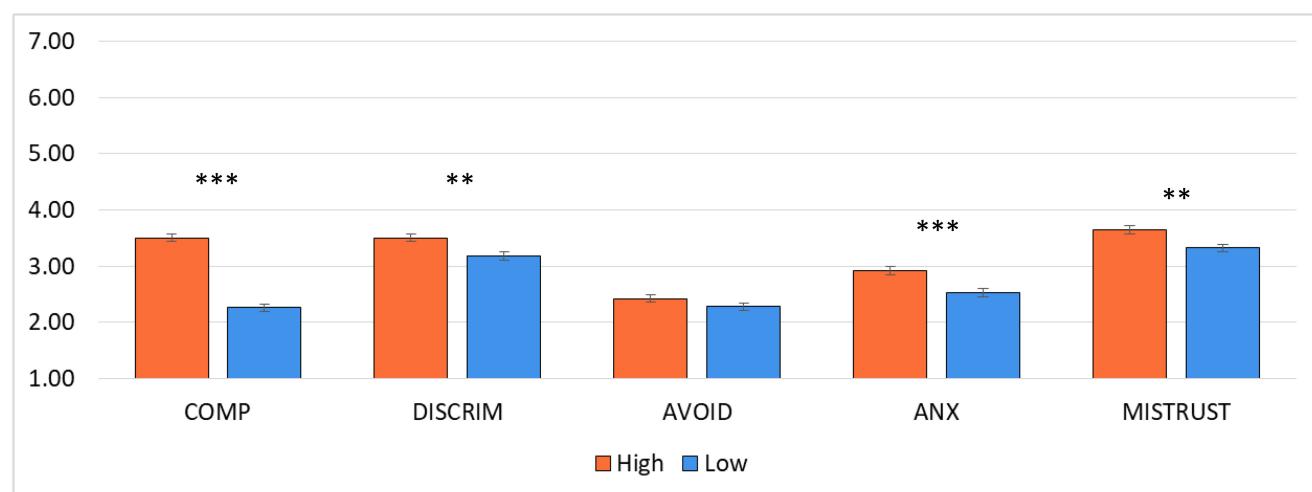
See <https://aspredicted.org/fk8xi.pdf> for preregistration.

### Sample Size Estimation

Power analyses were conducted using Superpower's Power Shiny ([https://shiny.ieis.tue.nl/anova\\_power/](https://shiny.ieis.tue.nl/anova_power/)) and Exact Shiny (<https://arcstats.io/shiny/anovaexact/>; Lakens & Caldwell, 2019) Apps. Power was based on a hypothesized interaction pattern, with the high inequality/high competition cell exhibiting the largest means across all outcomes, followed by the low inequality/high competition cell, and finally the high inequality/low competition and low inequality/low competition cells exhibiting similar means. Sample-size determination was based on small effect sizes (Cohen's *d* = 0.20;  $\mu$  = .5, .2, 0, 0; common *SD* = 1.00). To account for race, estimated means were entered for a significant main effect (where Black participants would exhibit higher values across all outcomes) and no interaction ( $\mu$  = .7, .4, .2, .2). Using these parameters, analyses revealed that 175 participants per cell were required to

### Figure 5

*Perceived Interracial Competition (COMP) and the Four Primary Outcomes (Perceived Discrimination [DISCRIM], Behavioral Avoidance [AVOID], Intergroup Anxiety [ANX], and Interracial Mistrust [MISTRUST]) as a Function of Perceived Interracial Competition Condition (High vs. Low)*



*Note.* Error bars represent  $\pm 1$  SE. See the online article for the color version of this figure.

\*\**p* < .01. \*\*\**p* < .001.

achieve a targeted power of .80 for detecting main effects for the racial income inequality condition, perceived interracial competition condition, race, and a significant Racial Income Inequality Condition  $\times$  Perceived Interracial Competition Condition interaction. To account for failed attention checks and a priori participant exclusions, we sought to recruit at least 200 participants per cell, for a total sample size of 1,600 participants, with roughly equal numbers of Black and White participants across conditions.<sup>4</sup>

## Participants

To reach the target sample size, adult U.S. residents of at least 18 years of age were recruited across three different platforms: Amazon's Mechanical Turk ( $N = 942$ ), Prolific ( $N = 633$ ), and a university subject pool ( $N = 67$ ).<sup>5</sup> Forty-five (2.7%) individuals failed the attention check and 14 (0.9%) completed the study extremely quickly/slowly; these were excluded a priori, leaving a final sample of  $N = 1,583$ : 832 females, 735 males, one intersex, 15 preferred not to answer; 787 White, 796 Black/African-American;  $M_{\text{age}} = 37.47$ ,  $SD_{\text{age}} = 12.85$  (range = 18–83).

## Procedure

Study 3 followed similar procedures to the previous studies. For the  $2 \times 2 \times 2$  design, Black and White participants were randomly assigned to racial income gap and perceived interracial competition conditions, which were counter-balanced. After providing their ZIP-code, participants received feedback about census statistics of their local area (i.e., racial income gap manipulation from Studies 1 and 2a, or perceived interracial competition manipulation from Study 2b). Then, participants saw the second of two displays, depending on the condition they were not yet been exposed to. In doing so, participants were assigned to one of four sets of manipulations: high racial income inequality and high perceived interracial competition, low racial income inequality and low perceived interracial competition, high racial income inequality and low perceived interracial competition, or low racial income inequality and high perceived interracial competition. Post manipulations, participants completed two manipulation checks (i.e., perceived racial income inequality scale and perceived interracial competition scale) and self-reports of the focal negative interracial outcomes: perceptions of discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust. Participants were debriefed after the study.

## Measures

Descriptive statistics and intercorrelations are provided in Table 3. Study 3 used the same scales used across Studies 1, 2a, and 2b. Specifically, participants completed the perceived racial income inequality scale and the perceived interracial competition scale (manipulation checks). Moreover, participants completed the four outcome scales: perceived discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust.

## Mediation (via Moderation-of-Process)

To test whether perceived interracial competition is a process by which racial income gap condition affects negative interracial psychological outcomes, we tested the Racial Income Gap Condition  $\times$  Perceived Interracial Competition Condition interaction

to see whether this effect predicts the four outcomes. In conjunction with the previous studies, by demonstrating the moderating influence of perceived interracial competition on the racial income gap condition main effect, this will serve as a strong support of process.

## Results

### Data Analysis Plan

The present study tested the effects of racial income inequality condition, perceived interracial competition condition, and race on four primary outcomes: perceived discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust. Additionally, we examined the interaction effect between the two conditions on the same outcomes of interest to examine whether perceived interracial competition moderates racial income inequality effects. Lastly, model differences based on racial group membership were assessed to test whether these effects operate similarly for both Black and White individuals. We conducted 2 (racial income gap: High/Low)  $\times$  2 (perceived interracial competition: High/Low)  $\times$  2 (race: White/Black) univariate analyses of variances for each outcome, focusing on (a) the main effects of conditions and race and (b) the two-way interaction between conditions. To examine racial differences within the model, we examined the three-way interaction effect across all outcomes. For clarity, results are presented in the following order: (a) manipulation checks, (b) main effects, (c) moderation-of-process, and (d) model differences by race. All analyses were planned a priori and all analyses conducted are reported.

### Manipulation Checks

Confirming the effectiveness of the manipulations operating simultaneously, participants in the high racial income gap condition perceived more racial income inequality compared to those in the low racial income gap condition,  $F(1, 1,575) = 124.61$ ,  $p < .001$ ,  $\eta_p^2 = .073$ . Further, participants in the high perceived interracial competition condition perceived more Black–White competition compared to those in the low perceived interracial competition condition,  $F(1, 1,575) = 127.76$ ,  $p < .001$ ,  $\eta_p^2 = .075$ .<sup>6</sup>

### Main Effects

See Table 4 for a results summary. As predicted, significant main effects for racial income gap condition emerged, such that participants in the high racial income gap condition perceived more discrimination,  $F(1, 1,575) = 31.62$ ,  $p < .001$ ,  $\eta_p^2 = .020$ ; behavioral

<sup>4</sup> Given the nature of simulated power analyses, these results are limited by the hypothesized data entered. In order to achieve more informed, comprehensive simulations, real data are required to determine the necessary sample sizes for detecting effects, assuming effects are present in the real world.

<sup>5</sup> Given platform differences and funding limitations, participants were given: \$0.25–\$0.55 (Amazon's Mechanical Turk), \$1.06–\$1.21 (Prolific), and study credit (Sona). Moreover, Prolific was primarily used to recruit Black participants given the difficulty of recruiting a large sample of Black participants using the other two platforms. Across all findings, when platform was dummy-coded and included as a covariate, results hold across all main effects and interactions.

<sup>6</sup> Interaction effects were also examined for the manipulation checks (see online supplemental materials).

**Table 3**

*Study 3: Descriptive Statistics and Intercorrelations for Perceived Racial Income Inequality, Interracial Competition, and Race-Based Psychological Outcomes*

Variable	Descriptive statistics			Pairwise intercorrelations					
	$\alpha$	$M$	$SD$	1	2	3	4	5	6
Perceived racial income inequality	.90	3.74	1.75	—					
Perceived interracial competition	.88	3.70	1.64	.27*	—				
Perceived discrimination	.96	3.50	1.49	.44*	.40*	—			
Perceived behavioral avoidance	.97	2.55	1.40	.40*	.36*	.62*	—		
Perceived intergroup anxiety	.97	2.92	1.56	.45*	.42*	.74*	.78*	—	
Perceived interracial mistrust	.95	3.79	1.50	.27*	.23*	.51*	.44*	.51*	—

\* $p < .001$ .

avoidance,  $F(1, 1,575) = 33.97, p < .001, \eta_p^2 = .021$ ; intergroup anxiety,  $F(1, 1,575) = 39.35, p < .001, \eta_p^2 = .024$ ; and interracial mistrust,  $F(1, 1,575) = 44.52, p < .001, \eta_p^2 = .027$ ; than those in the low racial income gap condition.

Significant main effects for perceived interracial competition condition also emerged, such that participants in the high perceived interracial competition condition perceived more discrimination,  $F(1, 1,575) = 13.17, p < .001, \eta_p^2 = .008$ ; behavioral avoidance,  $F(1, 1,575) = 6.90, p = .009, \eta_p^2 = .004$ ; intergroup anxiety,  $F(1, 1,575) = 13.56, p < .001, \eta_p^2 = .009$ ; and interracial mistrust,  $F(1, 1,575) = 5.66, p = .017, \eta_p^2 = .004$ ; than those in the low perceived interracial competition condition. Additionally, a significant race main effect emerged across all outcomes, such that Black participants perceived more discrimination,  $F(1, 1,575) = 44.44, p < .001, \eta_p^2 = .027$ ; behavioral avoidance,  $F(1, 1,575) = 33.99, p < .001, \eta_p^2 = .021$ ; intergroup anxiety,  $F(1, 1,575) = 38.18, p < .001, \eta_p^2 = .024$ ; and interracial mistrust,  $F(1, 1,575) = 90.53, p < .001, \eta_p^2 = .054$ ; than White participants.

### Moderation-of-Process

Of primary interest to the present research, we tested the interaction effect between the racial income gap and perceived interracial competition conditions to assess whether perceived interracial competition moderates the effect of racial income inequality on the four focal outcomes. Partially supporting hypotheses, the interaction between conditions significantly predicted perceived discrimination,  $F(1, 1,575) = 4.38, p = .036, \eta_p^2 = .003$ , and interracial mistrust,  $F(1, 1,575) = 4.99, p = .026, \eta_p^2 = .003$ , but not behavioral avoidance or intergroup anxiety. That is, the racial income inequality condition effects were stronger for those in the high perceived interracial competition condition across the two outcomes (see Figure 6).

### Model Differences by Race

To examine model differences based on racial group membership (White or Black), the Racial Income Gap Condition  $\times$  Perceived Interracial Competition Condition  $\times$  Race interaction effect was examined for each of the four outcomes. Contrary to hypotheses, significant three-way interaction effects emerged for two of the four outcomes: perceived discrimination,  $F(1, 1,575) = 5.11, p = .024, \eta_p^2 = .003$ , and interracial mistrust,  $F(1, 1,575) = 4.60, p = .032, \eta_p^2 = .003$ . To probe effects, data were split by race, and the between-condition interaction was reexamined for each race group (see Figure 7).

Follow-up analyses revealed the two-way interaction was significant for White participants, discrimination:  $F(1, 783) = 10.24, p = .001, \eta_p^2 = .013$ ; mistrust:  $F(1, 783) = 9.82, p = .002, \eta_p^2 = .012$ , while no significant effect emerged for Black participants, discrimination:  $F(1, 792) = 0.01, p = .909$ ; mistrust:  $F(1, 792) = 0.00, p = .950$ . White participants in the high interracial competition condition exhibited a stronger racial income gap effect, discrimination:  $F(1, 388) = 40.63, p < .001, \eta_p^2 = .095$ ; mistrust:  $F(1, 388) = 45.05, p < .001, \eta_p^2 = .104$ , compared to White participants in the low interracial competition condition, discrimination:  $F(1, 395) = 4.04, p = .045, \eta_p^2 = .010$ ; mistrust:  $F(1, 395) = 5.92, p = .015, \eta_p^2 = .015$ . For Black participants, the racial income gap effect predicted perceived interracial mistrust across competition conditions, High:  $F(1, 393) = 4.69, p = .031, \eta_p^2 = .012$ ; Low:  $F(1, 399) = 4.11, p = .043, \eta_p^2 = .010$ , but did not predict perceived discrimination.

### Discussion

As predicted, the racial income gap and perceived interracial competition conditions independently shifted perceptions of discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust, with the high conditions leading to higher outcomes compared to those in the low conditions. Moreover, main effects of race also emerged; Black participants reported higher levels of all negative psychological outcomes, replicating past findings (Gordis et al., 2020; Stephan et al., 2002).

Regarding moderation-of-process, two-way interactions revealed that perceived interracial competition moderated a subset of the effects. Those assigned to the high competition condition were more strongly impacted by the racial income gap manipulation, exhibiting greater perceived discrimination and mistrust. These results underscore the idea that perceived Black–White competition is a mechanism by which racial income inequality operates.

Contrary to expectations, results differed as a function of racial group. The Racial Income Inequality  $\times$  Perceived Interracial Competition interaction effect was supported for White, and not Black participants. Specifically, White participants in the high competition condition were more strongly impacted by the racial income gap manipulation and reported greater perceived discrimination and mistrust. While not hypothesized, these findings are congruent with past work on White Americans' perceptions of Black–White equality when presented with information regarding discrimination in the United States (Kraus et al., 2017).

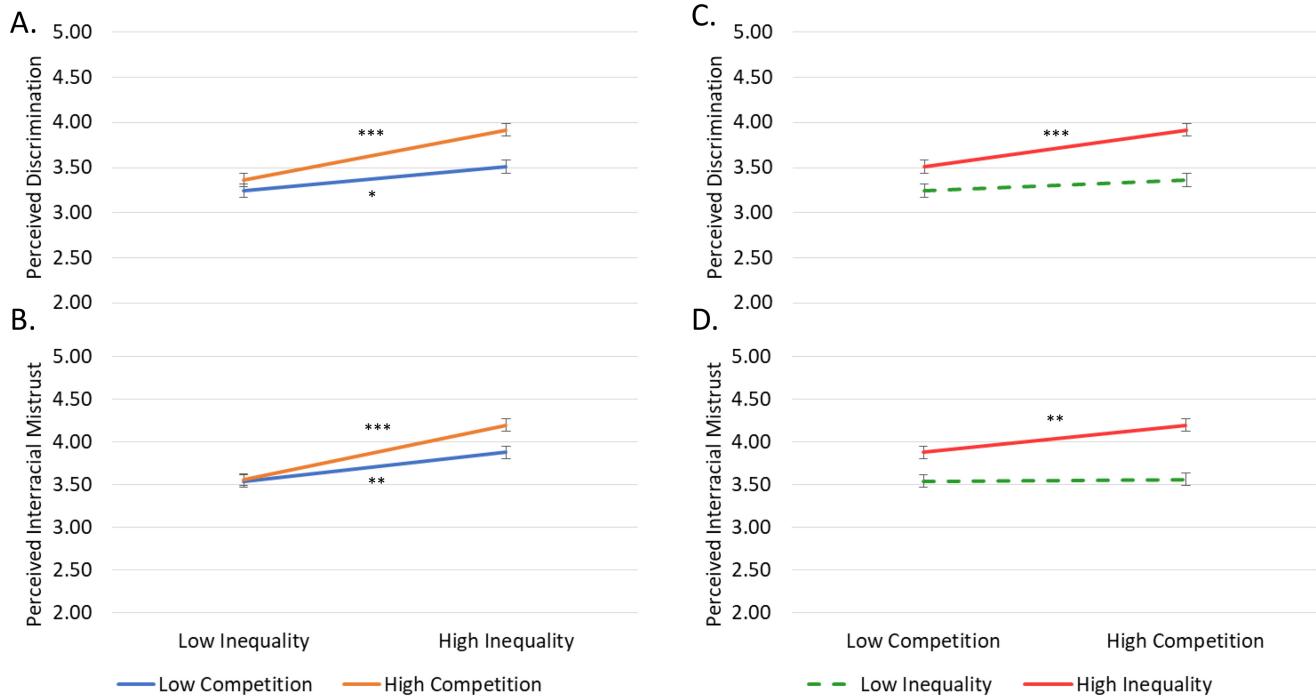
**Table 4**  
*Means and ANOVA of Conditions and Race on Race-Based Psychological Outcomes in Study 3*

Variable	Race	High inequality/ high competition		High inequality/ low competition		Low inequality/ high competition		Low inequality/ low competition		Effect	<i>F</i>	$\eta^2_{\text{fp}}$
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
<i>Perceived discrimination</i>												
White	3.93	1.46	3.19	1.44	3.02	1.35	2.92	1.29	Gap	31.62***	.020	
Black	3.91	1.42	3.81	1.45	3.69	1.52	3.58	1.60	Comp	13.17***	.008	
									Race	44.44***	.027	
									Gap × Comp	4.38*	.003	
									Gap × Race	6.37*	.004	
									Comp × Race	4.77*	.003	
									Gap × Comp × Race	5.11*	.003	
<i>Perceived behavioral avoidance</i>												
White	2.79	1.43	2.40	1.35	2.23	1.27	1.96	1.07	Gap	33.97***	.021	
Black	2.93	1.51	2.87	1.45	2.60	1.35	2.60	1.45	Comp	6.90**	.004	
									Race	33.99***	.021	
									Gap × Comp	0.38	.000	
									Gap × Race	2.14	.001	
									Comp × Race	4.68*	.003	
									Gap × Comp × Race	0.06	.000	
<i>Perceived intergroup anxiety</i>												
White	3.31	1.60	2.72	1.57	2.48	1.43	2.22	1.17	Gap	39.35***	.024	
Black	3.38	1.60	3.21	1.55	3.06	1.59	2.95	1.56	Comp	13.56***	.009	
									Race	38.18***	.024	
									Gap × Comp	1.61	.001	
									Gap × Race	5.90*	.004	
									Comp × Race	3.38	.002	
									Gap × Comp × Race	0.80	.001	
<i>Perceived interracial mistrust</i>												
White	4.07	1.46	3.49	1.37	3.10	1.39	3.15	1.41	Gap	44.52***	.027	
Black	4.33	1.38	4.24	1.41	4.02	1.47	3.94	1.53	Comp	5.66*	.004	
									Race	90.53***	.054	
									Gap × Comp	4.99*	.003	
									Gap × Race	5.94*	.004	
									Comp × Race	1.65	.001	
									Gap × Comp × Race	4.60*	.003	

*Note.* Gap = Racial income gap condition; Comp = Perceived interracial competition condition; ANOVA = analysis of variance.  
 \**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

**Figure 6**

*Examining the Interaction Effects of Racial Income Gap Condition  $\times$  Perceived Interracial Competition Condition on Perceived Discrimination and Perceived Interracial Mistrust*



*Note.* For ease of interpretation, data were split by condition. Data was split by competition condition (A and B) and split by inequality condition (C and D); nonsignificant effects marked by dashed lines. See the online article for the color version of this figure.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

## General Discussion

Research in sociology, economics, and psychology suggests that racial income inequality is associated with a host of negative societal outcomes (e.g., J. R. Blau & Blau, 1982; Parker & McCall, 1999). However, questions regarding causality and the person-level effects of racial income inequality have gone unexplored. Furthermore, research examining the mechanisms by which racial income inequality “gets into our heads” is nonexistent, despite the magnitude and severity of group-based economic inequality, and income inequality more generally. This series of preregistered experiments expand existing work by providing a novel examination of the role of perceived interracial competition as a process mediating the effect of Black–White income inequality on negative interracial psychological outcomes. These studies offer robust support for experimental causality and mechanistic processes using a multimethod approach. Specifically, this research provided evidence for the causal role of the racial income gap on perceptions of discrimination, behavioral avoidance, intergroup anxiety, and interracial mistrust via the proposed process of perceived interracial competition, using three approaches to mediation.

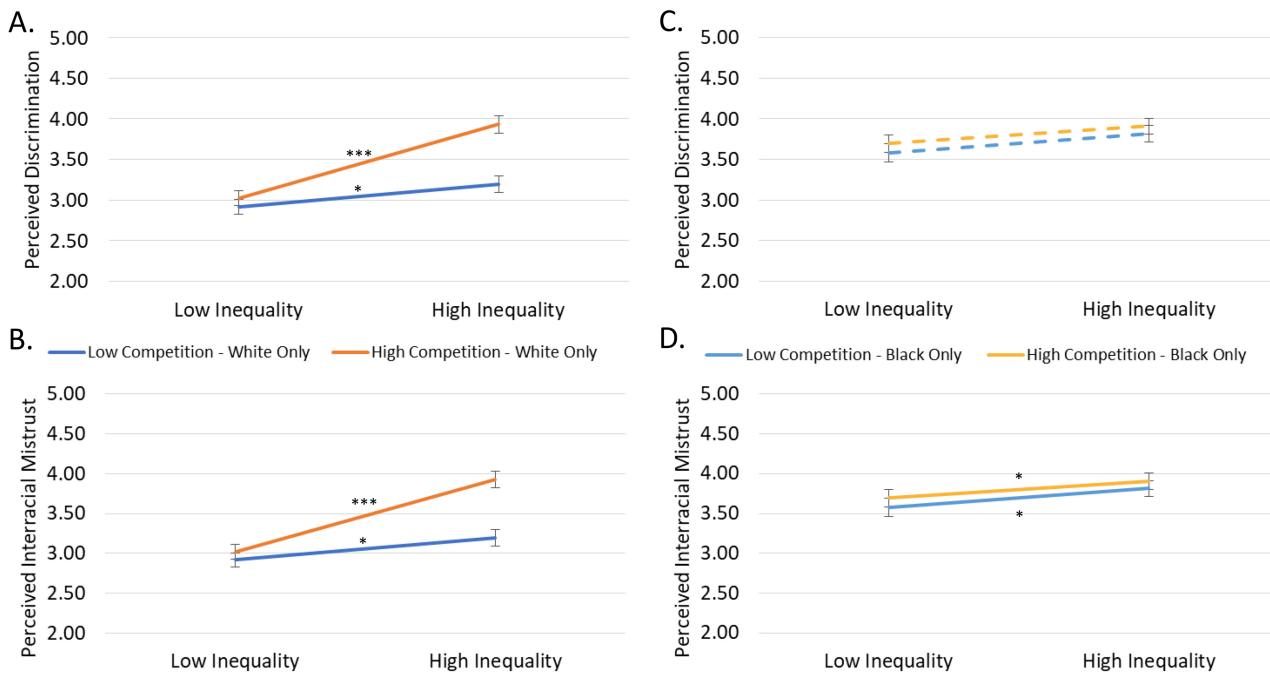
Study 1 utilized a measurement-of-mediation design and found that the racial income gap manipulation directly impacted perceptions of interracial competition and psychological outcomes, and indirectly impacted a subset of these outcomes via perceptions of interracial competition. Studies 2a and 2b employed an experimental-causal-chain

approach: Study 2a replicated the link between inequality and competition, while Study 2b tested the effects of manipulated group-level perceptions of interracial competition and found that individuals assigned to receive information indicating that interracial competition is high in their community perceived more discrimination, intergroup anxiety, and interracial mistrust. Finally, Study 3 used a moderation-of-process design and found that the inequality manipulation had a stronger effect on a subset of the negative outcomes for individuals who believed they were living in an area of high perceived Black–White competition. These preregistered experiments are unique in their use of multiple mediational approaches to test a model of race-based inequality and competition.

This research also highlighted racial differences. Black and White individuals were impacted differently, expanding our understanding of the intersection of inequality, competition, and race. As Black individuals experience worse outcomes compared to White individuals across numerous domains (e.g., education, job attainment, healthcare) and perceive more negative psychological outcomes (Gordils, Elliot, & Jamieson, 2021; Gordils et al., 2020), these differences may have influenced how information regarding inequality and competition impacts downstream perceptions and outcomes. Specifically, White participants were most influenced by the racial income gap manipulation when also presented with information regarding the state of Black–White competition in their local area. Moreover, White participants needed the exposure of both high racial inequality and high interracial competition to exhibit

**Figure 7**

Examining the Interaction Effects of Racial Income Gap Condition  $\times$  Perceived Interracial Competition Condition  $\times$  Race on Perceived Discrimination and Perceived Interracial Mistrust



**Note.** For ease of interpretation, the three-way interactions were split by race and perceived interracial competition condition. Data for White participants are presented in A and B, and data for Black participants are presented in C and D. Nonsignificant effects marked by dashed lines. See the online article for the color version of this figure.

\* $p < .05$ . \*\*\* $p < .001$ .

perceptions similar to those reported by Black participants, regardless of their competition condition. The need for White individuals to require more information regarding adversities more typically experienced by Black people has been documented (see Kraus et al., 2017). The misperception (or muted perception) of racial dissidence may be shaped by motivational and societal factors that lead people to undermine or remain unaware of racial disparities. While these findings were counter to hypotheses, they speak to heterogeneity; that is, these findings are important for understanding how inequality and competition “get into our heads” differently for different social groups.

Taken together, these data provide robust support that perceptions of interracial competition operate as a causal mechanism by which racial income inequality affects negative psychological outcomes. The data suggest that being confronted with information regarding the levels of income inequality between Black and White individuals in one’s local area can shift perceptions of competition between racial groups and lead to heightened perceptions of racial discord. Given the prevalence of racial income inequality, with most U.S. ZIP-codes experiencing some level of Black–White inequality, Black and White individuals may not only be distant from each other with respect to income, but also psychologically and socially: they perceive cross-race encounters as more anxious, perceive more discrimination, and believe social groups avoid and do not trust one another. Accordingly, as the income disparity between Black and White Americans grows, psychological distance grows in kind,

which can maintain and exacerbate inequality and negative intergroup outcomes.

All in all, the findings presented herein contribute to the literature on inequality, competition, race, and negative psychological outcomes. The experimental effects that we observed support many underlying assumptions and associations in models of group-based inequality and competition. Understanding how Black–White income inequality and perceptions of interracial competition causally elicit negative intergroup perceptions can help inform the development of process-focused interventions for improving race relations, and potentially reduce group disparities between Black and White people (e.g., Cameron & Rutland, 2016).

### Implications for Theory Development

The negative intergroup outcome variables examined herein may inform research on social group disparities (Gibbons et al., 2004; Kessler et al., 1999; Pascoe & Smart Richman, 2009). For instance, Black individuals are more likely to engage in substance use when they perceive more discrimination (Gibbons et al., 2004), and perceptions of being discriminated against predict worse health outcomes (Burgess et al., 2008; Lee et al., 2009). Avoidance behavior may manifest in the form of segregation (Emerson et al., 2001; Quillian, 2002), which may be stronger for White people avoiding Black people (Crowder, 2001). Additionally, residential segregation is associated with worse educational and health

outcomes for Black individuals relative to White individuals (T. Shapiro et al., 2013; Williams & Collins, 2001). Intergroup anxiety has myriad negative consequences (Mendes et al., 2007; Page-Gould et al., 2008; Trawalter et al., 2009). For example, this affective process can impair performance, shift attention to negative cues, and predict poor biological functioning (Jamieson et al., 2012; Jefferson et al., 2010; McEwen, 1998). Lastly, compared to White individuals, Black individuals mistrust other social groups, which can engender negative evaluations of White people (Dovidio et al., 2008; Mabry & Kiecolt, 2005). While the research linking mistrust and health is limited, a negative association exists between perceptions of mistrust and the experience of threat, and a positive association exists between perceived discrimination and mistrust in healthcare physicians (e.g., Blascovich, 2008; Hausmann et al., 2013; Haywood et al., 2014).

This research also offers insight into *how* perceived Black–White competition is influenced by intergroup inequality, and subsequently internalized. The extant literature on the opposing processes model of competition (Murayama & Elliot, 2012) documents the relationship between competition and performance, demonstrating that competition leads to both positive and negative outcomes depending on the achievement goals adopted. The present findings offer a similar takeaway: while competition impacts negative intergroup perceptions, this relationship is attenuated when the socio-economic context is perceived to be equal. Here, economic inequality may provide a contextual backdrop by which competition is perceived; high inequality may compel individuals to construe competition as a catalyst of perceived racial tension, and more egalitarian conditions (i.e., economic equality) may influence individuals to view competition less negatively. While recent work has documented some of the nuances of inequality and competition (Sommet et al., 2019, 2023), the present work is the first to document the importance of the economic context in conjunction with race-based competition.

## Limitations and Future Directions

While the present work offers a systematic approach to understanding the effects of racial income inequality and competition on negative intergroup outcomes, limitations should be considered. First, this work focuses on perceived outcomes, limiting conclusions regarding more objective outcomes (e.g., behavioral or health-related outcomes). As such, future research would benefit from examining more tangible, societal-level outcomes, such as drug use and violent crime rates (Galea et al., 2007; Hipp, 2007; Pickett & Wilkinson, 2015), as well as considering other objective social and economic factors that contribute to the emergence and spread of negative intergroup behaviors (Prusova & Agadullina, 2021).

Moreover, outcomes reflect perceptions of the prevalence of inter-racial action tendencies. Specifically, participants reported on the prevalence of these tendencies in their community, not on how much they themselves engage in or have experienced these action tendencies. This approach makes it difficult to identify which target group is driving the effect and engaging in action tendencies. That is, it is unclear whether participants are thinking of their racial ingroup, the outgroup, or if both groups are perceived to be behaving reciprocally in kind. This approach was used here to minimize socially desirable responding (e.g., Gibbons et al., 2012; Waytz et al., 2015). However, recent research suggests that using targeted, direct

questions pertaining to personal experiences may be a viable alternative (Axt, 2018; Oswald et al., 2013; Stark et al., 2022). As such, future research would benefit from examining the effect of Black–White inequality and competition on being the agent and target of negative intergroup behaviors, and from considering directional (e.g., ingroup vs. outgroup) effects separately.

Additionally, the present work manipulated racial income inequality by presenting information regarding the Black–White income gap, and this is not directly analogous to the objective experience of living in and experiencing an area of high Black–White income inequality. Manipulating personal experiences would require a proxy context (e.g., a Bimboola paradigm; Sánchez-Rodríguez et al., 2019; Sprong et al., 2019) given that randomly allocating resources to individuals in society is unethical and unfeasible. While this limitation is unavoidable, research has found an association between the objective (real) racial income gap and psychological outcomes (Gordils et al., 2020). Moreover, in over 80% of U.S. ZIP-codes, White individuals have a greater average income compared to Black individuals. So, the manipulation used in the present work can also be viewed (in most instances) as a reminder to individuals of the existence of racial income inequality in their area.

The present work exposed people to Black/White income data, which implies that people must both become aware of and accurately perceive racial income inequality in order to be affected by it. While past work has found that Americans exhibit greater accuracy for Black–White income inequality compared to Black–White wealth inequality (Kraus et al., 2017), they nonetheless have difficulty accurately reporting the magnitude and severity of these disparities, and in some cases, can be oblivious to them altogether (Jachimowicz et al., 2022; Kraus et al., 2019, 2022; Norton & Ariely, 2011). While people may not be perfectly attuned to the specific level of inequality in their area, past work has documented positive correlations between subjective and objective measures of economic inequality (Peters & Jetten, 2023; Schmalor & Heine, 2022; Sommet et al., 2019; Sprong et al., 2019). In other words, people are certainly imperfect detectors of economic inequality, but they can report with some level of accuracy in some instances (e.g., within their immediate area of residence).

This is an important limitation related to much of the empirical research of economic inequality. That is, to test for the effects of an intended experimental manipulation that utilizes information of objective indicators of inequality, people likely need to be made aware of the presence or absence of varying levels of inequality. Past research has documented inaccuracies between objective and perceived inequality. Thus, making individuals aware of the state of Black–White income inequality may artificially magnify effects and diminish ecological validity. While objective markers of income inequality influence psychological outcomes (Gordils et al., 2020; Sommet et al., 2019), dismissing the nuance of *how* people learn about and maintain awareness of inequality (and whether they are subsequently affected by it) may obscure the complexities of how these disparities “get into heads.” Future research would thus benefit from not only examining the explicit effects of manipulating inequality, but also capturing indirect and implicit effects independent of whether individuals are actively and accurately aware of it. Furthermore, the present work is centered on mean-level Black–White income differences at the ZIP-code level in the United States. That is, this work focused on a type of interracial inequality (i.e., the unequal distribution of resources between racial groups),

and not interracial inequality (i.e., whether resource distributions are fair or unjust between racial groups). While these constructs are related, they do vary. Inequality may be perceived as an unfair social ill, but it can also be perceived as a fair process that reflects variability in effort (i.e., some groups “try harder” than others; Shariff et al., 2016). If presented with information regarding the racial income gap, social liberals (e.g., Cooley, Brown-Iannuzzi, & Cottrell, 2019; Cooley, Brown-Iannuzzi, Lei, & Cipolla III, 2019) may construe the unequal income gap as an indication of racial privilege for White individuals, and unfair disadvantage for Black individuals. Or, racial group membership may influence how information about inequality is internalized. White and Black individuals may frame racial inequality differently due to their position in the hierarchy (e.g., Cooley, Brown-Iannuzzi, & Cottrell, 2019; Cooley, Brown-Iannuzzi, Lei, & Cipolla III, 2019; Lowery et al., 2007; Phillips & Lowery, 2015). Moreover, individual differences, including social dominance orientation (e.g., Esses et al., 1998; Pratto et al., 2006), system justification beliefs (e.g., Jost & Thompson, 2000), and support for economic inequality (Wiwad et al., 2019) all characterize individuals who view the world in terms of competition among social groups for status and power, and likely affect how racial disparities and intergroup tension is understood and internalized (Duckitt, 2005). Future research would benefit from incorporating these measures into work on racial inequality to understand how inequality impacts individuals downstream.

Regarding our testing of moderation-of-process, it may be difficult to imagine circumstances where inequality does not breed competition. As such, presenting some participants with information about the presence of racial income inequality in the absence of competition may represent an unlikely possibility. However, resources should be perceived as scarce and outgroups perceived as relevant, to engender competition and negative outcomes (see Intergroup Threat Theory). If individuals perceive an outgroup as not relevant (perhaps because they pose no threat to the resources in question), it is unlikely that individuals would perceive competition. As an example, it is unlikely that middle-class individuals perceive competition between themselves and the severely impoverished or those without a home, despite there being a large economic gap between the two. Moreover, if individuals perceive critical resources as non-zero-sum, this may attenuate perceptions of competition as well. Research on zero-sum beliefs suggests that as individuals feel economically deprived, they are more likely to believe that economic success is zero-sum (Ongis & Davidai, 2022). While presenting information about inequality may evoke zero-sum beliefs, lowering perceptions of race-based competition may also lower perceptions of zero-sum beliefs in kind. This line of thinking, however, raises the question: What are the processes underlying the relationship between income inequality and competition? In addition to these mechanisms (i.e., group relevance and zero-sum beliefs), past research on beliefs about social mobility and perceptions of the legitimacy of inequality likely play a role. For instance, believing that income mobility is achievable breeds tolerance of inequality (Shariff et al., 2016), and people who perceive income inequality as more legitimate are less negatively impacted by experiencing inequality (Schneider, 2012). Future research is needed to extend the present work by investigating mechanisms involved in the link between inequality and competition.

Finally, while the variables assessed in the present work may be linked to approach and avoidance motivation, this work did not

test the direct effect of racial income inequality and perceived interracial competition on these motivational orientations. Past research has documented effects of competition on approach and avoidance motivation (Hangen et al., 2016; Murayama & Elliot, 2012), and competition and motivation in the context of inequality in which economic inequality predicts both other-approach and other-avoidance economic goals via perceived competitiveness (Sommet et al., 2019). Approach motivation results in the energization or direction of behavior toward desirable objects, situations, or outcomes, while avoidance motivation encompasses the energization or direction of behavior away from undesirable objects, situations, or outcomes (Elliot, 2006; Jamieson et al., 2014). As inequality and perceived competition can promote striving to win *and* striving not to lose (Sommet et al., 2019; Wolters, 2004), it is possible that racial income inequality affects approach-related action tendencies for some individuals, while impacting avoidance-related action tendencies for others.

Research on the biopsychosocial model of challenge and threat (Blascovich, 2008; Blascovich & Tomaka, 1996; Seery, 2013) has documented differential outcomes based on perceptions of demands and available coping resources: when individuals perceive that available resources exceed situational demands, they are challenged and approach motivated; however, when individuals perceive that these demands exceed available coping resources, they are threatened and avoidance motivated (for reviews, see Jamieson, 2017). In the context of racial income inequality, individuals with the financial resources to cope with economically unequal and competitive environments may exhibit challenge responses, whereas individuals with fewer economic resources may experience threat in response to the same environment. These tendencies may manifest as approach-oriented affective responses such as discrimination, anger, and risk-taking (Jamieson et al., 2013; Sidanius et al., 2007; Tajfel & Turner, 2001), or avoidance-oriented responses such as intergroup anxiety and outgroup avoidance (Esses et al., 2005; McFarland & Warren, 1992). Understanding how perceptions of racial competition influence motivational processes may have important implications for health (e.g., Fuller-Rowell et al., 2012; Gibbons et al., 2014; Jamieson et al., 2013). Past experimental work supports the causal link between perceptions of competition and these motivational goals (e.g., Pekrun et al., 2014; Shin et al., 2017), and the present findings suggest that perceptions of interracial competition can elicit approach- and avoidance-oriented responses. However, the link between racial income inequality, perceived interracial competition, and approach-avoidance motivation have yet to be examined (although has been investigated on the subject of general income inequality and competition broadly; see Sommet & Elliot, 2023). As such, future research may benefit strongly from expanding the present work by integrating race-based income inequality, intergroup competition, and motivational processes together in a comprehensive model.

## Constraints on Generality

The present work focused exclusively on Black–White relations in the United States. Participants were recruited across various online platforms (e.g., MTurk workers, Prolific users, university students (Sona), and we recognize that the ability to use these platforms are constrained to those with internet access and electronic computer devices. Moreover, it is unclear whether findings would generalize

to other non-White groups. As such, a valuable future direction is to extend the proposed model to include other racial or ethnic group relations, such as non-White Hispanic/Latinx and East Asian groups, two of the fastest growing in the United States (Huo et al., 2018). For example, research shows that the growth of the Hispanic/Latinx population is a significant predictor of feelings of threat among White Americans (E. D. Knowles & Tropp, 2018). Moreover, given the rise and awareness of prejudice and discrimination towards Asian Americans (Associated Press, 2021; Croucher et al., 2020), understanding how existing socio-economic, socio-structural, and environmental (e.g., global pandemic) variables may play a role in maintaining, exacerbating, and attenuating discriminatory sentiment is paramount (e.g., Gordils, Elliot, Toprakkiran, & Jamieson, 2021; Toprakkiran & Gordils, 2021).

To understand the full effects of race-based income inequality on intergroup competition and negative downstream outcomes, efforts must be allocated toward assessing model generalizability and differences. As the majority of intergroup research focuses on one group's attitudes and perceptions toward some defined outgroup (e.g. Butz & Yogeeswaran, 2011; Diaz et al., 2011; Morrison & Ybarra, 2008), researchers would not only benefit from comparable group-sample sizes, but also from testing whether these models operate similarly for other social groups. In the event that group differences emerge, as was the case in the present work, future research would benefit from examining the mechanisms as to why model differences occur. For example, it is probable that cultural factors may be playing a role in how inequality and competition are internalized (Cohen et al., 2006; Oishi et al., 2022). Moreover, it is possible that the proposed constructs (i.e., racial income inequality, perceived interracial competition, and focal negative interracial outcomes) are not similarly understood between different racial groups (Trimble, 2007). As such, incorporating a multicultural lens for understanding not just the existence of differences, but the mechanisms underlying why these differences exist is of paramount importance and a notable future direction (Oishi et al., 2022; Wu et al., 2022).

## Conclusion

This research is the first to document the causal role of racial income inequality on perceived interracial competition and negative interracial psychological outcomes. This work contributes to our understanding of racial income inequality and intergroup competition by identifying perceived interracial competition as a mechanism for how Black–White inequality impacts person-level outcomes. Given the history, both past and ongoing, of racial tension in America, it is important that researchers continue to unpack the lasting effects and nuances of race-based disparities.

## Context of the Research

This research presented in this article was informed by the authors' program of research on the effects of racial income inequality on perceived intergroup competition and negative psychological outcomes. Past work has documented associations between the objective Black–White income gap and negative psychological perceptions, yet this research was limited to correlational interpretations. Building on research on economic inequality and intergroup relations, the studies presented herein utilize a systematic approach

to demonstrate that leading Black and White individuals to believe they live in an area of high Black–White inequality can impact their perceptions of intergroup competition and intergroup tension (e.g., discrimination, intergroup anxiety). Moreover, perceived competition between Black and White individuals is a process by which this inequality effect unfolds, yet manifests differently depending on one's racial group membership. These results offer a crucial first step to understanding causal implications of race-based inequality, a disparity that continues to persist in American society.

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