Internalization or Polarization: Community-Level Associations of Shifts in White Americans' Attitudes with Black Americans' Attitudes

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Abstract

We used over 1.4 million Project Implicit responses between 2008 and 2019 to examine whether living in communities where White Americans hold more negative attitudes toward Black individuals predicts internalization versus polarization among Black Americans (i.e., higher versus lower preference for White relative to Black individuals). We constructed two-year estimates of White and Black county-level implicit (automatic) and explicit (conscious, self-reported) preference for White relative to Black individuals. Results from multilevel autoregressive models were consistent with polarization. In a given county, when White residents' implicit or explicit preference for Whites increased at one wave, Black residents' implicit and explicit preference for Whites generally decreased at the subsequent wave. Indicators of structural racism inconsistently predicted outcomes, but negative associations between White and Black residents' relative preference for Whites were robust to inclusion of indicators of structural racism. These results have important implications for Black Americans' health and intergroup relations.

Introduction

For Black Americans, living in communities in which White Americans hold more negative attitudes towards Black individuals has been associated with poorer physical and mental health. For example, Black Americans in regions marked by high levels of explicit bias (conscious, self-reported) or implicit bias (non-conscious, automatic) experience elevated rates of self-inflicted, cardiovascular, and drug-related mortality, low infant birth weight, chronic illness (Gran-Ruaz et al., 2022; Leitner et al., 2016a; Orchard & Price, 2017; Splan et al., 2021; Zestcott et al., 2022). However, research has yet to examine how residing in more stigmatizing communities affects Black Americans' views of both White majority group members and members of their own group.

There remains disagreement in the individual-level theoretical and empirical literature regarding how prejudice and discrimination might influence Black Americans' out-group and in-group attitudes. Whereas one perspective emphasizes the potential for Black Americans to "internalize" or adopt the pro-White attitudes prevalent in the dominant society, another perspective suggests that polarization or backlash can occur in the form of reduced pro-White attitudes. This is an important research question because these attitudes may be a mechanism through which regional bias "gets under the skin," with internalization of pro-White views potentially being associated with poorer mental health (Gale et al., 2020; Graham et al., 2016; Hughes et al., 2015) and polarization being associated with greater anger, cardiovascular engagement, and related health sequelae (Armstead et al., 1989; Assari, 2017; Zilioli et al., 2017). Both possibilities also have important implications for race relations. The present research sought to address this gap in the literature by examining how White Americans' community-level attitudes predict the racial attitudes of Black Americans residing in the same communities.

Internalized racism has been defined as acceptance of the negative societal beliefs or stereotypes about one's own racial or ethnic group and operationalized as both favoring Whiteness and denigrating one's own race (Williams & Williams-Morris, 2000). Stigma theorists suggest that living in a society high in

racial inequality places members of marginalized racial groups at risk of internalizing a sense of inferiority relative to the White majority (Bos et al., 2013; Clark et al., 2004; David et al., 2019). Cross-sectional research at the individual level bears this out. Individuals who report experiencing more racial discrimination and exposure to media stereotypes score higher on measures of internalized racism (Cénat et al., 2022; Frisby, 2024; Graham et al., 2016; Molina & James, 2016). Although only a few longitudinal studies have examined this association among racial minorities, work with other stigmatized groups finds that individuals with greater exposure to prejudice and discrimination internalize those attitudes over time (e.g., Fazeli et al., 2017; Vogel et al., 2013).

In contrast, other theoretical and empirical work argues that group-based inequality and negativity from dominant group members may lead to greater *polarization*, with marginalized individuals developing more negative attitudes toward the dominant group and/or more positive attitudes towards their own group. According to intergroup image theory, perceived competition or simply differences in power between groups leads both groups to negatively stereotype one another (Alexander et al., 1999). Black Americans have been found to respond to White dominance, racial inequality, and rejection by Whites by characterizing White Americans as hostile, untrustworthy, irrational, or exploitative (Alexander et al., 2005; Monteith & Spicer, 2000). Studies on intergroup meta-perceptions have also linked perceived rejection or dehumanization from the dominant White society to reciprocal hostility among racial minorities (e.g., Kamans et al., 2009; Kteily & Bruneau, 2016). Cross-sectional national attitudinal means further suggest that White Americans on average prefer their own group, and rather than displaying internalization, Black Americans on average prefer Black relative to White Americans (Charlesworth & Banaji, 2021; Essien et al., 2021). However, the relationship between White and Black attitudes has not been examined at a lower level of analysis or longitudinally. Thus, theoretical and empirical literature provide evidence in both directions, such that higher regional anti-Black bias may lead to increases in either internalization or polarization among Black Americans.

Project Implicit data (Greenwald et al., 1998) are well-suited for examining whether White Americans' regional attitudes are associated with internalization or polarization among Black Americans. Individuals who visit the Project Implicit website take a Black-White implicit association test and report their explicit attitudes toward Black and White individuals. As described in the method, both metrics allow for characterizing the extent to which Black and White Americans in a given county display a preference for White relative to Black individuals. As implicit and explicit measures sometimes yield different individual-level results regarding the impact of prejudice (e.g., Livingston et al., 2002), it is important to examine both. Moreover, although internalized stigma scales exist, earlier work has operationalized internalized racism through measures of implicit and explicit relative preference for Whites among Black respondents (e.g., Cha et al., 2022; Essien et al., 2021). Simultaneously, others have conceptualized divergences in the implicit and explicit attitudes of two groups as evidence of attitudinal polarization (e.g., Charlesworth & Banaji, 2021; Sawyer & Gampa, 2018). Thus, there is precedent for using Project Implicit data on relative preference to capture both internalization and polarization.

Prior work on regional attitudes has evidenced some shortcomings. Earlier research has largely been cross-sectional, limiting conclusions about the direction of effects and leading Calanchini et al. (2022) to call for the use of analytic models allowing for greater causal inference in this literature. In addition, previous research has generally not examined associations of regional attitudes with outcomes relative to traditional measures of structural racism, as captured by indicators of racial disadvantage or inequalities in a given area (e.g., residential segregation, socioeconomic status, political representation). Indicators of structural racism are also associated with poorer physical and mental health among Black Americans (e.g., Anderson et al., 2023; Hatzenbuehler et al., 2022; Jeffers et al., 2023; Lukachko et al., 2014). However, research on the association of structural racism with Black attitudes has produced mixed results, with some finding that structural racism predicts more positive attitudes toward White individuals and/or more negative attitudes toward Black individuals; others have found the reverse (Cha et al., 2022; Payne et al., 2019; Vuletich et al., 2023). We therefore improved upon prior work by estimating autoregressive models that allowed us to examine whether change in White attitudes at one wave led to change in Black attitudes at a later wave. We also examined both main effects of indicators of structural racism on Black Americans' attitudes as well as whether White attitudes were associated with these outcomes over and above structural racism.

Study Overview and Hypotheses

Existing research has not examined to what extent communities marked by more negative regional attitudes or structural stigma are associated with internalization versus polarization in the attitudes of Black residents. This is important because Black Americans' attitudinal reactions to regional White attitudes and structural racism may have implications not only for their health but also for intergroup relations. The current study analyzed county-level associations and tested whether increases in White Americans' implicit and explicit preference for White relative to Black Americans were associated with internalization or polarization among Black residents at the next wave, operationalized as higher versus lower implicit and explicit relative preference for White Americans. We examined both implicit and explicit attitudes to demonstrate the consistency of effect on measures that are respectively more automatic versus self-reported. We also conducted parallel analyses examining associations of indicators of structural racism (Black unemployment, educational attainment, and incarceration) with internalization versus polarization as well as tested whether associations of White Americans' attitudes remained over and above those of structural racism measures. Finally, we conducted a series of sensitivity analyses to examine the robustness of the associations.

Methods

Counties were selected as the geographic unit of analysis because they are the smallest geographic unit available from Project Implicit and the smallest unit used in prior regional bias research (e.g., Leitner et al., 2016a, 2016b; Orchard & Price, 2017; Riddle & Sinclair, 2019). Analyses utilized 2008–2019 Project Implicit data on attitudes toward Black Americans, although data were available from 2003–2023. The 2003–2007 data were excluded due to small sample sizes and because Census data covariates were

not available before 2008. Data after 2020 were excluded to avoid any shifts in attitudes associated with the COVID-19 pandemic and George Floyd's murder.

We sought to model multi-wave autoregressive associations among Black implicit and explicit bias and the primary predictors – White implicit and explicit bias – and the three traditional measures of structural racism. Constructing this model required determining how many years of data to include in each wave. Because there are fewer Black than White Project Implicit respondents, the number of Black respondents per county served as the basis for this decision. Between 2008 and 2019, 377,872 US-dwelling Black Americans completed the Race Implicit Association Test (IAT), representing 2,458 of 3,143 counties. Yearly Black sample sizes per county were small (22.14 on average), whereas four- or five-year periods were a concern due to alignment with elections. To maximize both geographic coverage and the precision of time frames, we created six waves of two-year scores for the primary variables: 2008–2009, 2010–2011, 2012–2013, 2014–2015, 2016–2017, and 2018–2019. On average, there were approximately 62,979 Black respondents every two years, representing an average of 1,693 counties with at least one Black respondent and 37 Black respondents in each.

Primary Predictors and Outcomes: County-Level Attitudes

On the Project Implicit website (https://www.projectimplicit.net), individuals take an implicit association test and report explicit attitudes, demographics, and location (Xu et al., 2014). Black participants were defined as those who self-identified as "Black or African American" alone or in addition to other racial categories. White respondents were participants who identified as "White" alone.

Implicit Racial Attitudes

County-level implicit attitudes were measured with scores on the race IAT. In the race IAT, the words "Black" and "White" are first randomly assigned to be paired with either the word "good" or "bad." Respondents must classify Black and White faces and various words (e.g., "gross," "friend") into these categories as quickly as possible. The pairing of Black/White faces with good/bad is then reversed on subsequent trials. A preference for White relative to Black individuals is indicated when someone is faster to categorize the faces and words when White is paired with good compared to when Black is paired with good. The IAT D-score is calculated by taking the difference in mean response times between these pairings, divided by the standard deviation; positive scores indicate relative preference for White Americans while negative scores indicate relative preference for Black Americans. We retained the original scoring for both White and Black respondents, with positive scores indicating greater preference for White relative to Black Americans.

Explicit Racial Attitudes

In Project Implicit, explicit attitudes are assessed via two feeling thermometers capturing warmth toward White and Black Americans on a scale from 0 (*extremely cold*) to 10 (*extremely warm*). Following previous research (e.g., Leitner et al., 2016a, 2016b, 2018; Payne et al., 2019; Vuletich et al., 2023; Zestcott et al., 2022), and to maintain the same "relative preference" interpretation for both implicit and

explicit measures, explicit attitudes reflected the difference between the two items (White – Black). Higher scores indicated an explicit preference for White relative to Black Americans; this scoring was used for both Black and White respondents.

Aggregation of County-Level Bias Scores Via Post-stratification

Project Implicit respondents are not nationally representative. Consistent with prior research (Leitner et al., 2016a, 2016b; Lohr, 2009; Riddle & Sinclair, 2019), multilevel regression with post-stratification was employed to compensate for potential response biases by assigning greater weight to respondents who more closely match the demographics of their county. Post-stratification was executed six times for each bias measure to create six two-year waves of data. Post-stratification was conducted in RStudio and executed six times for each bias measure to create six two-year waves of data. Following previous Project Implicit research on regional bias (e.g., Kellogg et al., 2023; Leitner et al., 2016a, 2016b; Riddle & Sinclair, 2019), age was chosen as the weighting dimension, since visitors to the Project Implicit website tend to be younger than the population average (Kastellec et al., 2010). Respondents were first grouped in four age categories (15–24, 25–34, 35–49, 50–64, and 65+). Then, data on the total population of Americans within each county and age category were obtained from the American Community Survey (ACS). Finally, respondents who were more representative of their county were weighted more heavily when creating in county-level averages. Via post-stratification, we were able to employ the national data to estimate Black and White implicit and explicit attitude scores in counties that did not provide any attitudinal data. In all analyses, the post-stratified implicit and explicit attitude scores were multiplied by 100 in order to aid the interpretability of model coefficients.

Traditional Measures of Structural Racism

We examined associations of White Americans' implicit and explicit attitudes with Black implicit and explicit attitudes over and above the effects of traditional forms of structural racism. A number of structural racism indicators of interest were not available at the county level from 2008–2019 (e.g., Black voter registration, residential segregation). Hence, following Lukachko et al. (2014), we examined Black unemployment, Black bachelor's degree attainment, and Black incarceration rates as indicators of structural racism.

Black Unemployment

Data on the proportion of the Black population ages 16–64 who were unemployed were obtained from the American Community Survey (ACS; United States Census Bureau, 2023), specifically table C23002B – Sex by Age by Employment Status for the Population 16 Years and Over (Black or African American Alone).

Black Educational Attainment

Black educational attainment was operationalized as the proportion of Black residents with a bachelor's degree or higher in each county. This threshold has been used regularly in structural racism research

(Bartle-Haring & Whiting, 2022; Chantarat et al., 2021; Lukachko et al., 2014; Wallace et al., 2017). College graduation is also a better predictor of health and longevity than high school graduation, and the gap between those with and without a bachelor's degree has widened in recent decades (Case & Deaton, 2021). Estimates of the proportion of Black residents age 25 or older with a bachelor's degree were obtained through the Census API (see table C15010B).

Black Incarceration

Data on the proportion of Black incarcerated in jails in each county were drawn from the 2008–2018 Annual Survey of Jails and the 2019 National Jail Census, a survey of about 950 local jails across the United States administered by the Bureau of Justice Statistics (BJS, 2023).

Time-Invariant Covariates

To simplify models, covariates were time-invariant. Five-year estimates for each covariate in each county were drawn from the American Community Survey (ACS) for the years 2009, 2011, 2013, 2015, 2017, and 2019 and averaged (United States Census Bureau, 2023). The Census recommends (US Census Bureau, 2023) and prior work on regional bias has used five-year estimates (e.g., Kellogg et al., 2023; Leitner et al., 2016b; Rae et al., 2022; Riddle & Sinclair, 2019; Vuletich et al., 2023). The included covariates mirrored those from prior regional bias work (Hehman et al., 2018; Kellogg et al., 2023; Leitner et al., 2016a, 2016b, 2018; Orchard & Price, 2017; Riddle & Sinclair, 2019; Thomas et al., 2020; Zestcott et al., 2022)

Total Population

Analyses controlled for the (log-transformed) total population of each county to account for the potential effects of urbanicity, especially given that more populous areas exhibit decreases in implicit bias over time (Stier et al., 2024). Estimates were drawn from table DP05 – ACS Demographic and Housing Estimates.

Unemployment

Some evidence indicates associations between unemployment rates and prejudice (Bianchi et al., 2018; Isaksen et al., 2016). We therefore included county-level unemployment rates as a covariate (see table DP03 – Selected Economic Characteristics).

Median Income

Given that socioeconomic status can be a confound in studies on racism (Williams et al., 2010), log-transformed median income was included as a covariate. Data were obtained from table DP03.

Income Inequality

Since regional income inequality is associated with greater social dysfunction (Wilkinson & Pickett, 2009) and greater explicit preference for Whites among White residents (Connor et al., 2019), our analyses incorporated the Gini index as a measure of income inequality. The Gini Index assesses how well income is dispersed in the county, relative to a county in which everyone earns the same amount. A

score of zero represents perfect equality and one represents perfect inequality (see table B19083 – Gini Index of Inequality).

Educational Attainment

Since greater educational attainment is associated with lower prejudice (Carvacho et al., 2013; Wagner & Zick, 1995), the primary analyses incorporated the proportion of residents age 25 or older with a bachelor's degree or higher (see table DP02 – Selected Social Characteristics in the United States).

Black Geographic Mobility

Geographic mobility was calculated as the percentage of Black Americans in each county who moved into that county in the past 5 years, whether from within the same state, from another U.S. state, or from another country (see table S0701 – Geographic Mobility by Selected Characteristics). This was to control for the possibility that Black Americans may choose to move to locations with lower levels of structural racism or regional bias.

Analytic Plan

All analyses were conducted in Mplus version 8 (Muthén & Muthén, 2017). Three-level models (waves nested within counties nested within states) failed to converge. We therefore estimated two-level autoregressive models (waves nested within counties) and removed state-level effects from all covariates by subtracting the state means. Models controlled for the stability of Black implicit and explicit attitudes by, for example, allowing wave 1 Black explicit attitudes to predict wave 2 Black explicit attitudes. The same was done to model the stability of all primary predictors – White attitudes and structural racism indicators. The primary analyses focused on lagged associations of each primary predictor with Black implicit and explicit attitudes. For example, wave 1 White implicit attitudes predicted wave 2 Black explicit attitudes. Post-stratified county estimates of White implicit and explicit attitudes were highly correlated (r = .63), and we wanted to guard against missing an effect of one of the structural stigma measures. We therefore analyzed the five primary predictors individually as predictors of Black implicit and then Black explicit attitudes, resulting in ten initial models.

The primary predictors (e.g., lagged White implicit attitudes) were group-mean centered to capture level 1 associations (Enders & Tofighi, 2007), reflecting whether change in White attitudes at one wave predicted change in Black attitudes at the subsequent wave. Previous research has indicated that White and Black implicit and explicit attitudes have been trending towards neutrality over time (Charlesworth & Banaji, 2021); we therefore tested the significance of and ultimately included linear, quadratic, and cubic time terms as predictors of each measure of White and Black implicit and explicit attitudes. For each analysis, we first tested a random slopes model; if it did not converge or the random slope was non-significant, we proceeded with a random intercept model. Predictors and covariates were modeled as fixed effects. In models analyzing indicators of structural racism, general educational attainment and general unemployment were removed as covariates due to high overlap with Black-specific educational attainment and unemployment. All other covariates were retained in these models.

Sensitivity Analyses

To provide evidence that results were robust to response rates of Black residents, we re-examined associations between White and Black county-level attitudes including only those counties containing a certain number of respondents. Prior work has used a wide range of minimum respondents per county, from 1 to 100 respondent minimums (Götz et al., 2021; Payne et al., 2019). We followed the approach of Stelter et al. (2022) in testing the robustness of models. Analyses were conducted first including only those counties with one or more Black respondents in all waves; models were then re-examined for counties containing 25 or more and 50 or more Black respondents, resulting in six additional models. In all, 971 of 3,143 counties had at least 1 Black respondent for all waves; 225 and 129 counties were included when restricted to at least 25 and at least 50 Black respondents, respectively.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Results

Sample Descriptives

Descriptive statistics and bivariate correlations can be found in Table 1. White respondents' mean post-stratified county-level attitudinal scores were both above zero, indicating automatic and self-reported preference for White relative to Black Americans. For Black respondents, mean post-stratified attitudinal scores were both below zero, indicating preference for Black relative to White Americans. White Americans' implicit and explicit attitude scores were both negatively correlated with Black Americans' implicit and explicit attitude scores. Thus, the cross-sectional correlations were consistent with polarization, such that in communities where White Americans preferred White relative to Black individuals, Black Americans simultaneously preferred Black to White individuals.

Table 1

County-Level Descriptives and Correlation with Black Americans' Relative Preference for White Americans

			Correlations	
Variable	Mean	SD	Black Implicit	Black Explicit
Black Americans' implicit preference for Whites [a]	-2.62	5.47	--	0.81
Black Americans' explicit preference for Whites [a]	-136.72	32.39	0.81	--
White Americans' implicit preference for Whites [a]	39.03	3.73	-0.35	-0.26
White Americans' explicit preference for Whites [a]	61.50	27.66	-0.51	-0.32
Black unemployment	0.14	0.17	-0.12	-0.09
Black educational attainment	0.08	0.11	0.06	-0.03
Black jail incarceration	0.10	1.01	-0.03	0.01 *ns*
Total population	10.26	1.47	0.08	-0.21
Income inequality	0.44	0.03	-0.11	-0.25
General educational attainment	0.20	0.09	0.10	-0.15
Median income	10.73	0.24	0.17	0.07
General unemployment	0.04	0.02	-0.19	-0.29
Black mobility	0.15	0.13	0.39	0.28

Note. All correlations are significant at $p < .05$ except those marked by *n.s.* [a] Higher scores reflect preference for White Americans relative to Black Americans; scores have been multiplied by 100 to aid interpretation of model coefficients.

Lagged Associations Between White and Black Americans' Relative Preference for Whites

After controlling for demographic covariates, lagged White implicit and explicit attitudes were consistently negatively associated with Black implicit attitudes (see Table 2). This pattern of results is consistent with polarization – when White Americans' relative implicit or explicit preference for Whites increased in a given county at one wave, Black Americans' relative implicit preference for Whites decreased in the same county at the subsequent wave. With respect to Black Americans' explicit attitudes, increases in White Americans' implicit relative preference for Whites likewise predicted

subsequent decreases in Black Americans' explicit relative preference for Whites. However, surprisingly, White Americans' explicit relative preference for Whites did not significantly predict Black Americans' explicit relative preference for Whites.

Table 2
Associations of White Americans' and Black Americans' Relative Preference for Whites

	Black implicit preference for Whites			**Black explicit preference for Whites**		
Variable	*b*	*SE*	*p*	*b*	*SE*	*p*
Associations of Covariates						
Intercept	6.26	0.30	< .001	-54.01	1.74	< .001
Black implicit or explicit preference for Whites (lagged)	0.07	0.01	< .001	0.30	0.01	< .001
Time (linear)	-19.17	0.39	< .001	-146.92	2.23	< .001
Time (quadratic)	8.51	0.15	< .001	65.10	0.83	< .001
Time (cubic)	-0.99	0.02	< .001	-7.89	0.09	< .001
Total population	0.56	0.04	< .001	-2.29	0.28	< .001
Income inequality	-3.29	2.14	.125	-79.40	13.98	< .001
General educational attainment	-4.29	0.87	< .001	-107.71	5.66	< .001
Median income	3.56	0.39	< .001	30.34	2.52	< .001
General unemployment	-64.05	3.57	< .001	-632.32	23.31	< .001
Black geographic mobility	19.80	0.34	< .001	66.87	2.22	< .001
Associations of each primary predictor individually, controlling for covariates						
White implicit preference for Whites	-0.35	0.02	< .001	-1.12	0.13	< .001
White explicit preference for Whites	-0.03	0.00	< .001	-0.04	0.02	.111

Lagged Associations Between Structural Racism and Black Americans' Relative Preference for Whites

Associations of variables capturing structural racism with Black Americans' relative preference for Whites depended on whether or not this was assessed via implicit versus explicit measures (see Table 3). Surprisingly, unemployment, educational attainment, and incarceration rates among Black residents were not significantly associated with Black Americans' implicit relative preference for Whites. By contrast, when unemployment and incarceration rates among Black residents in a given county

increased at one wave, Black Americans' explicit preference for Whites decreased at the subsequent wave. The association between Black educational attainment and Black explicit attitudes was not significant.

Table 3
Associations of Structural Racism and Black Americans' Relative Preference for White Americans

	Black implicit preference for Whites			**Black explicit preference for Whites**		
Variable	*b*	*SE*	*p*	*b*	*SE*	*p*
Associations of Covariates						
Intercept	6.26	0.30	< .001	-54.00	1.74	< .001
Black implicit or explicit preference for Whites (lagged)	0.07	0.01	< .001	0.30	0.01	< .001
Time (linear)	-19.17	0.39	< .001	-146.92	2.23	< .001
Time (quadratic)	8.51	0.15	< .001	65.11	0.83	< .001
Time (cubic)	-0.99	0.02	< .001	-7.89	0.09	< .001
Total population	0.27	0.04	< .001	-5.59	0.29	< .001
Income inequality	-7.86	1.84	< .001	-217.41	13.15	< .001
Median income	4.19	0.28	< .001	16.09	1.97	< .001
Black geographic mobility	20.23	0.36	< .001	69.11	2.54	< .001
Associations of each primary predictor individually, controlling for covariates						
Black unemployment	-0.31	0.28	.266	-3.60	1.52	.018
Black educational attainment	-0.29	0.42	.487	-1.09	2.37	.646
Black jail incarceration	-0.08	0.09	.380	-1.20	0.44	.006

Table 4

Associations of White Americans' Relative Preference for Whites, Structural Racism, and Black Americans' Relative Preference for Whites

	Black implicit preference for Whites			**Black explicit preference for Whites**		
Variable	*b*	*SE*	*p*	*b*	*SE*	*p*
Associations of Covariates						
Intercept	6.26	0.30	< .001	-54.00	1.74	< .001
Black implicit or explicit preference for Whites (lagged)	0.07	0.01	< .001	0.30	0.01	< .001
Time (linear)	-19.17	0.39	< .001	-146.92	2.23	< .001
Time (quadratic)	8.51	0.15	< .001	65.11	0.83	< .001
Time (cubic)	-0.99	0.02	< .001	-7.89	0.09	< .001
Total population	0.27	0.04	< .001	-5.59	0.29	< .001
Income inequality	-7.86	1.84	< .001	-217.41	13.15	< .001
Median income	4.19	0.28	< .001	16.09	1.97	< .001
Black geographic mobility	20.23	0.36	< .001	69.11	2.54	< .001
Associations of all structural racism variables combined						
Black unemployment	-0.32	0.28	.250	-3.56	1.53	.020
Black educational attainment	-0.32	0.42	.452	-1.38	2.37	.562
Black jail incarceration	-0.06	0.09	.491	-1.13	0.44	.010
Associations of each predictor individually, controlling for covariates and structural racism						
White implicit preference for Whites	-0.35	0.02	< .001	-1.14	0.13	< .001
White explicit preference for Whites	-0.03	0.00	< .001	-0.08	0.02	< .001

Lagged Associations Between White and Black Americans' Relative Preference for Whites Controlling for Structural Racism

Results largely remained unchanged in models including both White Americans' attitudes and structural racism. Increases in White Americans' implicit and explicit preference for Whites in a given county remained significantly associated subsequent decreases in Black Americans' implicit preference for

Whites. The coefficients for Whites' attitudes were almost identical when tested individually and in the combined models, and structural racism indicators remained unassociated with Black implicit attitudes. With respect to Black explicit attitudes, the negative associations of White Americans' implicit preference, Black unemployment, and Black incarceration all replicated. However, White Americans' explicit preference also predicted lower Black explicit preference for White relative to Black individuals.

Sensitivity Analyses

Associations of White implicit and explicit attitudes with Black implicit attitudes were robust to the number of Black respondents in each county (see Supplementary Materials). When constrained to counties with 1 or more, 25 or more, or 50 or more Black respondents, White implicit and explicit preference for Whites remained significantly associated with subsequent reductions in Black implicit preference for White relative to Black individuals.

However, response rates affected the significance of associations of White attitudes with Black explicit attitudes. White implicit attitudes predicted Black explicit attitudes in counties with 1 or more Black respondents but not in counties with at least 25 or at least 50 Black respondents. White explicit attitudes similarly predicted Black Americans' explicit relative preference for Whites in counties with at least 1 or at least 25 Black respondents but became non-significant in counties with 50 or more Black respondents.

Discussion

The current study examined the extent to which indicators of regional bias and structural racism were predictive of internalization or polarization in the racial attitudes of Black Americans. Overall, results were consistent with polarization, and we saw no evidence of internalization at the county level. In counties where White Americans increased in relative implicit or explicit preference for their own group, Black residents in turn developed more negative attitudes towards White Americans. Notably, there were few associations of indicators of structural stigma with outcomes, and associations of Whites' attitudes remained when accounting for accounting for indicators of structural racism, suggesting that the relationship between White and Black community attitudes cannot be attributed primarily to Black disadvantage. Sensitivity analyses demonstrated that associations of Whites Americans' attitudes with Black Americans' implicit preference were particularly strong, as they were robust to the number of Black respondents in a county. However, associations with Black Americans' explicit preference appear to be more tenuous. Notwithstanding, unlike previous cross-sectional work, our use of autoregressive models demonstrated directionally that increases in White Americans' relative preference for Whites in a given county was associated with subsequent reductions in Black Americans' implicit preference for White individuals.

Our findings indicated that, at the county level, polarization appears to be the dominant response when White Americans become more positive toward White relative to Black individuals. This is consistent with individual-level research suggesting that Black negativity towards White Americans at least in part

represents a reaction to persistent anti-Black bias (Alexander et al., 2005; Monteith & Spicer, 2000). Among Black Americans, lower county-level preference for White individuals is associated with higher cardiovascular mortality (Leitner et al., 2016b; Zestcott et al., 2022). Thus, Whites' county-level bias may lead to mortality in part via Black negativity toward Whites. Anger, hostility, and mistrust, known precursors of cardiovascular disease, are likely byproducts of this process (Armstead et al., 1989; Assari, 2017; Zilioli et al., 2017). Little research has linked regional attitudes to Black Americans' mental health (Reid & Earnshaw, 2023). This may be because internalization of stigma is a primary driver of poor mental health, whereas outward-facing negativity engages systems linked more strongly to physical health.

Finally, our research implies that efforts to reduce racial prejudice among White Americans may be key to improving intergroup relations and reducing polarization. While White negativity toward Black Americans tends to be motivated more by ideology and perceived competition, Black negativity toward White Americans is generally explicitly connected to perceptions of racism and inequality (Alexander et al., 2005; Bianchi et al., 2018; Livingston et al., 2002; Monteith & Spicer, 2000). Moreover, regional preference for White relative to Black individuals is associated with discriminatory treatment of Black residents (e.g., Hehman et al., 2018; Riddle & Sinclair, 2019; Stelter et al., 2022), and racial distrust is unlikely to diminish in contexts in which fears of experiencing bias and discrimination are justified by experience.

We did not find evidence of internalization at the county level. It remains unknown why some Black individuals might internalize anti-Black or pro-White attitudes. Consistent with previous research, regional estimates evidenced greater variability for Black than White Americans (Payne et al., 2019), suggesting variation in responses that might be observed under certain conditions. Childhood socialization and social support may contribute to or protect against the internalization of racial prejudice (Constantine & Blackmon, 2002), although neither would be captured in our regional analyses. If databases allow, future research might explore whether certain community features that facilitate better or worse coping (e.g., Black churches or gathering spaces) might moderate the extent to which internalization is evident.

Associations between structural racism and Black attitudes appeared to be more complex. Black unemployment and incarceration were associated with decreases in Black residents' relative preference for White Americans on explicit but not implicit measures. It is unclear why there would be divergent associations between structural racism and implicit versus explicit attitudes, especially given that the direction of effects on the two measures is often similar (e.g., Cha et al., 2022; Payne et al., 2019; Vuletich et al., 2023). While some indicators of structural racism have been linked with increased relative preference for Whites (e.g., higher Black socioeconomic mobility), others have been associated with decreased relative preference for Whites (e.g., Black poverty). Further research is thus needed in order to understand how different operationalizations of structural racism might differentially affect results Black Americans' attitudes.

Limitations

Although we used a rigorous correlational design, causal conclusions cannot be drawn from these analyses. Our results also should not be extrapolated to draw individual-level conclusions. Furthermore, the Project Implicit sample is not random or nationally representative, though post-stratification allows for the reduction of bias relative to raw scores when generating estimates. In addition, we used a difference score for explicit warmth toward White individuals and warmth toward Black individuals to capture explicit attitudes. This was to maintain interpretations consistent with the implicit measure. However, it is unclear whether shifts in attitudes toward Whites or toward Blacks were driving the effects. These limitations notwithstanding, this work represents a novel examination of the relationship between White and Black Americans' views of one another.

Conclusion

In light of persistent racial disparities in health and ongoing difficulties in race relations, it is crucial to understand how White Americans' attitudes and structural racism relate to Black racial attitudes. Our results indicate that White Americans' negativity toward Black Americans may contribute to intergroup polarization, potentially affecting Black Americans' health and willingness to work toward common ground. Continued examination of the unique effects of regional attitudes will yield a comprehensive picture of how the social environment contributes to Black Americans' well-being.

Declarations

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Author Note

The authors declare no competing interests.

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