Research Article

Psychological Science
1–16

DOI: 10.1177/09567976231221546
www.psychologicalscience.org/PS

Perceptions of Falling Behind "Most White People": Within-Group Status Comparisons Predict Fewer Positive Emotions and Worse Health Over Time Among White (but Not Black) Americans

Nava Caluori[1], Erin Cooley[2], Jazmin L. Brown-Iannuzzi[1], Emma Klein[2], Ryan F. Lei[3], William Cipolli[4], and Lauren E. Philbrook[2]

[1]Department of Psychology, University of Virginia; [2]Department of Psychological and Brain Sciences, Colgate University; [3]Department of Psychology, Haverford College; and [4]Department of Mathematics, Colgate University

Abstract

Despite the persistence of anti-Black racism, White Americans report feeling worse off than Black Americans. We suggest that some White Americans may report low well-being despite high group-level status because of perceptions that they are falling behind their in-group. Using census-based quota sampling, we measured status comparisons and health among Black (N = 452, Wave 1) and White (N = 439, Wave 1) American adults over a period of 6 to 7 weeks. We found that Black and White Americans tended to make status comparisons within their own racial groups and that most Black participants felt better off than their racial group, whereas most White participants felt worse off than their racial group. Moreover, we found that White Americans' perceptions of falling behind "most White people" predicted fewer positive emotions at a subsequent time, which predicted worse sleep quality and depressive symptoms in the future. Subjective within-group status did not have the same consequences among Black participants.

Keywords

race, socioeconomic status, health, open data, open materials

Received 9/10/22; Revision accepted 11/29/23

In the United States, the enduring legacy of slavery combined with ongoing anti-Black racism are among the causes of a widening wealth gap between White and Black families (Collins et al., 2019). Yet poor White Americans report feeling less optimistic for their financial future and worse off economically than poor Black or Latinx Americans report feeling (Cohen et al., 2017; Graham, 2017). Although this trend is certainly driven by multiple factors, one contributing factor may be White Americans' subjective experience of feeling low status.

Understanding why many White Americans feel relatively low status and left behind, even though White people, on average, are doing better economically than minority racial groups, may help explain a variety of consequential trends, including the denial of White privilege (Knowles et al., 2014) and the rise of White populism (Jardina, 2019). In the present article, we propose that stereotypes that link White Americans with high status may lead many White Americans to feel as if they are falling behind the perceived high status of

Corresponding Authors:
Erin Cooley, Colgate University, Department of Psychological and Brain Sciences
Email: ecooley@colgate.edu

Nava Caluori, University of Virginia, Department of Psychology
Email: nc5pc@virginia.edu

their racial group. These feelings may then predict the experience of fewer positive emotions and, in turn, worse health over time. Such findings could potentially speak to the emergence of an increasingly strong narrative around suffering White people who feel left behind (Cohen et al., 2017; Jardina, 2019).

The Origin of Stereotypes That White Americans Are High Status

A sordid history of White supremacy in the United States has shaped present-day associations between Whiteness and high status (Bobo & Hutchings, 1996; Rasmussen et al., 2001; Roediger, 2006). The gap in wealth between White and Black Americans started with the blatant racism of U.S. slavery and, after the abolition of slavery, was compounded by subsequent racialized governmental policies that sought to maintain wealth and power in the hands of White people (Derenoncourt et al., 2022; Rothstein, 2017). During Reconstruction, enslavement transitioned to other forms of legalized oppression which dictated where Black Americans could live, the services they could use, whether they could participate in government, and the jobs they could hold. The Great Depression ushered in a new era of policies that systematically limited Black Americans' ability to accumulate wealth in a time of national wealth rebuilding. Perhaps most notably, Roosevelt's New Deal policies (e.g., the Social Security Act, the Wagner Act, and the National Housing Act) ensured that wealth would accumulate in the hands of White people at the expense of Black people. Given the persistence of structural forces today (e.g., redlining, gerrymandering), it is not surprising that between 1983 and 2016 the median White family went from having approximately 8 times more wealth than the median Black family to 13 times more wealth (Pew Research Center, 2016). For these social and structural reasons, many people living in the United States associate White Americans with high status and Black Americans with low status (Brown-Iannuzzi et al., 2019; Zou & Cheryan, 2017).

Subjective Socioeconomic Standing

While objective differences in socioeconomic status (e.g., income, education, wealth) have meaningful consequences for White and Black Americans' quality of life (e.g., Chetty et al., 2016), a growing body of research highlights the unique and powerful role that subjective perceptions of being low status also play in well-being (Adler, 2009; Adler et al., 2000; Brown-Iannuzzi et al., 2014; Cundiff & Matthews, 2017; Singh-Manoux et al., 2005). Some of this work finds, for example, that subjective perceptions of status mediate the relationship between objective status and mental health (Brown-Iannuzzi et al., 2014), highlighting the central role of subjective perceptions of relative status on well-being. But how do people develop a subjective status that is unique from their objective status?

Statement of Relevance

There is a persistent racial wealth gap in the United States: The typical White family has 8 times the wealth of the typical Black family. Despite this reality, White Americans report feeling worse off economically than Black Americans do. We seek to understand the paradox of why poor White Americans feel their individual status is so bleak despite greater group-level status and how these feelings influence health. We raise the possibility that because racial economic inequality benefits White people on average, many White Americans may feel they are individually falling behind the perceived high status of their in-group. These feelings of low within-group status may then affect emotional experiences, and thus health. Using a longitudinal design and census-based quota sampling, we found that among White (but not Black) Americans, perceptions of falling behind other people in one's racial group predict fewer positive emotions, worse sleep quality, and increased depressive symptoms.

The Role of Stereotypes That White Americans Are High Status for Social Comparisons

People often compare themselves to similar others (e.g., Festinger, 1954), and the people they consider to be similar to themselves seem, almost universally, to be within their own racial group: White people overwhelmingly report comparing themselves to other White people, and Black people overwhelmingly report comparing themselves to other Black people (e.g., Cooley et al., 2021). For this reason, we expect that race-status stereotypes that link Whiteness with high status and Blackness with low status are likely to be important when trying to understand White and Black Americans' subjective status.

The reality that White Americans tend to be wealthier than Black Americans, coupled with psychological factors such as racism, social-dominance orientation, and motivations to think highly of the in-group, may lead many White Americans to perceive "most White people" as having higher status than the self. However, the continued growth of racial wealth inequality, alongside

increased knowledge of racism in the United States (e.g., Salter et al., 2018), may lead many Black Americans to perceive "most Black people" as having lower status than the self (Cooley et al., 2021). As a result, White (vs. Black) Americans may make more frequent upward status comparisons. These upward status comparisons may, in turn, make White Americans frequently feel as if they are falling behind.

Positive Emotions and Health

Feeling worse off, and disconnected from, "most White people" may have cascading effects on positive emotions and health through stigmatization. Although not part of a marginalized group, White Americans may feel social stigma to the extent they think they are not fulfilling identity- and context-based normative standards—such as not being a high-status White person (Cooley et al., 2021; Kunstman et al., 2016). Further, stigma can have diverse and adverse effects on mental and physical health mediated by emotions. Original research on stigma and health focused on the role of negative emotions on health (e.g., Hatzenbuehler, 2009). However, more recent work has emphasized the critical role of positive emotions in predicting health. For example, depression is characterized as increased levels of negative affect and decreased levels of positive affect (e.g., Gross & Jazaieri, 2014), and worse depressive symptoms are uniquely associated with diminished levels of positive emotions (e.g., American Psychiatric Association, 2013). Research building upon these findings proposes that health behaviors developed while experiencing positive affect can elicit an addiction-like motivation to engage in those behaviors again, which then elicits more positive emotions (e.g., Van Cappellen et al., 2017). This results in a health-promoting cycle stemming from the experience of positive, rather than negative, emotions. For these reasons, researchers have called for a renewed focus on understanding how positive emotions may serve as a protective factor against poor health (e.g., Vanderlind et al., 2020).

In the present work, we combine this research on the key role that positive emotions can play in mental and physical well-being with prior cross-sectional findings demonstrating that positive (vs. negative) emotions play a central role in linking subjective within-group status to health uniquely among White Americans (Cooley et al., 2021). We use a longitudinal design, combined with cross-lagged panel models, to assess the relationship between positive emotions and health outcomes over time, as they relate to perceptions of within-group status among White and Black Americans via a representative quota sample.

Open Practices Statement

All measures are reported below; verbatim materials, data, and analysis code are available via the Open Science Framework at https://osf.io/shgjd/. Although these hypotheses were not preregistered, they build directly from previous work (Cooley et al., 2021).

Method

We conducted a five-wave longitudinal study, starting in late October 2020 and ending in early December 2020, with 7 to 14 days between time points and recruitment through Qualtrics Panels. At each time point, White and Black participants living in the United States were asked to answer a series of questions regarding the perceived status of the self and of their racial group, their experience of positive emotions, and their health (i.e., depressive symptoms, sleep quality, and physical health). We predicted that White Americans' perceptions of being lower status than other White people would predict the subsequent experience of fewer positive emotions at a later time point, which would in turn predict worse health at a future time point.

To provide additional evidence that these psychological processes are driven by the unique historical and social context of being a White American, we also conducted analyses on a parallel longitudinal sample of Black Americans. This sample also allowed us to test our hypothesis that widespread stereotypes that link Black Americans with low status would lead many Black Americans to feel higher status than "most Black Americans." Such a finding would suggest that Black and White Americans are making fundamentally different within-group status comparisons when judging their own relative social status. Further, because Black Americans experience racism, we anticipated that feeling higher status than most Black Americans may activate thoughts about their racial group's historical and present-day experience of racism. For these reasons, we did not expect perceptions of low within-group relative status to diminish the experience of positive emotions and health among Black Americans in the same way as among White Americans.

All methods below were reviewed and approved by an institutional review board to ensure adequate protection of participants.

Participant recruitment

To enhance the generalizability of our results, we worked with Qualtrics Panels to collect a representative sample of White and Black Americans. Quotas were

based on having an equal number of male and female participants. For household income, the quota was 55% of the sample with a household income of less than $35,000, 26% of the sample with a household income of less than $75,000, and 19% of the sample with a household income of more than $75,000. For education, the quota was 45% with a GED diploma or less, 30% of the sample with some college or technical college, and 25% of the sample with a college degree or more.

White participants

On the basis of suggested minimum sample sizes for our modeling approach (i.e., $N = 200$; Kline, 2011; Wolf et al., 2013), we contracted with Qualtrics Panels to recruit a final number of 250 White Americans who would complete all five waves of our longitudinal study. Qualtrics Panels overrecruited at Wave 1 to account for attrition across the subsequent four waves of the study. Our final sample at Wave 1 consisted of 439 participants (222 women, 211 men, 6 nonbinary) who were on average 35.01 years old ($SD = 9.87$), had a median education of some college (no degree), a median income of $50,001 to $75,000, and the following political identifications: 133 Democrats, 140 Republicans, 146 independents, and 20 not identifying with a party.

Our longitudinal analyses included data from all five waves of data collection. Wave 2 included 341 participants ($M_{age} = 35.49$, $SD_{age} = 9.78$), Wave 3 included 275 respondents ($M_{age} = 36.30$, $SD_{age} = 9.78$), Wave 4 included 248 respondents ($M_{age} = 36.44$, $SD_{age} = 9.85$), and Wave 5 included 239 respondents ($M_{age} = 36.37$, $SD_{age} = 9.78$). Our strategy for handling missing data across waves is discussed in more detail in the Results section.

Black participants

Recruitment strategies were the same for our Black sample as described above for our White sample. Our Black American sample at Wave 1 consisted of 452 Black participants (236 women, 215 men, 1 nonbinary) who were, on average, 31.77 years old ($SD = 10.64$), had a median education of some college (no degree), a median income of $25,001 to $50,000, and the following political identifications: 286 Democrats, 30 Republicans, 121 independents, and 15 not identifying with a party.

Our longitudinal analyses included data from all five waves of data collection. Wave 2 included 283 participants ($M_{age} = 34.16$, $SD_{age} = 11.26$), Wave 3 included 229 respondents ($M_{age} = 34.72$, $SD_{age} = 10.07$), Wave 4 included 213 respondents ($M_{age} = 35.00$, $SD_{age} = 10.06$), and Wave 5 included 204 respondents ($M_{age} = 35.24$, $SD_{age} = 9.87$). Our strategy for handling missing data across waves is discussed in more detail in the Results section.

Procedure

Participants were contacted by Qualtrics in mid-October 2020 to complete a longitudinal study through early December. If they agreed, they continued to be contacted again every 7 to 14 days. Participants who completed Wave 1 were then recontacted for Wave 2; participants who completed Wave 2 were then recontacted for Wave 3; and so on, for a total of 5 waves. If participants missed a wave of data collection, we did not continue to contact them, as our intention was to maximize our sample of people who completed all five waves. Participants began each wave by reading an informed consent and completing a captcha to ensure they were not robots. See Table 1 for descriptions of each measure by wave.

Subjective within-group status. After consenting, participants were asked to consider their social status in the United States. Status was defined for participants as "a combination of money, education, and job prestige." Next, participants were asked to complete the original MacArthur ladder (Adler & Ostrove, 1999): They viewed a ladder with 10 rungs and were asked to select which rung best represented their own status compared to others living in the United States. We refer to responses on this measure as "ladder self" going forward. To follow up this measure, participants were asked to report the race and gender of the person or people with whom they most often compare their own status. Next, participants were presented with a modified version of the MacArthur ladder in which they were asked to determine where they think the majority of their racial group stands in the United States. This measure was taken from Cooley et al. (2021); we refer to responses on this measure as "ladder group" going forward. Also mirroring Cooley et al. (2021), we calculated a subjective within-group status score by subtracting the perceived status of the self (i.e., the first ladder measure) from the perceived status of one's racial group (i.e., the second ladder measure) such that positive values indicate feeling lower status than one's racial group. We will call this calculated variable "ladder difference" from here forward.

Positive and negative emotions in response to status. After answering questions about relative status, participants were asked the extent to which they felt a series of positive emotions (e.g., hopeful, optimistic, or encouraged) and negative emotions (e.g., sad, downhearted, or unhappy)

Table 1. Descriptive Statistics of Measures by Wave

	Wave 1		Wave 2		Wave 3		Wave 4		Wave 5	
Measure	α	*M* (*SD*)	α	*M* (*SD*)	α	*M* (*SD*)	α	*M* (*SD*)	α	*M* (*SD*)
Ladder difference										
White sample	—	1.18 (2.38)	—	1.11 (2.26)	—	0.91 (2.14)	—	0.73 (2.00)	—	0.97 (1.97)
Black sample	—	−0.45 (2.49)	—	−0.11 (2.32)	—	−0.33 (1.96)	—	−0.42 (1.81)	—	−.38 (1.61)
Positive emotions										
White sample	.93	2.84 (0.89)	.94	2.79 (0.93)	.94	2.71 (0.92)	.95	2.57 (0.99)	.96	2.62 (1.04)
Black sample	.93	3.23 (0.98)	.95	3.10 (1.05)	.94	3.26 (1.02)	.95	3.30 (1.08)	.96	3.35 (1.13)
Negative emotions										
White sample	.94	2.00 (0.79)	.95	1.89 (0.79)	.94	1.82 (0.72)	.95	1.74 (0.73)	.95	1.75 (0.76)
Black sample	.92	2.16 (0.84)	.94	2.04 (0.88)	.93	1.87 (0.73)	.94	1.78 (0.74)	.94	1.75 (0.77)
Depression										
White sample	.95	2.42 (0.98)	.96	2.24 (1.01)	.95	2.18 (0.96)	.96	2.17 (1.03)	.96	2.17 (1.00)
Black sample	.95	2.29 (1.02)	.95	2.16 (1.00)	.94	2.08 (0.91)	.94	1.99 (0.88)	.94	1.95 (0.92)
Sleep										
White sample	.85	3.02 (0.98)	.89	3.15 (1.00)	.89	3.20 (0.96)	.90	3.15 (1.03)	.90	3.17 (1.03)
Black sample	.80	3.28 (0.98)	.84	3.31 (1.00)	.88	3.46 (1.01)	.87	3.56 (1.04)	.86	3.56 (0.99)
Physical health										
White sample	.77	0.00 (0.77)	.78	0.00 (0.78)	.78	0.00 (0.78)	.80	0.00 (0.79)	.79	0.00 (0.79)
Black sample	.65	0.00 (0.70)	.65	0.00 (0.70)	.72	0.00 (0.74)	.74	0.00 (0.75)	.74	0.00 (0.75)

Note: Cronbach's alpha, mean, and standard deviation for each measure broken down by wave. Items in the physical-health measure were standardized prior to averaging, so all means are 0.00.

"when thinking about [their] social status in society"; these items were taken from the modified Differential Emotions Scale (mDES; Fredrickson et al., 2003), were answered on a scale ranging from 1 (*not at all*) to 5 (*extremely*), and were the same emotion items used in Cooley et al. (2021). In addition to the negative emotions from the mDES, we also included two items assessing shame (i.e., humiliated, self-conscious) and two items assessing guilt (i.e., feel you deserve criticism, regretful; Harder & Zalma, 1990), as in prior work (Cooley et al., 2021).

Mental and physical health outcomes. The items used to measure mental and physical health were from Cooley et al. (2021).

Depressive symptoms. To assess mental health, participants reported their experience of depressive symptoms over the past 7 days using the PROMIS depression scale (Schalet et al., 2016). Participants responded to items such as "I felt worthless" on a 5-point scale (1 = *never*, 5 = *always*).

Sleep quality. To assess sleep health over the past 7 days, participants were asked to rate their sleep quality using the PROMIS Sleep Disturbance scale (Yu et al., 2011). This scale began by asking participants to rate three statements: "I had difficulty falling asleep," "I had a problem with my sleep," and "My sleep was refreshing," using a scale ranging from 1 (*not at all*) to 5 (*very much*). This was followed by asking participants to rate their overall sleep quality on a 5-point scale ranging from 1 (*very poor*) to 5 (*very good*).

Physical health. Participants were also asked to consider their general physical health over the past 7 days by answering "In general, would you say your physical health is poor or good?" on a sliding scale (0 = *very poor*, 100 = *very good*) followed by three items to rate, on average, their "ability to carry out physical activities," "fatigue," and "pain" on a 5-point scale ranging from 1 (*none*) to 5 (*very severe*). All health items were standardized prior to averaging because of different measurement scales.

Policy and political attitudes. Finally, because of the expense of recontacting a large representative sample of White and Black Americans over time, as well as the longitudinal time investment of this study, we also included measures that were designed to test other hypotheses. In particular, we measured participants' redistribution policy attitudes, beliefs about meritocracy, beliefs about the state of the country, election attitudes and voting intentions, racial socialization, feeling thermometers, and demographic items. Because these items were used to address separate research questions, we will not discuss them further here; however, all verbatim survey items are available on the Open Science Framework at the link

Table 2. Correlation Table for Wave 1 Broken Down by Sample Race

	1	2	3	4	5	6	7	8	9	10
	Ladder self	Ladder group	Ladder difference	Income	Education	Negative emotions	Positive emotions	Depressive symptoms	Physical health	Sleep
1	—	**.444**	**−.430**	**.137**	−.046	−.073	**.275**	**−.159**	**.093**	**.194**
2	**.266**	—	**.618**	.033	**−.114**	**−.161**	**.229**	**−.128**	.029	**.223**
3	**−.591**	**.621**	—	−.087	−.074	**−.098**	−.010	.011	−.053	.055
4	**.403**	**.131**	**−.218**	—	**.302**	**−.150**	.043	**−.139**	**.178**	.091
5	**.206**	**.162**	−.032	**.369**	—	**−.163**	.005	**−.142**	**.136**	.002
6	**−.246**	.027	**.222**	**−.134**	**−.136**	—	−.082	**.607**	**−.384**	**−.299**
7	**.334**	.032	**−.244**	**.158**	.006	**−.182**	—	**−.231**	**.271**	**.315**
8	**−.325**	.030	**.290**	**−.228**	**−2.09**	**.677**	**−.315**	—	**−.475**	**−.498**
9	**.315**	**−.103**	**−.343**	**.256**	**.265**	**−.416**	**.189**	**−.513**	—	**.534**
10	**.300**	.011	**−.235**	**.188**	**.160**	**−.334**	**.239**	**−.482**	**.577**	—

Note: Bolded correlations indicate statistically significant correlations ($p < .05$). The lower half of the table shows correlations for the White sample; the upper half of the table shows correlations for the Black sample.

provided. Participants concluded by reporting demographic information and completed delayed debriefing at the end of Wave 5.

Results and Discussion

Preliminary analyses

First, we inspected correlations among our key variables, including our two objective status control variables (i.e., income and education), at Wave 1, separately by sample race (see Table 2).

Next, we sought to replicate two findings that provide the basis for our hypothesized model. First, we investigated whether White and Black Americans reported comparing their status to their own racial group more than other racial groups. Specifically, we sought to replicate previous findings (Cooley et al., 2021; see pretest) with a much larger and more representative sample of White and Black Americans. In response to this question—"When you placed your status relative to those who are the best and worst off in the U.S., which racial group were you comparing yourself to?"—participants predominantly reported comparing themselves to people from their own racial group (see Fig. 1), which replicates prior work. Extending upon Cooley et al. (2021), we also assessed the frequency of these social comparisons to better quantify their likely impact on White and Black Americans' daily lives. White Americans reported making these status comparisons very frequently, on average reporting that they made these status comparisons 44.21 times (SD = 30.70) in the past 7 days. Black Americans reported making these status comparisons even more frequently in the past 7 days (M = 64.83, SD = 30.63).

Second, we investigated whether White Americans tended to make upward status comparisons to most people in their racial group, and whether Black Americans tended to make downward status comparisons to most people in their racial group. Replicating prior work (Cooley et al., 2021), White Americans tended to perceive that the "majority of White Americans" had a higher status (i.e., ladder group; M = 6.26, SD = 1.99) than the self (i.e., ladder self; M = 5.07, SD = 1.94), $t(438) = 10.42$, $p < .001$. This finding held when controlling for objective indicators of status (education and income), $F(1, 436) = 108.61$, $p < .001$. In other words, on average, White Americans did not feel they were living up to the high-status stereotype of their own racial group.

In contrast, and again replicating prior work (Cooley et al., 2021), Black Americans tended to perceive that the "majority of Black Americans" had lower status (i.e., ladder group; M = 5.12, SD = 2.50) than the self (i.e., ladder self; M = 5.57, SD = 2.18), $t(450) = -3.81$, $p < .001$. This finding held when controlling for objective indicators of status (education and income), $F(1, 449.34) = 14.48$, $p < .001$. In other words, on average, Black Americans felt as if their group was suffering economically relative to the self.

Primary analyses: cross-lagged panel models

Next, we tested our primary prediction that White Americans' perceptions of being lower status than other White people at a given wave (t) would predict the experience of fewer positive emotions at a subsequent wave ($t + 1$), which may in turn predict worse mental and physical health at a following wave ($t + 2$). We also

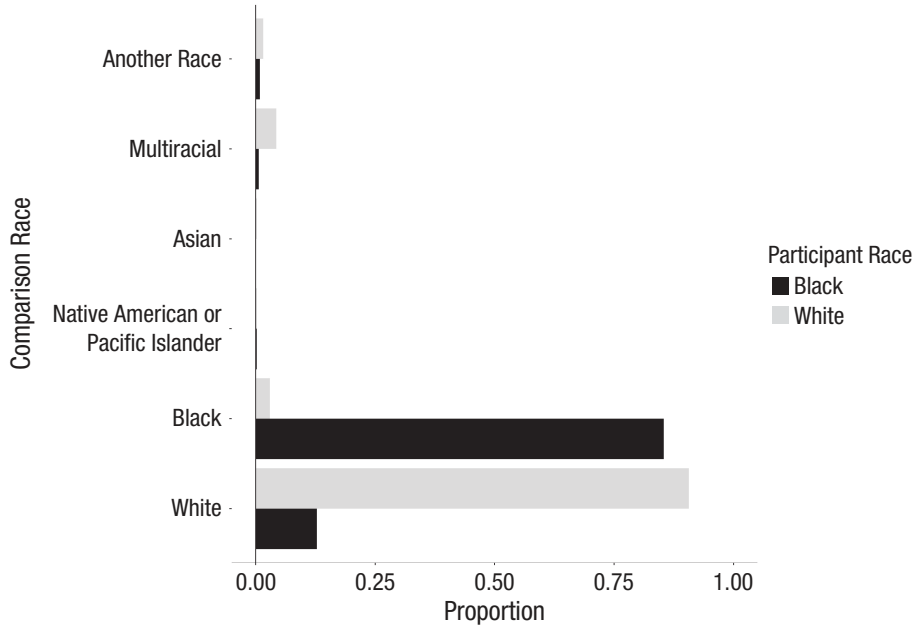

Fig. 1. Race of status comparisons broken down by participant race (Wave 1).

expected that this effect would be either stronger in magnitude for, or only present among, our sample of White (vs. Black) Americans. To investigate this hypothesis, we fit a series of cross-lagged panel models (CLPMs) to our longitudinal data collected across five waves. While CLPMs cannot fully speak to causality, they can speak to temporal precedence of a presumed cause and effect. They do this by regressing a presumed effect at a given wave on a presumed cause at a previous wave (e.g., X_t predicting Y_{t+1}, where subscripts reflect waves of data collection). These are termed *cross-lagged effects*, and they can demonstrate that a presumed cause occurs before a presumed effect. Thus, these models speak to temporal precedence and pseudocausality in a way that cross-sectional models cannot. Researchers can also test for potential bidirectionality by including paths running in the opposite temporal direction—for example, from Y_t to X_{t+1}. Thus, CLPMs are particularly useful for testing longitudinal relationships between multiple variables because these longitudinal models allow time for one variable to produce a change in another and can speak more directly to the direction of causation than cross-sectional models can (Selig & Preacher, 2009). CLPMs also specify autoregressive components, or the stability of a variable over waves. This can be thought of as a variable at wave *t*'s correlation with itself at wave $t + 1$.

Model specifications. We predicted that higher ladder difference scores at wave *t* may precede reduced positive emotions at wave $t + 1$, which would, in turn, precede worsened health outcomes at wave $t + 2$. Thus, we modeled paths from ladder difference scores at wave *t* to positive emotions at wave $t + 1$ and paths from positive emotions at wave $t + 1$ to health outcomes at wave $t + 2$.[1] Our cross-lagged approach also concurrently tests the reverse temporal pathway by estimating pathways from health outcomes at wave *t* to positive emotions at wave $t + 1$ and from positive emotions at wave $t + 1$ to ladder difference scores at wave $t + 2$. We predicted that greater ladder difference scores would precede reduced positive emotions, rather than reduced positive emotions preceding greater ladder difference scores. Such a pattern would provide evidence that ladder difference scores may cause changes in the daily experience of positive emotional experiences. All variables were standardized before analysis to aid in interpretability. Likewise, all models controlled for age and gender at all waves because of the known relationship of these variables with both positive emotions and health; we also controlled for objective indicators of status (i.e., income and education) at all time points so that we could isolate the effects of subjective perceptions of within-group status (i.e., ladder difference scores). The effects of all covariates were constrained over time. Finally, to compare our models across Black and White participants, our main models specified race as a grouping factor.

Noting that 31% of cells are missing (when considering our full sample of both White and Black Americans), we estimated our models using full information maximum likelihood (FIML) estimation. This approach uses all available data, as opposed to listwise deletion

or multiple imputation, by calculating a likelihood function for every individual using all available variables (Enders, 2001). FIML has been shown to produce unbiased parameter estimates in structural equation modeling models under missing-at-random conditions (Enders & Bandalos, 2001) and less biased estimates compared to listwise deletions when data are missing not at random as long as variables that are correlated with missingness are included (Collins et al., 2001; Graham, 2009; van Ginkel et al., 2020), with some exceptions (Thoemmes & Rose, 2014). We provide code for evaluating whether our data are missing at random in our Open Science Framework materials. Of note, we were able to predict missingness with 72% accuracy using a support-vector machine classifier using only the first wave responses and race, education, age, gender, and income, indicating some evidence the data may be approximately missing at random.

We included first-order and second-order autoregressive paths in our models (e.g., sleep quality at Wave 5 was predicted by both sleep quality at Wave 4 and sleep quality at Wave 3), as our models were a significantly better fit to the data when these second-order autoregressive paths were specified—depression models: $\Delta\chi^2(9) = 502.12$, $p < .001$; sleep models: $\Delta\chi^2(9) = 488.4$, $p < .001$; physical health models: $\Delta\chi^2(9) = 575.31$, $p < .001$. We also applied equality constraints to all similar cross-lagged paths of interest (e.g., the path from ladder difference scores at wave t to positive emotions at wave $t + 1$ was constrained to be the same as the path from ladder difference scores at wave $t + 1$ to positive emotions at wave $t + 2$). Applying these constraints did not significantly affect the fit of the models compared to models without equality constraints—depression models: $\Delta\chi^2(12) = 11.81$, $p = .461$; sleep models: $\Delta\chi^2(12) = 9.00$, $p = .703$; physical-health models: $\Delta\chi^2(12) = 11.96$, $p = .449$.

Multigroup analysis. Before examining the hypothesized paths in our models, we conducted a number of multigroup analyses to determine whether the cross-lagged and covariate paths do indeed differ for Black and White participants. We conducted three sets of analyses: one for the outcome of depression, one for the outcome of sleep, and one for the outcome of self-reported physical health.

We first fit the model described in the model specification section that additionally specified participant race as a grouping category. In this first model, we constrained all cross-lagged and covariate paths to be the same across White and Black participants. Importantly, paths were also constrained to be the same across waves. For example, the relationship between ladder difference scores and positive emotions was constrained to be the same for Black and White participants, and this relationship was constrained to be the same across all five waves. This path had a separate constrained value from the relationship between positive emotions and depression, and so on.

In a second model, we released all constraints specifying these paths to be the same across racial groups. Importantly, paths were still constrained to be the same across waves. For example, the path from ladder difference scores to positive emotions had different values for White and Black samples, but these paths were still constrained to be the same across all five waves within each racial group.

We then compared these two models to each other using a likelihood-ratio test. A significant result from this test would suggest that constraining the cross-lagged and covariate paths to be the same across racial groups would significantly decrease model fit. Results of these tests for each of our different outcome measures were all significant—depression models: $\Delta\chi^2(16) = 29.20$, $p = .023$; sleep models: $\Delta\chi^2(16) = 28.43$, $p = .028$; physical-health models: $\Delta\chi^2(16) = 26.57$, $p = .046$—suggesting that our modeled paths do vary significantly by racial group. Thus, in all subsequent analyses, we fitted separate models for White and Black participants.

White sample.

Depression. Figure 2 depicts the results of a cross-lagged panel model focusing on the health outcome of depressive symptoms for White participants. This model demonstrated good fit, $\chi^2(113) = 250.91$, $p < .001$, CFI = .95, TLI = .93, RMSEA = .05, SRMR = .07. Consistent with our theoretical model, higher ladder difference scores at wave t predicted fewer positive emotions at wave $t + 1$, $\beta = -0.06$, 95% confidence interval (CI) = [−0.11, −0.02], $p = .006$. Fewer positive emotions at wave $t + 1$, in turn, predicted more depressive symptoms at wave $t + 2$, $\beta = -0.04$, 95% CI = [−0.08, −0.006], $p = .023$. These results suggest that when White Americans feel lower status than other White people, this precedes the experience of fewer positive emotions at a subsequent wave; fewer positive emotions, in turn, precede greater depressive symptoms at a later wave (see gold paths in Fig. 2).

To better assess our hypothesis that greater ladder difference scores cause the subsequent experience of fewer positive emotions, rather than the reverse, our model also tested the reverse temporal pattern (see blue paths in Fig. 2). Depression at wave t did precede fewer positive emotions at wave $t + 1$, $\beta = -0.11$, 95% CI = [−0.16, −0.07], $p < .001$, suggesting that depression and experiencing fewer positive emotions may have bidirectional effects on one another. Critically, however, positive emotions at wave $t + 1$ did not predict ladder difference scores at wave $t + 2$, $\beta = -0.03$, 95% CI = [−0.09, 0.01], $p = .130$. This suggests that temporal precedence flows from within-group status comparisons to emotional

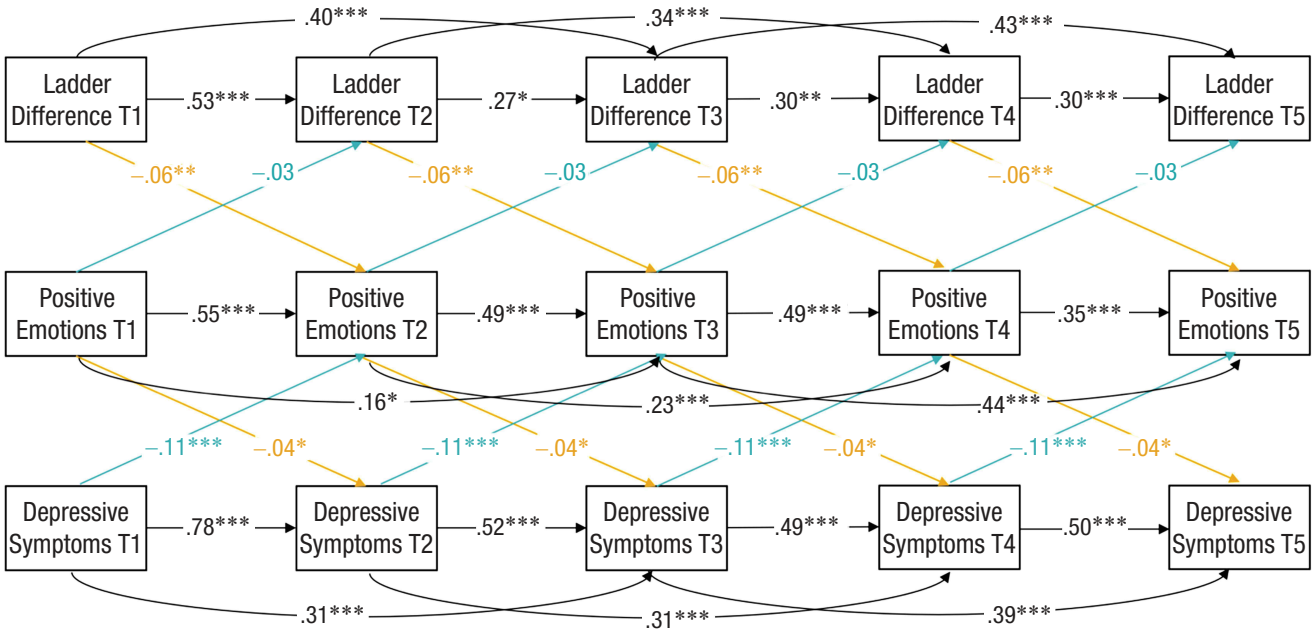

Fig. 2. Cross-lagged panel model results predicting depressive symptoms, White sample (Waves 1–5). Note: Gold paths indicate predicted directional pathways, and blue paths indicate reverse directional pathways. Asterisks indicate levels of statistical significance: *$p < .05$. **$p < .01$. ***$p < .001$.

experiences rather than the reverse. These results support our prediction that White people with higher ladder difference scores may feel fewer positive emotions and, in turn, more depressive symptoms at future time points.

Sleep. Figure 3 depicts a comparable cross-lagged path model, but this time focusing on the health outcome of sleep quality. Good sleep quality is a critical health outcome given that it promotes myriad aspects of individuals' physical and mental health and cognition, including immune and cardiovascular system functioning, well-being and life satisfaction, and memory and work performance (Luyster et al., 2012). Given the close relationship between psychopathology and sleep (Fang et al., 2019), sleep researchers sometimes include measures of depression as a covariate in their analysis of sleep quality. We chose not to control for depressive symptoms in our sleep models given that depression can partly be defined as a lack of positive emotions. Thus, we reasoned that controlling for this variable would partial out meaningful variability in our emotional mediator (i.e., experiences of positive emotions over the past week) of interest. Our model demonstrated good fit, $\chi^2(113) = 223.81, p < .001$, comparative fit index (CFI) = 0.95, Tucker-Lewis index (TLI) = 0.93, root-mean-square error of approximation (RMSEA) = 0.05, standardized root-mean-square residual (SRMR) = 0.06. Centrally, higher ladder difference scores at wave t predicted fewer positive emotions at wave $t + 1$, $\beta = -0.08$, 95% CI = [−0.12, −0.04], $p < .001$, and fewer positive emotions at wave $t + 1$, in turn, predicted worse sleep quality at wave $t + 2$, $\beta = 0.06$, 95% CI = [0.02, 0.10], $p = .003$. These results suggest that when White Americans feel lower status than other White people, this precedes the experience of fewer positive emotions; fewer positive emotions, in turn, precede worse sleep quality at a later time point (see gold paths in Fig. 3).

Again, to better assess our hypothesis that greater ladder difference scores lead to the subsequent experience of fewer positive emotions, rather than the reverse, our cross-lagged model also tested the reverse temporal pattern (see blue paths in Fig. 3). Similar to our previous model assessing depression, worse sleep quality at wave t did predict fewer positive emotions at wave $t + 1$, $\beta = 0.07$, 95% CI = [0.02, 0.12], $p = .004$. This suggests that the experience of positive emotions and sleep quality may have bidirectional effects on one another. Critically, however, as predicted, the reverse pathway from positive emotions at wave $t + 1$ to ladder difference scores at wave $t + 2$ was not significant, $\beta = -0.04$, 95% CI = [−0.09, 0.02], $p = .147$. This provides evidence consistent with our hypothesized model: Higher ladder difference scores precede fewer positive emotions, rather than the reverse. More generally, these effects are consistent with our hypothesized model wherein higher ladder difference scores precede the experience of fewer positive emotions, and fewer positive emotions precede reduced sleep quality.

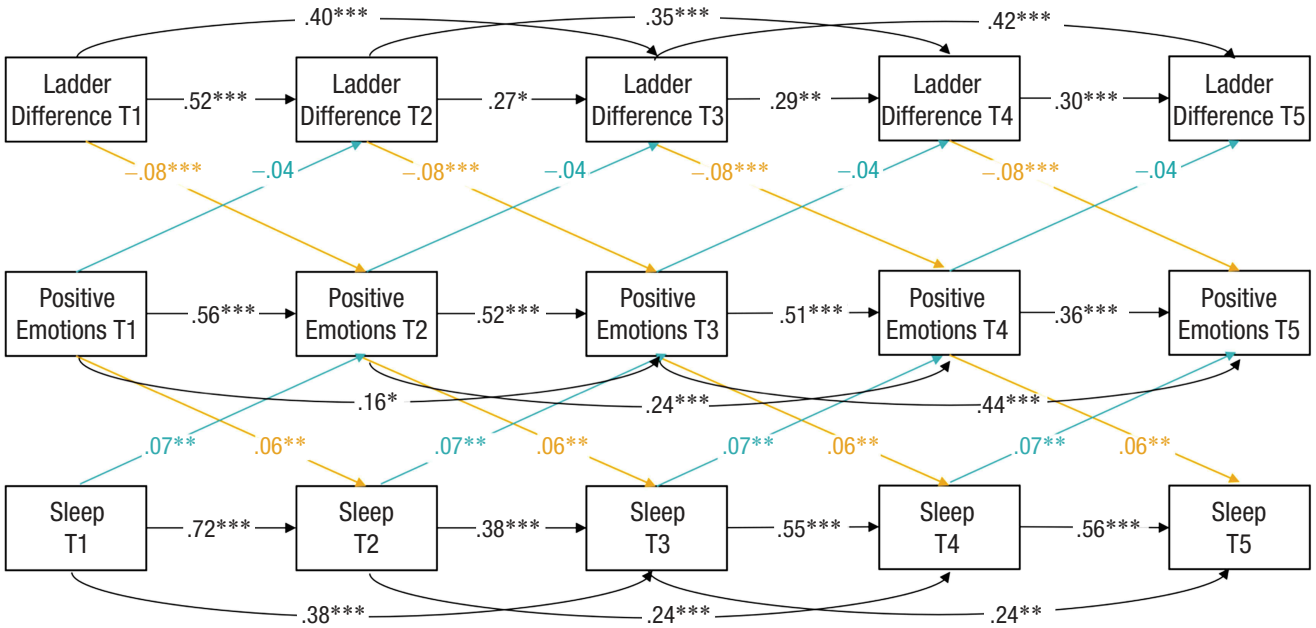

Fig. 3. Cross-lagged panel model results predicting sleep quality, White sample (Waves 1–5).
Note: Gold paths indicate predicted directional pathways, and blue paths indicate reverse directional pathways.
Asterisks indicate levels of statistical significance: *$p < .05$. **$p < .01$. ***$p < .001$.

Physical health. Finally, Figure 4 depicts a comparable cross-lagged path model, but this time focusing on the outcome of self-reported physical health. This model demonstrated good fit, $\chi^2(113) = 248.57, p < .001$, CFI = .95, TLI = .93, RMSEA = .05, SRMR = .07. Once again, higher ladder difference scores at wave t predicted fewer positive emotions at wave $t + 1$, $\beta = -0.07$, 95% CI = [−0.12, −0.03], $p = .001$. However, contrary to our hypotheses, fewer positive emotions at wave $t + 1$ did not predict worse self-reported physical health at wave $t + 2$, $\beta = 0.02$, 95% CI = [−0.01, 0.05], $p = .147$ (see gold paths in Fig. 4), though we note that the nonsignificant effect was in the predicted direction.

As with our other reported models, this cross-lagged panel model also tested the reverse temporal pattern (see blue paths in Fig. 4). This analysis revealed a significant relationship between worse self-reported physical health at wave t and fewer positive emotions at wave $t + 1$, $\beta = 0.06$, 95% CI = [0.002, 0.12], $p = .040$. As with the other health outcomes, this reverse effect indicates that physical health and the experience of positive emotions may have bidirectional effects on one another. Also consistent with the other health outcomes, testing the reverse temporal pathway revealed no relationship between positive emotions at wave $t + 1$ and ladder difference scores at wave $t + 2$, $\beta = -0.04$, 95% CI = [−0.09, 0.02], $p = .168$. Together these results did not provide evidence for the hypothesized pathway, nor the reverse pathway, when predicting self-reported physical health. For this reason, we revisit these null effects in the Discussion section below.

White-sample summary. Together, the results of these CLPMs provide pseudocausal evidence consistent with our hypotheses. Higher ladder difference scores among White Americans predicted the experience of fewer positive emotions at a subsequent time point, and the reverse temporal pathway did not hold (i.e., prior positive emotions did not predict within-group status comparisons). Fewer positive emotions, in turn, predicted worse depressive symptoms and sleep quality in the future.

Black sample. Next, we conducted parallel longitudinal analyses on our Black American sample. Among Black Americans, we anticipated that many Black Americans would feel higher status than most Black Americans, consistent with the Wave 1 findings reported above and likely because of widespread stereotypes that link Black Americans with low status (e.g., Brown-Iannuzzi et al., 2019; Gilens, 1996). Likewise, because Black Americans experience racism, we anticipated that perceptions of relative within-group status might conjure complex emotions regarding the economic consequences of racism for both the group and the self; as a result, we did not expect feelings of low within-group status to affect positive emotions and health among Black Americans to the same degree as among White Americans.

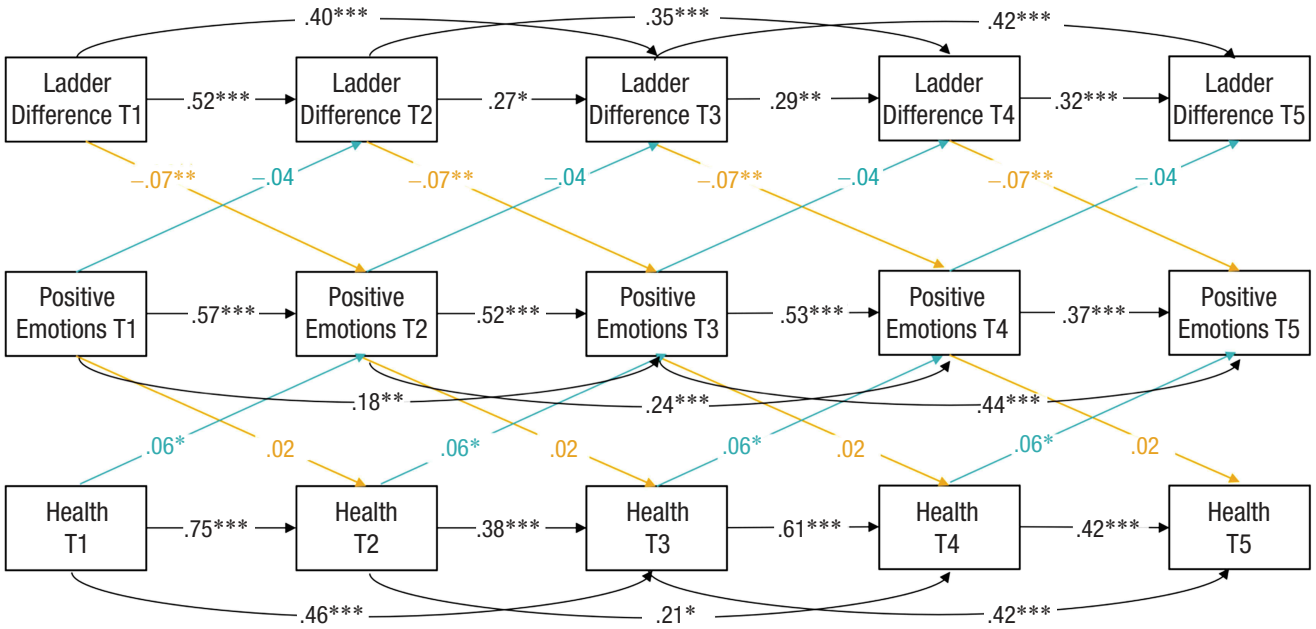

Fig. 4. Cross-lagged panel model results predicting physical health, White sample (Waves 1–5).
Note: Gold paths indicate predicted directional pathways, and blue paths indicate reverse directional pathways.
Asterisks indicate levels of statistical significance: *$p < .05$. **$p < .01$. ***$p < .001$.

Depression. We ran the same models for Black participants as for White participants. The model that included depression showed adequate fit, $\chi^2(113) = 216.85, p < .001$, CFI = .95, TLI = .93, RMSEA = .05, SRMR = .05. However, in contrast to our White American sample, ladder difference scores at wave t did not significantly predict positive emotions at wave $t + 1$, $\beta = -0.03$, 95% CI = [–0.07, 0.004], $p = .083$. Notably, this null effect is consistent with our theory that the hypothesized link between ladder difference scores and emotions and health may be a by-product of the privileged sociopolitical position of White people living in the United States. Positive emotions at wave $t + 1$ were significantly related to depression at wave $t + 2$, $\beta = -0.10$, 95% CI = [–0.14, –0.05], $p < .001$, suggesting that the experience of fewer positive emotions may lead to greater depression among Black Americans (see gold paths in Fig. 5). Testing the reverse temporal pattern (see blue paths in Fig. 5), depression at wave t was related to positive emotions at wave $t + 1$, $\beta = -0.11$, 95% CI = [–0.16, –0.06], $p < .001$, suggesting that positive emotions and depression may have bidirectional effects on one another among Black Americans, as they do among White Americans. But positive emotions at wave $t + 1$ were not in turn associated with ladder difference scores at wave $t + 2$, $\beta = -0.03$, 95% CI = [–0.08, 0.03], $p = .341$. Together these findings suggest that ladder difference scores do not have the same downstream consequences on emotions and depressive symptoms among Black Americans as among the White Americans in our sample.

Sleep. Among the Black American sample, the model that included sleep showed good fit, $\chi^2(113) = 190.83, p < .001$, CFI = .96, TLI = .94, RMSEA = .04, SRMR = .05. However, again in contrast to our White American sample, ladder difference scores at wave t did not significantly predict positive emotions at wave $t + 1$, $\beta = -0.03$, 95% CI = [–0.07, 0.01], $p = .123$. This null effect indicates that the hypothesized link between ladder difference scores and emotions and health may be unique to White Americans, as predicted. Positive emotions at wave $t + 1$ were significantly related to sleep at wave $t + 2$, $\beta = 0.08$, 95% CI = [0.04, 0.13], $p = .001$, suggesting that the experience of fewer positive emotions may lead to worse sleep quality among Black Americans (see gold paths in Fig. 6). Testing the reverse temporal pattern (see blue paths in Fig. 6), depression at wave t was not significantly related to positive emotions at wave $t + 1$, $\beta = 0.03$, 95% CI = [–0.02, 0.07], $p = .289$, and positive emotions at wave $t + 1$ also were not associated with ladder difference scores at wave $t + 2$, $\beta = -0.03$, 95% CI = [–0.08, 0.03], $p = .370$. Again, these findings suggest that ladder difference scores do not have the same downstream consequences on emotions and sleep quality among Black Americans that we observed among our White American sample.

Health. Finally, among the Black American sample, the model that included self-reported health showed adequate fit, $\chi^2(113) = 249.69, p < .001$, CFI = .93, TLI = .90, RMSEA = .05, SRMR = .05. However, ladder difference

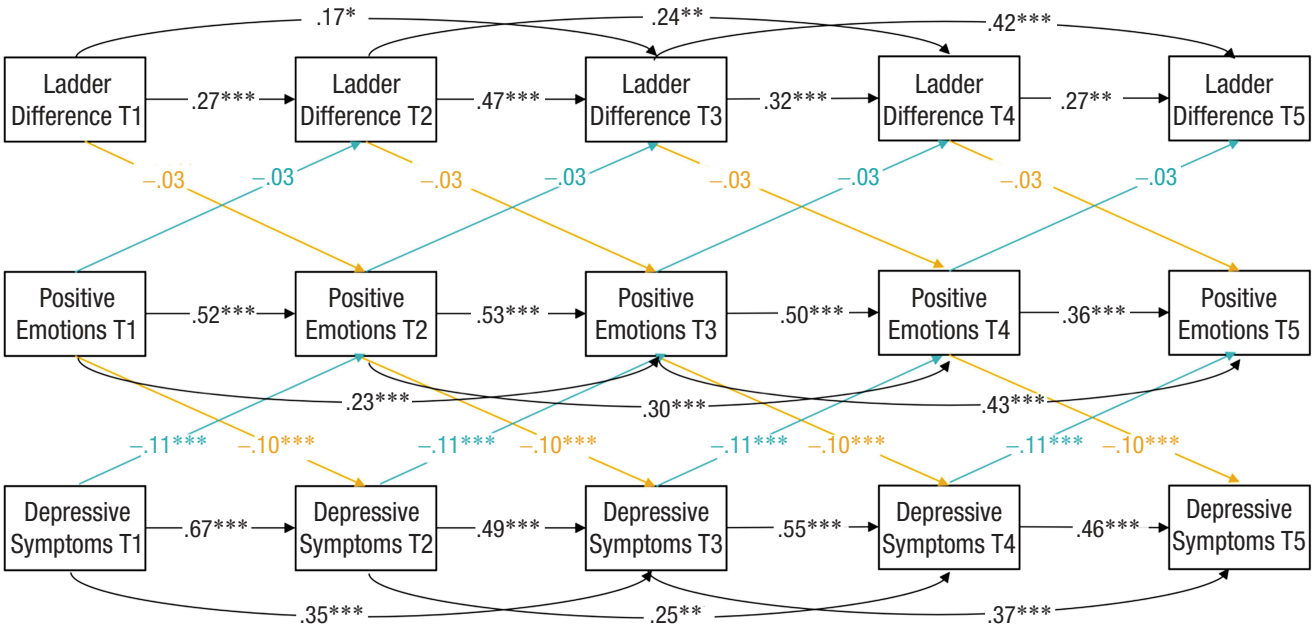

Fig. 5. Cross-lagged panel model results predicting depression, Black sample (Waves 1–5).
Note: Gold paths indicate predicted directional pathways, and blue paths indicate reverse directional pathways.
Asterisks indicate levels of statistical significance: *$p < .05$. **$p < .01$. ***$p < .001$.

scores did not significantly predict positive emotions at wave t +1, β = −0.03, 95% CI = [−0.07, 0.01], p = .117, and positive emotions at wave t + 1 were not related to physical health at wave t + 2, β = 0.02, 95% CI = [−0.01, 0.05], p = .202. Testing the reverse temporal pattern, physical health at wave t was not related to positive emotions at wave t + 1, β = 0.07, 95% CI = [−0.002, 0.13], p = .063, and positive emotions at wave t + 1 were also not associated with ladder difference scores at wave t + 2, β = −0.02, 95% CI = [−0.08, 0.03], p = .429. In this case, these null

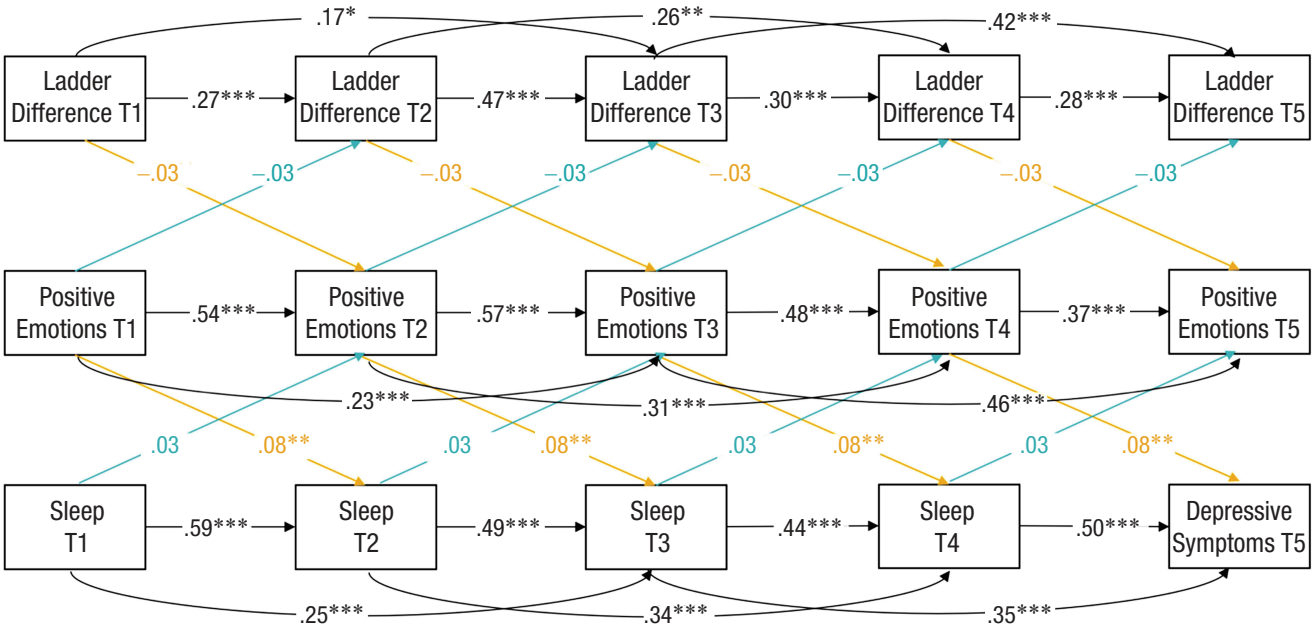

Fig. 6. Cross-lagged panel model results predicting sleep, Black sample (Waves 1–5).
Note: Gold paths indicate predicted directional pathways, and blue paths indicate reverse directional pathways.
Asterisks indicate levels of statistical significance: *$p < .05$. **$p < .01$. ***$p < .001$.

effects are similar to what was observed among the White American sample when predicting self-reported physical health. We revisit this outcome in the Discussion section.

Black-sample summary. Together these results suggest that the daily experience of fewer positive emotions is associated with worse sleep quality and more depression among Black participants, but ladder difference scores do not seem to be involved in this process as they are for White participants.

Discussion

Even though White Americans, on average, have higher status than racial minorities, many White Americans report feeling as if they are falling behind (Cooley et al., 2021). Extending prior work (Cooley et al., 2021) through the use of a longitudinal design and representative quota sampling, the present work suggests that these feelings of falling behind stem from perceptions that most White people are doing better than the self, and that such perceptions (controlling for objective status) predict worse health over time via changes in positive emotions. Notably, these effects emerged among White Americans but not Black Americans, suggesting that these processes may be tied to the distinct sociopolitical position of White people in the United States.

Our focus on the outcomes of depressive symptoms and sleep quality are noteworthy for several reasons. First, depression and anxiety among people living in the United States were a pressing public-health concern even before the pandemic, and these mental-health challenges, unsurprisingly, were only exacerbated during the first year of the pandemic (Kessler et al., 2022). On a related note, sleep quality is associated with myriad aspects of physical and psychological health (Luyster et al., 2012), as well as substance use and suicidality (Porras-Segovia et al., 2019). To our knowledge, however, sleep has not been not examined as a consequence of status-based stress. In demonstrating that in-group–self discrepancies in perceived status are longitudinally associated with poor sleep, the present study highlights a novel variable that may precipitate poor sleep as well as poorer health and functioning over the long term.

Recent work suggests that inequality itself creates a context in which people make frequent status comparisons (Wang et al., 2022). It follows that, in the United States, the context of high and growing economic inequality may be amplifying the processes we have observed here. Likewise, although we propose that the stigma of not conforming to the perceived high status of one's racial group may contribute to reduced positive emotions and worse health among White Americans, it is also possible that feeling low within-group status may be associated with feelings that one is entitled to the perceived prestige of the group, fears of downward mobility, or fears about shifts in the race-based status hierarchy (e.g., Craig & Richeson, 2014). Thus, subjective feelings among White Americans that they are being left behind by their own group may also amplify perceived status threat from other racial groups.

Although the present findings are from 2020, there are several reasons to believe that these findings are not limited to that time period. Most notably, if such effects were driven by the historical period, then we might have expected to find similar effects among both White and Black samples, given that both were living in the same time period. Instead, consistent with our theory, perceptions of low within-group status only had the predicted effects on the daily experience of positive emotions, depression, and sleep quality among White Americans. Likewise, cross-sectional data collected pre-pandemic (Cooley et al., 2021) are consistent with the effects we captured here. Finally, because our theory contends that the history of racialized wealth in the United States has shaped the White/high-status associations that underlie White Americans' feelings of falling behind, we would not expect these findings to be restricted to a particular time period.

We should also note several limitations to the present work. First, the CLPM model did not show the expected effects when predicting physical health, a finding that is inconsistent with prior cross-sectional work (Cooley et al., 2021). It is possible that our predictions did not hold when predicting physical health because participants' physical health was too stable over the relatively short data-collection time span, leaving little variability to detect any effects. It is also possible that perceptions of within-group status simply do not affect physical health. Future research should include more nuanced measures of health, such as physiological measures, and should follow participants for a longer period of time. Likewise, we used representative quota sampling to increase the likelihood that our results would generalize to White and Black Americans; however, this sampling did not allow us to test how within-group status comparisons affect other minority groups or people within cultural contexts outside of the United States.

Finally, there are limitations with respect to difference scores. Although aligned with the construct we hoped to capture (i.e., perceived status disparities), difference scores may have statistical limitations (e.g., Edwards, 2001). Fortunately, these concerns are mitigated by the fact that the direction of the effects observed here is consistent with that of previous work (e.g., Cooley et al., 2021). That said, future research could replicate these effects by directly asking about perceived in-group–self status discrepancies.

Conclusion

Despite the fact that White Americans, on average, are economically better off relative to other racial and ethnic groups in the United States (Collins et al., 2019), White Americans report feeling worse off than people from other racial and ethnic groups (Cohen et al., 2017; Graham, 2017). Here we suggest that some White Americans may report low well-being despite high group-level status because many White Americans may feel as if they are not living up to the perceived high status of their racial group. In turn, these feelings of falling behind may have meaningful health consequences.

Transparency

Action Editor: Kate Ratliff
Editor: Patricia J. Bauer
Author Contributions

The first two authors contributed equally.

Nava Caluori: Data curation; Formal analysis; Investigation; Visualization; Writing – original draft; Writing – review & editing.

Erin Cooley: Conceptualization; Data curation; Funding acquisition; Investigation; Methodology; Project administration; Resources; Writing – original draft; Writing – review & editing.

Jazmin L. Brown-Iannuzzi: Conceptualization; Data curation; Funding acquisition; Investigation; Methodology; Project administration; Writing – original draft; Writing – review & editing.

Emma Klein: Conceptualization; Data curation; Investigation; Methodology; Writing – original draft; Writing – review & editing.

Ryan F. Lei: Conceptualization; Funding acquisition; Investigation; Methodology; Writing – review & editing.

William Cipolli: Conceptualization; Data curation; Formal analysis; Funding acquisition; Visualization; Writing – review & editing.

Lauren E. Philbrook: Conceptualization; Funding acquisition; Writing – review & editing.

Declaration of Conflicting Interests

The author(s) declared that there were no conflicts of interest with respect to the authorship or the publication of this article.

Open Practices

Verbatim materials, data, and analysis code are available via the Open Science Framework at https://osf.io/shgjd/. The hypotheses were not preregistered. This article has received the badges for Open Data and Open Materials. More information about the Open Practices badges can be found at http://www.psychologicalscience.org/publications/badges.

ORCID iDs

Nava Caluori https://orcid.org/0000-0003-1632-4512
Ryan F. Lei https://orcid.org/0000-0002-7954-2368

Supplemental Material

Additional supporting information can be found at http://journals.sagepub.com/doi/suppl/10.1177/09567976231221546

Note

1. For models with negative emotions, see the Supplemental Material available online.

References

Adler, N. E. (2009). Health disparities through a psychological lens. *American Psychologist*, *64*(8), 663–673.

Adler, N. E., Epel, E. S., Castellazzo, G., & Ickovics, J. R. (2000). Relationship of subjective and objective social status with psychological and physiological functioning: Preliminary data in healthy white women. *Health Psychology*, *19*(6), 586–592. https://doi.org/10.1037//0278-6133.19.6.586

Adler, N. E., & Ostrove, J. M. (1999). Socioeconomic status and health: What we know and what we don't. *Annals of the New York Academy of Sciences*, *896*, 3–15.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed.). American Psychiatric Publishing, Inc.

Bobo, L., & Hutchings, V. L. (1996). Perceptions of racial group competition: Extending Blumer's theory of group position to a multiracial social context. *American Sociological Review*, *61*(6), 951–972.

Brown-Iannuzzi, J. L., Cooley, E., McKee, S. E., & Hyden, C. (2019). Wealthy Whites and poor Blacks: Implicit associations between racial groups and wealth predict explicit opposition toward helping the poor. *Journal of Experimental Social Psychology*, *82*, 26–34.

Brown-Iannuzzi, J. L., Payne, B. K., Rini, C., DuHamel, K. N., & Redd, W. H. (2014). Objective and subjective socioeconomic status and health symptoms in patients following hematopoietic stem cell transplantation. *Psycho-Oncology*, *23*(7), 740–748.

Chetty, R., Stepner, M., Abraham, S., Lin, S., Scuderi, B., Turner, N., Bergeron, A., & Cutler, D. (2016). The association of income and life expectancy in the United States, 2001–2014. *Journal of the American Medical Association*, *315*(16), 1750–1766.

Cohen D., Shin F., Liu X., Ondish P., & Kraus M. W. (2017). Defining social class across time and between groups. *Personality and Social Psychology Bulletin*, *43*(11), 1530–1545.

Collins, D., Asante-Muhammed, D., Hoxie, J., & Terry, S. (2019). *Dreams deferred: How enriching the 1% widens the racial wealth divide*. https://inequality.org/wp-content/uploads/2019/01/IPS_RWD-Report_FINAL-1.15.19.pdf

Collins, L. M, Schafer, J. L., & Kam, C.-M. (2001). A comparison of inclusive and restrictive strategies in modern missing data procedures. *Structural Equation Modeling*, *6*(4), 330–351.

Cooley, E., Brown-Iannuzzi, J. L., Lei, R. F., Philbrook, L. E., Cipolli, W., III, & McKee, S. E. (2021). Investigating the health consequences for White Americans who believe White Americans are wealthy. *Social Psychological and Personality Science*, *12*(3), 371–382.

Craig, M. A., & Richeson, J. A. (2014). On the precipice of a "majority-minority" America: Perceived status threat from the racial demographic shift affects White Americans' political ideology. *Psychological Science*, *25*(6), 1189–1197.

Cundiff, J. M., & Matthews, K. A. (2017). Is subjective social status a unique correlate of physical health? A meta-analysis. *Health Psychology*, *36*(12), 1109–1125. https://doi.org/10.1037/hea0000534

Derenoncourt, E., Kim, C. H., Kuhn, M., & Schularick, M. (2022). Wealth of two nations: The US racial wealth gap, 1860–2020 (Working Paper No. w30101). National Bureau of Economic Research. https://www.nber.org/papers/w30101

Edwards, J. R. (2001). Ten difference score myths. *Organizational Research Methods*, *4*(3), 265–287.

Enders, C. K. (2001). A primer on maximum likelihood algorithms available for use with missing data. *Structural Equation Modeling*, *8*(1), 128–141.

Enders, C., & Bandalos, D. (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. *Structural Equation Modeling*, *8*(3), 430–457.

Fang, H., Tu, S., Sheng, J., & Shao, A. (2019). Depression in sleep disturbance: A review on a bidirectional relationship, mechanisms and treatment. *Journal of Cellular and Molecular Medicine*, *23*(4), 2324–2332.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, *7*(2), 117–140.

Fredrickson, B. L., Tugade, M. M., Waugh, C. E., & Larkin, G. R. (2003). What good are positive emotions in crisis? A prospective study of resilience and emotions following the terrorist attacks on the United States on September 11th, 2001. *Journal of Personality and Social Psychology*, *84*, 365–376. https://doi.org/10.1037/0022-3514.84.2.365

Gilens, M. (1996). "Race coding" and white opposition to welfare. *American Political Science Review*, *90*(3), 593–604.

Graham, C. (2017). *Happiness for all? Unequal hopes and lives in pursuit of the American dream*. Princeton University Press.

Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual Review of Psychology*, *60*, 549–576.

Gross, J. J., & Jazaieri, H. (2014). Emotion, emotion regulation, and psychopathology: An affective science perspective. *Clinical Psychological Science*, *2*(4), 387–401.

Harder, D. H., & Zalma, A. (1990). Two promising shame and guilt scales: A construct validity comparison. *Journal of Personality Assessment*, *55*, 729–745.

Hatzenbuehler, M. L. (2009). How does sexual minority stigma "get under the skin?" A psychological mediation framework. *Psychological Bulletin*, *135*, 707–730.

Jardina, A. (2019). *White identity politics*. Cambridge University Press.

Kessler, R. C., Ruhm, C. J., Puac-Polanco, V., Hwang, I. H., Lee, S., Petukhova, M. V., Sampson, N. A., Ziobrowski, H. N., Zaslavsky, A. M., & Zubizarreta, J. R. (2022). Estimated prevalence of and factors associated with clinically significant anxiety and depression among US adults during the first year of the COVID-19 pandemic. *JAMA Network Open*, *5*(6), 1–14.

Kline, R. B. (2011). *Methodology in the social sciences. Principles and practice of structural equation modeling* (3rd ed.). Guilford Press.

Knowles, E. D., Lowery, B. S., Chow, R. M., & Unzueta, M. M. (2014). Deny, distance, or dismantle? How White Americans manage a privileged identity. *Perspectives on Psychological Science*, *9*(6), 594–609.

Kunstman, J. W., Plant, E. A., & Deska, J. C. (2016). White ≠ poor: Whites distance, derogate, and deny low-status ingroup members. *Personality and Social Psychology Bulletin*, *42*(2), 230–243.

Luyster, F. S., Strollo, P. J., Zee, P. C., & Walsh, J. K. (2012). Sleep: A health imperative. *Sleep*, *35*(6), 727–734.

Pew Research Center. (2016). On views of race and inequality, Blacks and Whites are worlds apart: Demographic trends and economic well-being. Pew Research. https://www.pewresearch.org/social-trends/2016/06/27/1-demographic-trends-and-economic-well-being/

Porras-Segovia, A., Perez-Rodriguez, M. M., López-Esteban, P., Courtet, P., López-Castromán, J., Cervilla, J. A., & Baca-García, E. (2019). Contribution of sleep deprivation to suicidal behaviour: A systematic review. *Sleep Medicine Reviews*, *44*, 37–47.

Rasmussen, B. B., Klinenberg, E., Nexica, I. J., & Wray, M. (Eds.). (2001). *The making and unmaking of whiteness*. Duke University Press.

Roediger, D. R. (2006). *Working toward whiteness: How America's immigrants became white: The strange journey from Ellis Island to the suburbs*. Hachette UK.

Rothstein, R. (2017). *The Color of law: A forgotten history of how our government segregated America*. Liveright.

Salter, P. S., Adams, G., & Perez, M. J. (2018). Racism in the structure of everyday worlds: A cultural-psychological perspective. *Current Directions in Psychological Science*, *27*(3), 150–155.

Schalet, B. D., Pilkonis, P. A., Yu, L., Dodds, N., Johnston, K. L., Yount, S., Riley, W., & Cella, D. (2016). Clinical validity of PROMIS depression, anxiety, and anger across diverse clinical samples. *Journal of Clinical Epidemiology*, *73*, 119–127.

Selig, J. P., & Preacher, K. J. (2009). Mediation models for longitudinal data in developmental research. *Research in Human Development*, *6*(2–3), 144–164.

Singh-Manoux, A., Marmot, M. G., & Adler, N. E. (2005). Does subjective social status predict health and change in health status better than objective status? *Psychosomatic Medicine*, *67*(6), 855–861.

Thoemmes, F., & Rose, N. (2014). A cautious note on auxiliary variables that can increase bias in missing data problems. *Multivariate Behavioral Research*, *49*(5), 443–459.

Van Cappellen, P., Rice, E. L., Catalino, L. I., & Fredrickson, B. L. (2017). Positive affective processes underlying positive health behavior change. *Psychology & Health*, *33*(1), 77–97.

van Ginkel, J. R., Linting, M., Rippe, R. C., & van der Voort, A. (2020). Rebutting existing misconceptions about multiple

imputation as a method for handling missing data. *Journal of Personality Assessment*, *102*(3), 297–308.

Vanderlind, W. M., Millgram, Y., Baskin-Sommers, A. R., Clark, M. S., & Joormann, J. (2020). Understanding positive emotion deficits in depression: From emotion preferences to emotion regulation. *Clinical Psychology Review*, *76*, Article 101826.

Wang, Z., Jetten, J., & Steffens, N. K. (2022). Restless in an unequal world: Economic inequality fuels the desire for wealth and status. *Personality and Social Psychology Bulletin*, *49*(6), 871–890.

Wolf, E. J., Harrington, K. M., Clark, S. L., & Miller, M. W. (2013). Sample size requirements for structural equation models: An evaluation of power, bias, and solution propriety. *Educational and Psychological Measurement*, *73*(6), 913–934.

Yu, L., Buysse, D. J., Germain, A., Moul, D. E., Stover, A., Dodds, N. E., Johnston, K. L., & Pilkonis, P. A. (2011). Development of short forms from the PROMIS™ Sleep Disturbance and Sleep-Related Impairment item banks. *Behavioral Sleep Medicine*, *10*(1), 6–24. https://doi.org/10.1080/15402002.2012.63626

Zou, L. X., & Cheryan, S. (2017). Two axes of subordination: A new model of racial position. *Journal of Personality and Social Psychology*, *112*(5), 696–717.