Empirical Research Paper

Implicit Evaluative Biases Toward Targets Varying in Race and Socioeconomic Status

Personality and Social Psychology Bulletin
1–16

DOI: 10.1177/0146167219835230
journals.sagepub.com/home/pspb
SAGE

Bradley D. Mattan[1], Jennifer T. Kubota[1], Tianyi Li[2], Samuel A. Venezia[1], and Jasmin Cloutier[1]

Abstract

Generally, White (vs. Black) and high-status (vs. low-status) individuals are rated positively. However, implicit evaluations of simultaneously perceived race and socioeconomic status (SES) remain to be considered. Across four experiments, participants completed an evaluative priming task with face primes orthogonally varying in race (Black vs. White) and SES (low vs. high). Following initial evidence of a positive implicit bias for high-SES (vs. low-SES) primes, subsequent experiments revealed that this bias is sensitive to target race, particularly when race and SES antecedents are presented in an integrated fashion. Specifically, high-SES positive bias was more reliable for White than for Black targets. Additional analyses examining how implicit biases may be sensitive to perceiver characteristics such as race, SES, and beliefs about socioeconomic mobility are also discussed. Taken together, these findings highlight the importance of examining evaluations based on race and SES when antecedents of both categories are simultaneously available.

Keywords

socioeconomic status, implicit bias, race, stereotyping, prejudice

Received November 15, 2017; revision accepted January 27, 2019

Decades of social psychological research suggests that dominant racial groups (e.g., Whites) consistently elicit more positive evaluations than do other racial groups (e.g., Blacks). Such bias has been observed at the explicit (Forscher, Cox, Graetz, & Devine, 2015), implicit (Fazio, Jackson, Dunton, & Williams, 1995; Greenwald, McGhee, & Schwartz, 1998), and neural levels (Kubota, Banaji, & Phelps, 2012; Mattan, Wei, Cloutier, & Kubota, 2018). Sometimes at odds with explicit evaluations and egalitarian intentions, race-based implicit bias tends to be characterized as a stronger positive association for White compared with Black (Greenwald et al., 1998). Although status-based biases have historically received less attention than visually salient social categories such as race, age, and gender (Fazio & Olson, 2003), a growing literature has begun to examine the evaluative consequences of perceived status. Specifically, high-status individuals can be perceived explicitly as more competent, valuable, and rewarding compared with low-status individuals (Fiske, 2010; Mattan, Kubota, & Cloutier, 2017; Varnum, 2013). Unlike for race, status-based implicit evaluative associations remain underexplored. The use of implicit measures is important for understanding status-based prejudice and discrimination because these measures may reflect the activation of valence associations that form the basis for deliberative evaluations (Gawronski & Bodenhausen, 2011). Accordingly, such status-specific valence associations may be particularly influential in shaping behaviors that are relatively spontaneous, especially under conditions that tax cognitive capacity (e.g., decisions to shoot; Moore-Berg, Karpinski, & Plant, 2017). Notably, race- and status-based prejudices have been studied largely in parallel. This is surprising, given both early acknowledgment (Allport, 1954) and more recent emphases (Fiske, Dupree, Nicolas, & Swencionis, 2016; Mattan et al., 2017; Moore-Berg & Karpinski, 2019) on the relationship between these two attributes. To address this gap in the literature, we consider implicit evaluative biases toward individuals varying in both perceived race and socioeconomic status (SES).

Despite empirical evidence of stereotypic associations between race and status in social categorization (Freeman, Penner, Saperstein, Scheutz, & Ambady, 2011; Lei & Bodenhausen, 2017; Shutts, Brey, Dornbusch, Slywotzky, &

[1]University of Delaware, Newark, USA
[2]The University of Illinois at Chicago, USA

Corresponding Author:
Jasmin Cloutier, Department of Psychological & Brain Sciences, University of Delaware, 105 The Green, Newark, DE 19716, USA.
Email: jcloutier@psych.udel.edu

Olson, 2016), only a handful of empirical studies have examined the interaction of perceived race and status on person evaluation (Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001; Correll, Wittenbrink, Park, Judd, & Goyle, 2011; Jussim, Coleman, & Lerch, 1987; Moore-Berg et al., 2017; Smedley & Bayton, 1978). Studies utilizing explicit evaluations frequently report independent effects of target race and status on evaluations (e.g., Blascovich, Mendes, et al., 2001; Smedley & Bayton, 1978; but see Jussim et al., 1987). Even some studies relying on indirect measures of social evaluation (e.g., neuroimaging, cardiovascular responses) find no evidence to suggest that race and status interactively shape spontaneous person evaluation (e.g., Blascovich, Mendes, et al., 2001; Mattan, Kubota, Dang, & Cloutier, 2018; Mattan, Kubota, Li, Dang, & Cloutier, 2018). One possibility is that, when status is made salient, attending to status may provide a proactive means of attenuating bias toward other typically salient attributes such as race (Amodio & Swencionis, 2018; Gawronski, Cunningham, LeBel, & Deutsch, 2010).

In summary, this study represents an initial exploration of whether perceived status may modulate implicit racial bias. In four experiments, we assessed the potential for independent and interactive effects of race and status on implicit bias using an adaptation of a classic evaluative priming task in which face primes varied both in their race (Black, White) and in their SES (low, high). If race and status do interact, we might expect especially positive implicit evaluations of high-status Whites at the top of the social hierarchy relative to the other three subgroups occupying lower ranks in the hierarchy (e.g., Moore-Berg et al., 2017). Alternatively, the simultaneous presence of status-related information may diminish the significance of race, attenuating any implicit racial bias. After providing initial evidence for status-based priming in Experiment 1, subsequent experiments provide a more contextualized understanding of how perceived SES can shape person evaluation. Experiments 2 to 4 explore the boundary conditions (viz., perceiver characteristics and antecedents of SES) surrounding implicit evaluative associations with SES for Black and White targets.

Experiment 1

We first explored the consequences of simultaneously perceived race and status for implicit evaluative associations. Participants completed an evaluative priming task in which face primes varying in race (Black and White) and status (low and high) preceded the categorization of positive and negative target words (Fazio et al., 1995).

Previous research has relied on various antecedents of status including clothing, ascribed occupation/income/rank, body posture, facial structure, and even car ownership (Mattan et al., 2017). Although such cues may convey ecological validity in some contexts, these status cues do not always unambiguously convey status level. For example, formal attire may indicate a high-status attorney or a relatively low-status waiter in a fine restaurant. Other perceptual antecedents of status (e.g., posture, grooming/appearance) are often confounded with multiple dimensions of status (e.g., dominance vs. SES) and/or other evaluative attributes (e.g., attractiveness), making it difficult to reliably isolate effects of status. The complexity associated with the use of percept-based status antecedents is perhaps exacerbated when status is presented simultaneously with a stereotypically related attribute such as race. To avoid these potential pitfalls in our initial exploration of status-based priming, we borrowed an approach from previous work (Cloutier & Gyurovski, 2014; Gyurovski, Kubota, Cardenas-Iniguez, & Cloutier, 2017; Mattan, Kubota, Dang, & Cloutier, 2018; Mattan, Kubota, Li, et al., 2018), in which status level was ascribed to targets using otherwise neutral colored backgrounds (see "Method" section for details).

In light of the proposal that status is multidimensional (Mattan et al., 2017), race and status may be both considered as independent dimensions of status that contribute additively to implicit evaluations. In that case, we would expect independent two-way interactions with target word valence (i.e., prime race × word valence and prime status × word valence, respectively) indicative of positive associations for White (vs. Black) and high-status (vs. low-status) targets. Alternatively, it may be that stereotypic race–status associations affect implicit evaluations of race and status. If so, then we would expect that high-status Whites (i.e., top of the hierarchy) may elicit an especially positive implicit bias relative to the three other subgroups (e.g., Moore-Berg et al., 2017). This would result in a prime race × prime status × word valence interaction, indicative of greater status-based priming for White (vs. Black) targets.

Method

For all experiments, we have reported all measures, conditions, data exclusions, and sample size determinations, consistent with best practices promoted by the Center for Open Science. Moreover, all experiments were completed in compliance with American Psychological Association ethical standards for the treatment of human research participants.

Participants. All U.S.-based workers from Amazon Mechanical Turk (MTurk) were eligible to participate. The final sample included 93 White participants (see Supplemental Material S1.1 for participant exclusions and compensation). Our power analysis (see Supplemental Material S1.1) indicated that the final sample was adequately powered to detect two-way interactions as small as $d = 0.17$ ($1 - \beta = .82$) and a three-way interaction as small as $d = 0.12$ ($1 - \beta = .80$).

Stimuli. Ten Black and 10 White faces were selected from an existing database for use as primes in the evaluative priming task. Colored borders serving as learned cues of social status level were added to each picture (within each race: five red and five blue). To ensure that the resulting

four groups were as similar as possible, we equated them on age, attractiveness, racial prototypicality, trust, and threat. Additional details on the face stimulus set are reported in Supplemental Material S1.1.

Five words of each valence were used in the experimental trials of the evaluative priming task (Correll, 2011). A different set of words taken from previous work (Gawronski et al., 2010) was used in the practice trials at the beginning of the evaluative priming task. A full listing of target words is provided in the online supplemental method appendix.

Status–color association training. Prior to completing the evaluative priming task, participants first learned to associate the colors red and blue with different levels of SES. Both the status–color association training and the subsequent evaluative priming task were presented online via Inquisit 4 Web (Version 4.0.9; Millisecond Software, Seattle, Washington). Participants initially read the following definitions of status:

> Those who have the HIGHEST social status tend to have the most money, the most education, and the most respected jobs. Those who have the LOWEST social status tend to have the least money, the least education, and the least respected jobs or no job.

Following these definitions, participants learned that they would see pictures of low- and high-status individuals in the United States, and that the pictures would be superimposed on a colored background denoting their status level (e.g., blue = low status, red = high status). Status–color associations were counterbalanced across participants.

To thoroughly learn status–color associations, participants completed simple association training blocks. In an initial block of 12 trials, participants passively viewed images of darkened silhouettes over a colored background (i.e., red or blue) paired with a sentence describing the silhouette's color-specific status level (six trials per status level). Next, participants completed a block of 36 trials in which they viewed the same stimuli without ascribed status information and responded to a prompt regarding the silhouette's status level (e.g., "Does this color mean HIGH or LOW status in the United States?"). Participants had unlimited time to press 1 for high status or 2 for low status. Incorrect responses elicited an error message: "INCORRECT—please give the correct response to proceed." At the end of the block, participants received feedback on their overall accuracy and instructions that they would repeat the preceding block, irrespective of their initial accuracy. Any errors resulted in repetition of this training block. Training concluded with the next successful completion of the training block at 100% accuracy.

Evaluative priming task. The evaluative priming task was based on previous work (Fazio et al., 1995; Gawronski et al., 2010). Participants were trained to categorize target words as positive or negative as quickly and accurately as possible. A face prime (e.g., low-status White) appeared immediately prior to each target word. Faster responses for primes preceding positive (vs. negative) words are thought to reflect a positive evaluative bias, whereas faster responses for primes preceding negative (vs. positive) words are thought to reflect a negative evaluative bias.

At the start of the evaluative priming task, participants completed a brief training procedure to familiarize themselves with the paradigm. The initial instructions page informed participants that they would press the M key for positive words and the N key for negative words using the index and middle fingers of their dominant hand. Practice trials began with a central black fixation on a white background. The words "negative" and "positive" were continuously presented at the vertical midpoint on the far left and far right sides of the screen, respectively. Note that these locations parallel the response key positions; the N (negative) key is to the left of the M (positive) key. After 500 ms, one of the practice words replaced the central fixation. Target word valence was randomized across all trials, with each practice word being presented once. Each trial terminated after the participant's response or 1,500 ms, whichever came first. Late or incorrect responses resulted in a 200-ms error message of "INCORRECT," presented centrally. No feedback for correct responses in the practice trials was given. A pause of 150 ms preceded all subsequent trials.

On completion of the 10-trial practice block, participants learned that they would continue to categorize word valence quickly and accurately in the main trial block. They were also informed that target words would be preceded by faces that they should ignore. Following these brief instructions, the experimental block commenced. As in the practice block, experimental trials began with a central black fixation on a white background, flanked by the words "negative" and "positive." After 500 ms, the fixation was replaced by a face prime (e.g., low-status White) for a 300-ms duration. Immediately after the face prime disappeared, a target word appeared in the center of the screen. Each trial terminated after the participant's response or 1,500 ms, whichever came first. Failures to respond after 1,500 ms were counted as errors. A pause of 150 ms preceded all subsequent trials. Error feedback was not displayed during the experimental block. The 160-trial experimental block consisted of 20 iterations of a fixed eight-trial sequence. This sequence was pseudorandomly generated with the constraint that the sequence must present one trial from each of the eight conditions in the experimental design. Prime stimuli and target words were selected sequentially within their respective conditions to ensure that each prime stimulus and target word were displayed with similar frequency.

Experimental protocol. On accepting the MTurk Human Intelligence Task, participants were directed to the prescreen survey. This survey was intended to assess inclusion criteria (see

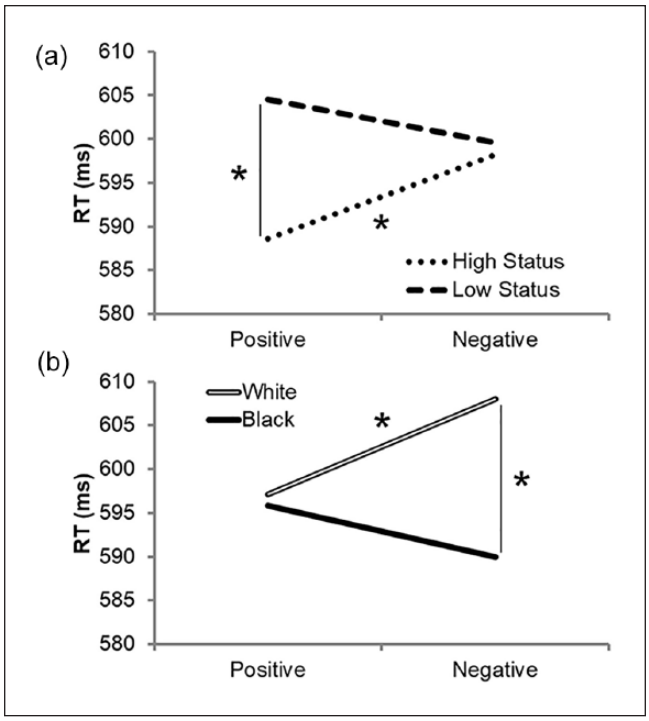

Figure 1. Linear mixed-effects estimates of evaluative priming effects from Experiment 1 ($N = 93$).
Note. Prime status × word valence and prime race × word valence interactions in the RT data indicated significant positive evaluative biases for high-status (vs. low-status) primes (panel a) and for White (vs. Black) primes (panel b), respectively. Log RTs were converted to milliseconds for ease of interpretation. Significant simple effects and slopes are indicated with asterisks (see Supplemental Material S1.5 for statistics). RT = response time.

Supplemental Material S1.1 for full details). Eligible participants who met all inclusion criteria were sent a link to the study consent form and evaluative priming task approximately 2 days later. Participants who then completed the evaluative priming task were sent a link to some questionnaires (see Supplemental Material S2.1) approximately 4 days later.

Data analysis. Because of the greater variability of response time (RT) compared with response accuracy data, our main analyses for all experiments focused on RT data. For analyses of response accuracy data for all experiments, see Supplemental Material S2.2. After excluding incorrect responses (1%-26% across participants), RT values below 75 ms or exceeding 3.5 standard deviations from the participant's mean correct RT above 75 ms were excluded from analyses (0-5 RTs excluded per participant). To correct for positive skew of RTs, RTs were log-transformed for all analyses. The lme4 package (Bates, Maechler, Bolker, & Walker, 2015) in the R programming language (R Core Team, 2018) was used to run all regressions for all experiments. Degrees of freedom were estimated using Satterthwaite's approximation, provided by the package lmerTest, version 2.0-33 (Kuznetsova, Brockhoff, & Christensen, 2016).

We entered prime race (Black, White), prime status (low, high), and target word valence (positive, negative) as parameters into a linear mixed-effects regression. For the full regression model, conditions were coded as follows: Black = −0.5 and White = 0.5, low = −0.5 and high = 0.5, negative = −0.5 and positive = 0.5. We fitted perceivers' log RT (continuous variable) as a function of the three within-participants conditions. We allowed for between-participants variance in intercepts and slopes (i.e., random effects) to account for participant-level variations in log RT. In all experiments, we attempted to model as many random effects as possible without overfitting the data. In the event of convergence failures or model overfitting, we followed a uniform procedure for the simplification of random-effects structures (see Supplemental Material S1.2). In the present experiment, our final model included all random slopes. For significant interactions, follow-up models were conducted to plot the interaction and test simple effects. Model syntax and contrast coding for all experiments are reported in Supplemental Material S1.2 (see also Supplemental Material S1.3 for alternative analyses using ANOVA).

Results

Results revealed a reliable main effect of prime race, $b = 0.00699$, $SE = 0.00171$, 95% confidence interval ($CI_{95\%}$) = [0.00364, 0.0103], $t(91) = 4.089$, $p < .001$, suggesting faster overall responses to Black compared with White primes. Results also revealed a significant main effect of prime status, $b = -0.00626$, $SE = 0.00172$, $CI_{95\%}$ = [−0.00963, −0.00288], $t(91) = -3.629$, $p < .001$, indicating faster overall responses to high-status compared with low-status primes. All two-way interactions were significant. We follow up on interactions related to evaluative priming below (for all nonevaluative interaction effects, see Supplemental Material S1.4). All other effects were nonsignificant, $p > .089$.

Prime status × word valence interaction. Particularly relevant to our hypotheses on evaluative priming, the prime status × word valence interaction was significant (see Figure 1a), $b = -0.0107$, $SE = 0.00326$, $CI_{95\%}$ = [−0.0171, −0.00429], $t(90) = -3.279$, $p = .001$. Follow-up analyses (see Supplemental Material S1.5) signal that the prime status × word valence interaction was primarily driven by an implicit association of high-status primes with positive valence.

Prime race × word valence interaction. Also relevant to our hypotheses on evaluative priming, the prime race × word valence interaction was significant (see Figure 1b), $b = -0.0121$, $SE = 0.00319$, $CI_{95\%}$ = [−0.0184, −0.00588], $t(92) = -3.803$, $p < .001$. Follow-up analyses (see Supplemental Material S1.5) signal that the prime race × word valence interaction was primarily driven by an implicit association of White primes with positive valence.

Discussion

Taken together, results from Experiment 1 supported the hypothesis that race and status contribute simultaneously and independently to implicit evaluations. Consistent with our predictions, White (vs. Black) and high-status (vs. low-status) primes were both associated implicitly with positive valence. The effects of race on implicit evaluations have been well documented (Fazio & Olson, 2003). However, the present study is the first to our knowledge to demonstrate an implicit evaluative bias as a function of ascribed SES. These findings were replicated in an independent online sample, $N = 88$ (Experiment 1R: see Supplemental Material S1.6).

Experiment 2

In Experiment 2, we assessed whether perceiver characteristics shape implicit evaluations of race and ascribed status. A brief review of the largely parallel literatures on race- and status-based evaluation reveals that high-status racial groups (i.e., Whites) and high SES are positively evaluated even among Black (Ashburn-Nardo, Knowles, & Monteith, 2003; Livingston, 2002; Nosek, Banaji, & Greenwald, 2002) and low-status (Varnum, 2013) participants, respectively. Nonetheless, there is some evidence that the magnitude of these biases is affected by perceiver race or status, among other factors (Ashburn-Nardo et al., 2003; Livingston, 2002; Ly, Haynes, Barter, Weinberger, & Zink, 2011; Nosek et al., 2002; Smedley & Bayton, 1978). For example, the magnitude of implicit pro-White bias is smaller for Black than for White participants in large national samples (Kubota, Peiso, Marcum, & Cloutier, 2017; Nosek et al., 2002). For status, greater reward network activity has been observed in response to targets with a similar status level to the perceiver's own status (Ly et al., 2011). Although these findings illustrate that evaluative biases for race and status are sensitive to the perceiver's own race and status, they were not designed to address the potential interaction between perceiver race and status (but see Smedley & Bayton, 1978).

Existing work examining deliberative evaluations and cognitive performance has demonstrated that Blacks compared with Whites can be especially sensitive to hierarchically threatening associations between race and different kinds of status, including economic (Ivanic, Overbeck, & Nunes, 2011; Penner & Saperstein, 2008; Swencionis, Dupree, & Fiske, 2017) and intellectual status (Blascovich, Spencer, Quinn, & Steele, 2001; Steele & Aronson, 1995). Accordingly, chronic exposure to threatening expectancies vis-à-vis the interaction of racial/socioeconomic identity and race–status stereotypes may shape implicit associations with status. In concrete terms, because their socioeconomic position places them at odds with the perennial American racial hierarchy (i.e., White = high status and Black = low status), high-SES Blacks (and perhaps low-SES Whites; Kunstman, Plant, & Deska, 2016) may experience considerable threat in status-relevant contexts (Brannon & Markus, 2013). As a result of day-to-day microaggressions (e.g., Wang, Leu, & Shoda, 2011), these hierarchy-inconsistent individuals (e.g., high-SES Blacks) may develop ambivalent associations with status, perceiving high-status cues as both appealing and potentially threatening to their own standing (for recent work on the evaluative ambivalence of status cues, see Garcia, Weaver, & Chen, 2018). Previous work suggests that competing implicit associations can be acquired (e.g., through the learning of new information), resulting in attenuated bias scores at the implicit level (Petty, Briñol, Tormala, & Jarvis, 2006). Compared with hierarchy-inconsistent individuals (e.g., high-SES Blacks), hierarchy-consistent low-SES Blacks (and high-SES Whites) may experience relatively less threat when status is salient. In the absence of such identity-related threat, these hierarchy-consistent individuals should possess more consistently positive associations with high status.

In sum, we anticipated an interaction characterized by greater status-based evaluative priming in individuals whose racial and socioeconomic identities are consistent (high-SES White, low-SES Black) versus inconsistent (e.g., high-SES Black, low-SES White) with the American racial hierarchy (i.e., a prime status × word valence × participant race × participant status interaction). To the extent that perceived race reflects status independently of ascribed status, a similar pattern may also be expected in responses to perceived race.

Method

Participants. The final sample included 107 participants from the Chicago area (46 female; $M_{age} = 23.6$ years, $SD_{age} = 4.64$ years, range = 18-35 years). See Supplemental Material S1.1 for full details on participant exclusions and compensation. The sample identified as 52% White and 48% Black. The distribution of gender (male, female, other) across race was relatively even (20 Black women, 26 White women: $\chi^2(2) = 1.55$, $p = .46$). For comparisons of other demographic variables (including status: Figure S1) by participant race, see Supplemental Material S1.1. Our power analysis (see Supplemental Material S1.1) indicated that a sample of 100 was adequately powered to detect the modulation of the prime status × word valence and the prime race × word valence interactions by both perceiver race and perceiver status (i.e., four-way interactions), assuming effect sizes as small as $d = 0.10$ ($1 - \beta > .92$). Because Experiments 1 and 1R consistently showed independent priming effects of race and status, we did not predict a five-way interaction.

Stimuli. The same stimuli, training task, and evaluative priming task from Experiments 1 and 1R were used in Experiment 2.

Perceiver status measure. Perceiver social status was assessed using the MacArthur Scale of Subjective Social Status

(Adler, Epel, Castellazzo, & Ickovics, 2000). The MacArthur Scale presents a ladder comprising rungs labeled 1 to 10 in ascending order with the following instructions:

> Think of this ladder as representing where people stand in terms of social status among the general population of the United States. At the top of the ladder are the people who have the highest standing among the general population in the United States. At the bottom are people who have the lowest standing among the general population in the United States. Where would you place yourself on this ladder? Please select the rung where you think you stand at this time in your life, relative to other people in the United States.

Participants responded using a 10-point scale, from *first step* (lowest rung) to *tenth step* (highest rung).

Experimental protocol. On arrival, participants were escorted by a researcher to a group testing room containing multiple testing cubicles. Participants first completed the consent form, followed by the color–status association training (see Experiment 1) and evaluative priming task. As in Experiment 1, the trial sequence for the evaluative priming task comprised 20 repetitions of a fixed eight-trial sequence. For Experiment 2, the eight-trial sequence was selected from one of four pseudorandomized orders, counterbalanced across participants. Following the evaluative priming task, participants completed the measure of perceiver status and exploratory measures (see Supplemental Material S2.1).

Data analysis. RT values below 75 ms or exceeding 3.5 standard deviations from the participant's mean correct RTs above 75 ms were excluded from analyses (zero to nine trials excluded per participant). The primary purpose of Experiment 2 was to explore whether perceiver race and perceiver status influence implicit associations with perceived race and status. We examined how perceiver race (Black or White), perceiver status (continuous measure), prime race (Black or White), and prime status (low or high) affected RTs for positive and negative target words. We entered those parameters into a linear mixed-effects regression. Participant status scores were *Z* transformed using the full sample's mean and standard deviation. For the full model, we coded participant race as follows: Black = −0.5, White = 0.5. All other factors were coded as in Experiment 1.

Unlike in Experiment 1, we were only able to model random effects for the intercept and the main effects of prime status and word valence (see Supplemental Material S1.2 for model syntax). To estimate the effects of participant status, follow-up models were repeated at three mean-deviated levels of perceiver status: low status (−1.5 *SD* from the mean), mean status, and high status (+1.5 *SD* from the mean).

Results

As in Experiments 1 and 1R, we found a reliable main effect of prime race, $b = 0.00683$, $SE = 0.00194$, $CI_{95\%} = [0.00302, 0.0106]$, $t(14{,}980) = 3.516$, $p < .001$, suggesting faster overall responses to Black compared with White primes. Relevant to implicit evaluative priming, we observed a significant four-way interaction between prime status, word valence, participant race, and participant status, $b = -0.0254$, $SE = 0.00792$, $CI_{95\%} = [-0.0409, -0.00984]$, $t(14{,}980) = -3.202$, $p = .001$. No interactions between prime race and word valence reached significance; all ps $> .07$.

Follow-up models fitted log RT data as a function of target word valence separately for high-status and low-status primes. These models were repeated for Black and White participants at three mean-deviated levels of perceiver status: low status (−1.5 *SD* from the mean), mean status, and high status (+1.5 *SD* from the mean). Statistics from these models are summarized in Supplemental Material S1.5, and estimates are plotted in Figure 2. In summary, the pattern of results was consistent with our predictions of a differential impact of perceiver status on status-based implicit evaluations in Blacks compared with Whites. Specifically, we observed that positive implicit evaluations of high status were driven by low-status Black and high-status White participants.

Independent of word valence, we observed a set of interactions involving prime race and perceiver status (see Supplemental Material S1.4).

Discussion

Results from Experiment 2 again revealed significant positive implicit bias for high-status targets. However, the critical contribution of this experiment is that status-based implicit bias was dependent on both perceiver race and perceiver SES. Whereas increasing subjective status was associated with decreased high-status-positive associations in Black participants, the opposite was the case for White participants. Consistent with previous research on the perception and evaluation of status hierarchies (Davidai & Gilovich, 2015; Ellemers, Wilke, & van Knippenberg, 1993; Jost, Pelham, & Carvallo, 2002; Kraus, Park, & Tan, 2017), participants whose identities aligned most closely with the perennial American racial status hierarchy (viz., low-status Blacks, high-status Whites) showed the most robust positive implicit associations for high status. For hierarchy-inconsistent participants (e.g., high-status Blacks, low-status Whites), status-based priming was not reliable and, in fact, trended in the opposite direction (i.e., low status associated with positive valence). This is in line with our initial expectation that hierarchy-inconsistent participants would possess ambivalent associations with status. Such ambivalence may have attenuated positive implicit evaluations of high status in high-SES Blacks and low-SES Whites (see Petty et al., 2006).

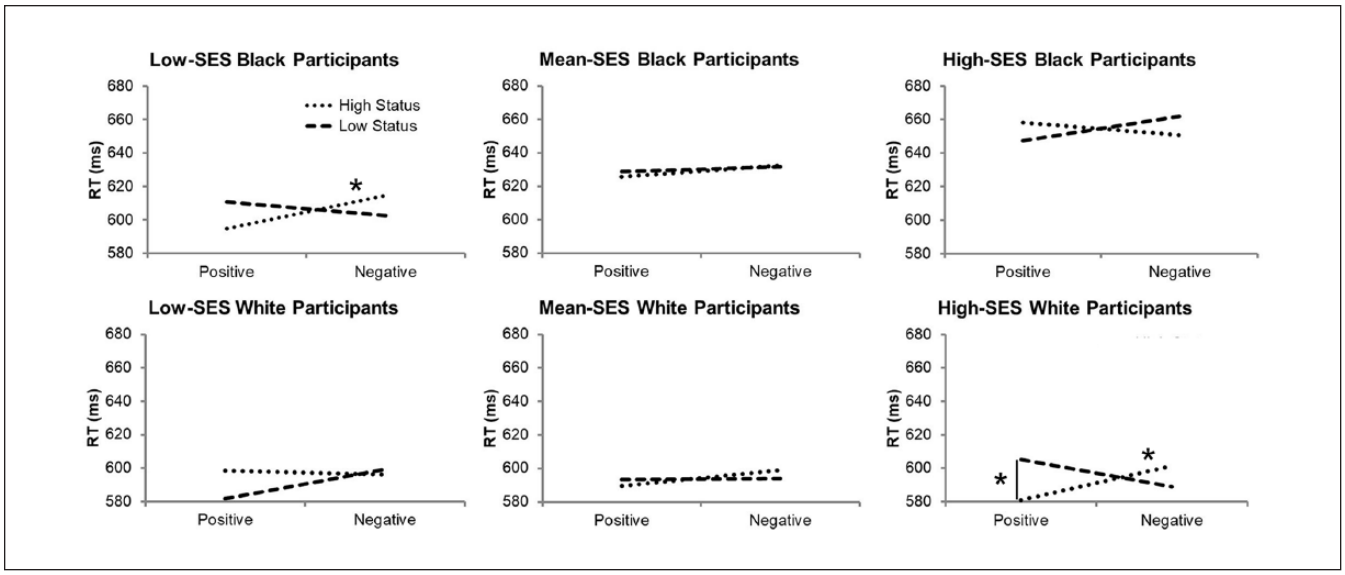

Figure 2. Linear mixed-effects estimates of status-based evaluative priming effects as a function of the participant's race and status (Experiment 2: $N = 107$).

Note. A significant four-way interaction in the log RT data indicated positive evaluative biases for high-status (vs. low-status) primes were most reliable in low-status Black participants and high-status White participants. Log RTs were converted to milliseconds for ease of interpretation. Significant simple effects and slopes are indicated with asterisks (see Supplemental Material S1.5 for statistics). RT = response time; SES = socioeconomic status.

Alternatively, or in addition to the existence of attitudinal ambivalence, it is possible that the race–status priming paradigm elicited stereotype threat (e.g., due to negative race–status associations) in high-SES Black participants. Previous work suggests that the experience of stereotype threat can disrupt performance on cognitive tasks (e.g., an evaluative priming task) either through increased stress (and its regulation) or self-monitoring (Schmader, Johns, & Forbes, 2008). Consistent with this account, reaction times in Experiment 2 slowed as a function of perceiver SES in Black but not White participants (see Figure 2). Further research is needed to directly examine the extent to which chronic and acute status challenges experienced by middle- to upper class racial minority members (e.g., Wang et al., 2011) may contribute to altered implicit evaluations of status as well as specific deficits in well-being (e.g., Neighbors, 1986).

Although the present findings are intriguing, there are two caveats that merit discussion. First, we failed to replicate the effect of perceiver SES in subsequent samples of White participants (see Supplemental Material S1.7). One possibility is that the effect of perceiver race and perceiver SES on status-based priming from this experiment may have been driven by Black participants. Pending replication in a larger sample, this finding should be interpreted with caution. Second, unlike in Experiment 1, we found no evidence of race-based evaluative priming in RT data. One possibility is that this experiment was underpowered to detect this effect. A large-scale psychometric study has estimated that the overall race effect on evaluative priming tasks is $d = 0.07$ (Bar-Anan & Nosek, 2014). However, the current experiment was adequately powered to detect priming effects no smaller than $d = 0.10$. It is also possible that differences in our online versus lab-based participant samples (e.g., perceiver SES, beliefs about race and socioeconomic mobility; see Supplemental Material S2.4-S2.5) may have contributed to observed differences in implicit racial biases between Experiments 1 and 2.

Experiment 3

Experiments 1 and 2 illustrated a consistent pattern of status-based evaluative priming that appeared to be independent of implicit race bias. However, closer scrutiny of the status–color association training raised the possibility that these findings could be attributable to factors unrelated to SES. First, the extensive training procedure may have increased the salience of status (i.e., the background colors), ultimately diverting attention away from race and attenuating any race effects (Amodio & Swencionis, 2018; Gawronski et al., 2010). Indeed, this is a potential explanation for the absence of race effects in the analyses of RT in Experiment 2. Second, combined with the initial training, the relatively valence-laden descriptions of high and low SES may have facilitated the formation of heuristic valence–color associations rather than the intended status–color associations.

To eliminate these alternative interpretations, we conducted a follow-up experiment that largely replicated the procedures from Experiment 1, but without extensive training. In addition, the initial descriptions of status were modified to present relatively neutral depictions of low- and high-SES

individuals. If the findings from Experiments 1 and 2 are indeed due to the status knowledge conveyed by the stimulus backgrounds, then one would expect these results to replicate when participants are given relatively neutral depictions of low- and high-SES and in the absence of an extensive training procedure.

Method

Participants. All U.S.-based workers from MTurk were eligible to participate in the study prescreen (see Supplemental Material S1.1 for exclusions and compensation details). The final sample included 224 White participants (118 female; $M_{age} = 28.8$ years, $SD_{age} = 4.11$ years, range = 19-35 years). A conservative power analysis (see Supplemental Material S1.1) indicated that the final sample was adequately powered to detect the three-way interaction at $d \geq 0.08$ ($1 - \beta > .83$). For the two-way priming interactions, the sample was powered at $1 - \beta = .75$, assuming $d = 0.10$.

Stimuli. The same color-framed face stimuli from Experiments 1 and 2 were used in Experiment 3. To clearly convey status associations, each face's status level was printed in white capital letters (e.g., "HIGH STATUS") displayed centrally in the upper and lower parts of the colored frame.

The same set of five positive and five negative target words from Experiments 1 and 2 were used in Experiment 3. The set of practice block target words was resampled from previous work (Gawronski et al., 2010) to ensure the same number of positive and negative words (see online supplemental method appendix).

Evaluative priming task. Due, in part, to the removal of the initial status–color association training, some modifications to the evaluative priming paradigm were necessary for Experiment 3. As in Experiments 1 and 2, participants first completed a 10-trial practice procedure to familiarize themselves with the main experimental task, where they simply categorized the valence of the positive and negative practice word set. After these practice trials, participants were informed that trials in the main experiment would start with the presentation of a high- or low-status face. Participants then read the following status definitions, which were revised with the intention of minimizing valenced terminology:

> As you may know, those who are HIGH STATUS tend to be wealthy and university educated, typically working in "white-collar" positions. As you may know, those who are LOW STATUS tend to be poor and high school educated (or less), typically working in "blue-collar" positions or unemployed.

Next, participants saw two back-to-back screens, each presenting an example prime stimulus. The example consisted of a silhouette surrounded by a colored frame (one screen for blue and one screen for red). Embedded at the top and bottom of the colored frame, the status of the prime was also presented in white capital letters (e.g., "HIGH STATUS") to ensure that status–color associations were clear. Both example screens presented a simple two-sentence description (e.g., "A high-status face will be framed in RED. For the actual trials, a real face will be presented instead of the silhouette shown here."). As in Experiments 1 and 2, the status–color associations were counterbalanced across participants.

Following the two example screens, participants read a final reminder to categorize the word appearing after the face disappears. The 160-trial experimental block began seamlessly after eight practice trials involving a different set of practice faces but the same target words as in the main block. These practice trials were not analyzed. The eight practice trials were added to minimize any noise arising from initial confusion about the paradigm (Correll, 2011). Such confusion was arguably less of an issue when participants were extensively trained on status–color associations in Experiments 1 and 2. The fixed trial sequences used for Experiment 3 were the same as those used in Experiment 2.

Experimental protocol. On consenting to participate, all participants first completed the prescreen to determine their inclusion based on country of birth, race, and age (see Experiment 1 and Supplemental Material S1.1 for details). Participants then completed the evaluative priming task and post-task exploratory measures (see Supplemental Material S2.1).

Data analysis. RTs below 75 ms and correct RTs exceeding 3.5 standard deviations from the participant's mean correct RTs above 75 ms were excluded from analyses (zero to 17 RTs per participant). The random-effects structure was the same as in Experiment 2 (see Supplemental Material S1.2 for model syntax).

Results

Consistent with Experiments 1 and 2, results revealed a reliable main effect of prime race, $b = 0.00753$, $SE = 0.00113$, $CI_{95\%} = [0.00531, 0.00975]$, $t(32{,}480) = 6.652$, $p < .001$, suggesting faster overall responses to Black compared with White primes. Results also revealed a significant main effect of prime status, $b = -0.00460$, $SE = 0.00135$, $CI_{95\%} = [-0.00724, -0.00195]$, $t(207) = -3.408$, $p = .001$, indicating faster correct categorization of words primed by high-status compared with low-status faces (see Experiment 1). We also observed a main effect of word valence, $b = -0.00379$, $SE = 0.00141$, $CI_{95\%} = [-0.00655, -0.00104]$, $t(217) = -2.699$, $p = .008$, finding faster overall responses to correctly categorized positive (vs. negative) words.

Both two-way interactions indicative of evaluative priming were significant: prime status × word valence, $b = -0.00989$,

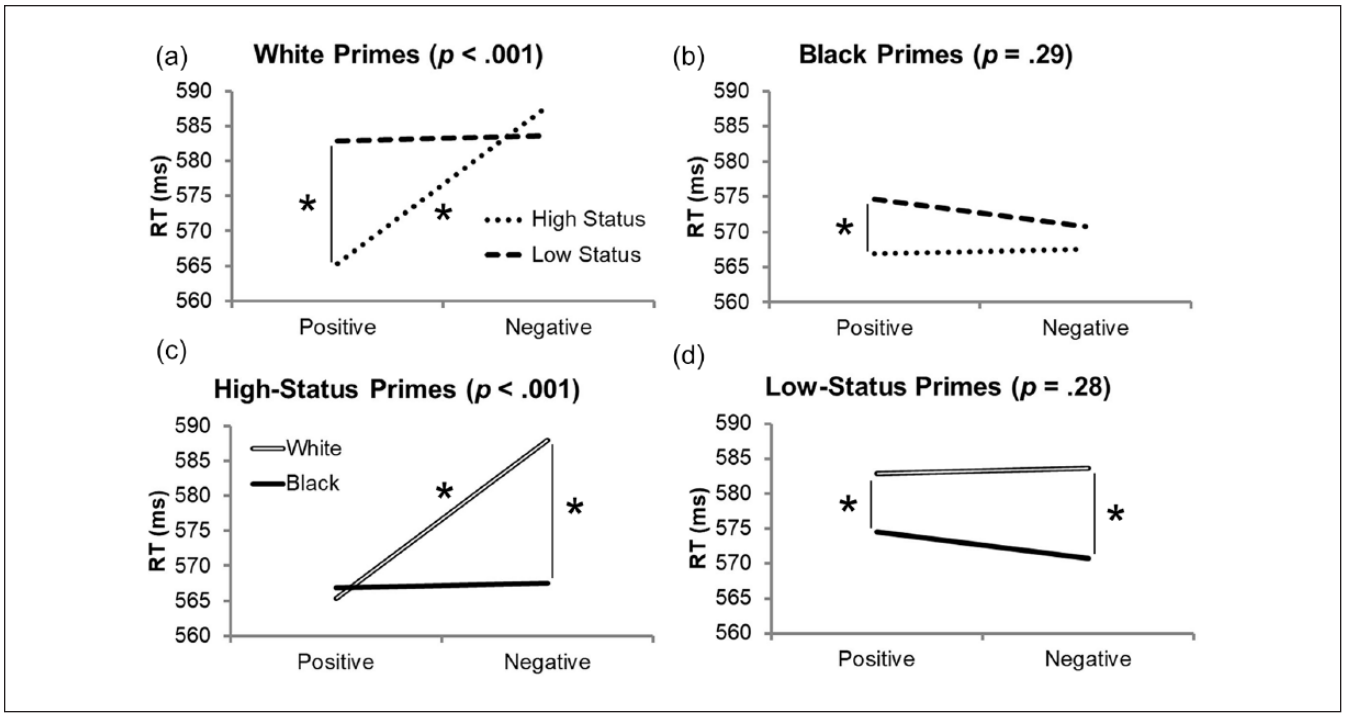

Figure 3. Linear mixed-effects estimates of evaluative priming effects from Experiment 3 ($N = 224$).
Note. A prime race × prime status × word valence interaction in the RT data indicated significant status-based priming for White primes (panel a) but not Black primes (panel b). Decomposing the interaction by prime status, we observed race-based priming for high-status primes (panel c) but not low-status primes (panel d). Log RTs were converted to milliseconds for ease of interpretation. Significant simple effects and slopes are indicated with asterisks (see Supplemental Material S1.5 for statistics). RT = response time.

$SE = 0.00226$, $CI_{95\%} = [-0.0143, -0.00546]$, $t(32{,}500) = -4.370$, $p < .001$; and prime race × word valence, $b = -0.00998$, $SE = 0.00226$, $CI_{95\%} = [-0.0144, -0.00554]$, $t(32{,}480) = -4.409$, $p < .001$. Unlike in any of the preceding experiments, both priming effects were subsumed by a significant three-way interaction, $b = -0.0130$, $SE = 0.00453$, $CI_{95\%} = [-0.0219, -0.00416]$, $t(32{,}480) = -2.880$, $p = .004$. We decompose this interaction below. All other effects were nonsignificant, $p > .70$.

Status priming by race. The prime status × word valence interaction was significant for White primes (see Figure 3a and Supplemental Material S1.5), showing evidence of an implicit association of high status with positive valence, $b = -0.0164$, $SE = 0.00322$, $CI_{95\%} = [-0.0227, -0.0101]$, $t(32{,}510) = -5.105$, $p < .001$. This pattern was not observed for Black primes (see Figure 3b and Supplemental Material S1.5), $b = -0.00338$, $SE = 0.00319$, $CI_{95\%} = [-0.00962, 0.00287]$, $t(32{,}490) = -1.060$, $p = .29$.

Race priming by status. The prime race × word valence interaction was significant for high-status primes (see Figure 3c and Supplemental Material S1.5), showing evidence of an implicit association of White with positive valence, $b = 0.0165$, $SE = 0.00320$, $CI_{95\%} = [0.0102, 0.0228]$, $t(32{,}480) = 5.150$, $p < .001$. This pattern was not observed for low-status primes (see Figure 3d and Supplemental Material S1.5), $b = 0.00346$, $SE = 0.00320$, $CI_{95\%} = [-0.00281, 0.00973]$, $t(32{,}500) = 1.080$, $p = .28$.

Discussion

Results from Experiment 3 revealed priming effects of both status and race even in the absence of extensive status–color association training. Importantly, we observed that status- and race-based priming effects were sensitive to the race and status of the primes, respectively. Taken together, the results suggest that high-status White targets are especially positive relative to other combinations of race and status (see also Moore-Berg et al., 2017). These findings are informative in that they help to rule out the possibility that status-based priming effects from the preceding experiments could be explained solely by training (viz., an unusually high salience of status and/or a heuristic association of valence rather than status with the status cues). However, these findings also raise the question of what contributed to the emergence of an interaction between status and race in the priming effects. One possibility is that the magnitude of the interaction in the context of Experiments 1 and 2 was relatively small, requiring larger samples to detect. Alternatively, the necessity of activating recently learned status–color associations in Experiments 1 and 2 may have impeded the integration of

both race and status cues during the brief window during which the primes were presented. In other words, on any given trial, the primes may have activated race associations or status associations, rather than associations tied to race–status subgroups. This would give rise to apparently independent effects of simultaneously perceived race and status. The use of text-based status labels in Experiment 3 may have simplified the perception of the face primes, ultimately facilitating the integration of perceived race and status, leading to a more interactive priming pattern.

Experiment 4

In a final preregistered experiment (osf.io/hd8ea), we intended to examine whether presenting status cues that are relatively integrated with the face primes will similarly give rise to the interaction of race and status in priming effects observed in Experiment 3. Using the same paradigm from Experiment 2, we opted to convey prime status through clothing. Although it is not a perfectly reliable indicator of someone's status (see Mattan et al., 2017), clothing is perhaps one of the more frequent means by which status is inferred (e.g., Freeman et al., 2011; Kraus et al., 2017; Moore-Berg et al., 2017). To control for salient differences between low- and high-status attire, we used t-shirt color as a social status cue. If such a relatively integrated status cue facilitates the processing of both race and status, then we would expect a replication of the three-way interaction we observed in Experiment 3.

Method

Participants. All U.S.-based workers from MTurk were eligible to participate in the study prescreen provided they had not already participated in the preceding experiments (see Supplemental Material S1.1 for a priori exclusions and compensation). The final sample included 253 White participants (132 female; M_{age} = 28.4 years, SD_{age} = 4.17 years, range = 18-35 years). A simulation-based power analysis using effect sizes from Experiment 3 (see Supplemental Material S1.1) indicated that a sample of 250 participants would be adequately powered to detect all possible priming-related interactions, $1 - \beta > .86$.

Stimuli. The same face stimuli from Experiments 1 to 3 were used in Experiment 4. The previously gray t-shirts worn by the photographed models were digitally altered to appear blue or red, according to the face's assigned condition as low or high in status (see online supplemental method appendix). Across participants, faces were counterbalanced across status level and shirt color. The same valenced target word stimuli from Experiment 3 were used in Experiment 4.

Experimental tasks and protocol. The abbreviated training, priming task, and overall procedure used in Experiment 4 were the same as in Experiment 3 with the exception that prime status was conveyed via t-shirt color rather than text labels and background colors.

Data analysis. RTs below 75 ms and correct RTs exceeding 3.5 standard deviations from the participant's mean correct RTs above 75 ms were excluded from analyses (zero to 19 RTs per participant). As in Experiment 1, we were able to model all random effects (see Supplemental Material S1.2 for model syntax).

Results

Consistent with Experiments 1 to 3, results revealed a reliable main effect of prime race, $b = 0.00732$, $SE = 0.00111$, $CI_{95\%} = [0.00514, 0.00950]$, $t(35{,}740) = 6.586$, $p < .001$, suggesting faster overall responses to Black compared with White primes. Results also revealed a significant main effect of prime status, $b = -0.00364$, $SE = 0.00111$, $CI_{95\%} = [-0.00582, -0.00146]$, $t(35{,}730) = -3.275$, $p = .001$, indicating faster correct categorization of words primed by high-status compared with low-status faces (see Experiments 1 and 3). As in Experiment 3, we also observed a main effect of word valence, $b = -0.00356$, $SE = 0.00135$, $CI_{95\%} = [-0.00621, -0.000911]$, $t(245) = -2.634$, $p = .009$, finding faster overall responses to correctly categorized positive (vs. negative) words.

Both two-way interactions indicative of evaluative priming were significant: prime status × word valence, $b = -0.0190$, $SE = 0.00404$, $CI_{95\%} = [-0.0270, -0.0111]$, $t(196) = -4.714$, $p < .001$; and prime race × word valence, $b = -0.0101$, $SE = 0.00222$, $CI_{95\%} = [-0.0144, -0.00579]$, $t(35{,}740) = -4.564$, $p < .001$. Replicating Experiment 3, both priming effects were subsumed by a significant three-way interaction, $b = -0.0160$, $SE = 0.00471$, $CI_{95\%} = [-0.0253, -0.00678]$, $t(243) = -3.399$, $p = .001$. We decompose this interaction below. All other effects were nonsignificant, $p > .10$.

Status priming by race. Replicating Experiment 3, the prime status × word valence interaction was significant for White primes (see Figure 4a and Supplemental Material S1.5), showing evidence of an implicit association of high status with positive valence, $b = -0.0253$, $SE = 0.00319$, $CI_{95\%} = [-0.0315, -0.0190]$, $t(36{,}430) = -7.940$, $p < .001$. Unlike in Experiment 3, this pattern was also reliable for Black primes (see Figure 4b and Supplemental Material S1.5), $b = -0.00955$, $SE = 0.00315$, $CI_{95\%} = [-0.0157, -0.00338]$, $t(36{,}400) = -3.033$, $p = .002$.

Race priming by status. Replicating Experiment 3, the prime race × word valence interaction was significant for high-status primes (see Figure 4c and Supplemental Material S1.5), showing evidence of an implicit association of White with positive valence, $b = 0.0181$, $SE = 0.00316$, $CI_{95\%} = [0.0119, 0.0243]$, $t(36{,}410) = 5.719$, $p < .001$. This pattern

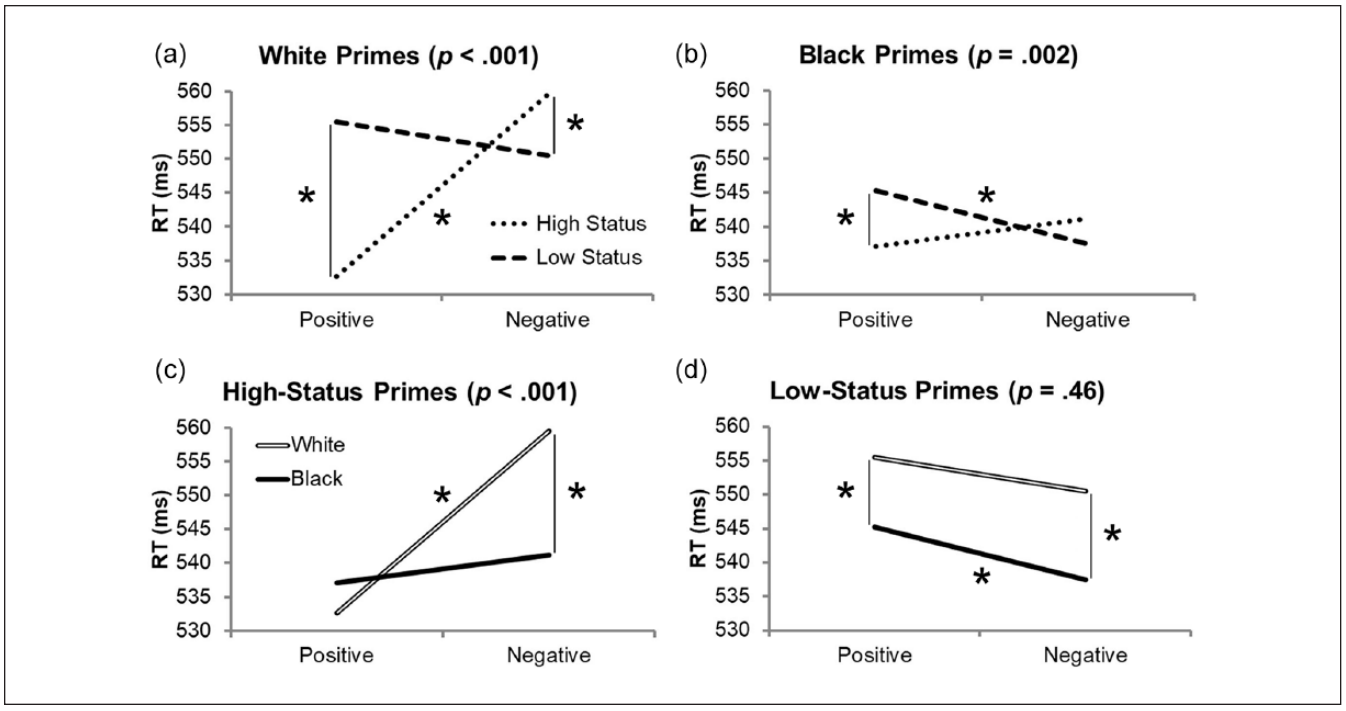

Figure 4. Linear mixed-effects estimates of evaluative priming effects from Experiment 4 ($N = 253$).
Note. A prime race × prime status × word valence interaction in the RT data indicated significant status-based priming for White primes (panel a) and Black primes (panel b). Decomposing the interaction by prime status, we again observed race-based priming for high-status primes (panel c) but not low-status primes (panel d). Log RTs were converted to milliseconds for ease of interpretation. Significant simple effects and slopes are indicated with asterisks (see Supplemental Material S1.5 for statistics). RT = response time.

was not observed for low-status primes (see Figure 4d and Supplemental Material S1.5), $b = 0.00234$, $SE = 0.00317$, $CI_{95\%} = [-0.00386, 0.00855]$, $t(36{,}420) = 0.740$, $p = .46$.

Discussion

Findings from this preregistered experiment conceptually replicated Experiment 3. The use of a status cue (i.e., clothing color) that was relatively integrated with the stimulus person resulted in sensitivity to race and status during status priming and race priming, respectively. We again found evidence of an especially positive association for high-status White targets relative to other race–status combinations. Notably, the effect size for this three-way interaction was comparable if not larger than in Experiment 3 despite the absence of extensive status–color association learning (cf. Experiments 1 and 2) and clear text-based status cues (cf. Experiment 3).

General Discussion

Across four experiments, the present study provides consistent evidence that cues ascribing status can shape implicit evaluations independent of extraneous factors frequently confounded with status perception (e.g., dominance, attractiveness). The novelty of this study is further underscored by the fact that most studies on implicit bias (Fazio & Olson, 2003) have focused on primary social categories that can often be relatively more salient during person perception compared with SES (e.g., race, gender, age). Studies on implicit bias that examine alternative categories have typically included the perceiver in one group (Ashburn-Nardo, Voils, & Monteith, 2001; Jost et al., 2002; Van Bavel & Cunningham, 2009). In the present study, we find consistent evidence of a positive association (see also accuracy analyses, Supplemental Material S2.2) for high SES that is especially pronounced when perceiving White (vs. Black) targets (see Experiments 3 and 4). Notably, this positive association with high SES may be sensitive to the perceiver's own race and SES level (Experiment 2).[1] If so, this would be consistent with our recently articulated social neuroscience framework arguing that status-based evaluations are sensitive to characteristics of the perceiver (Mattan et al., 2017).

Implicit Evaluations at the Intersection of Perceived Race and Status

In a preregistered final experiment, we replicated the finding from Experiment 3 that perceived race and status together shape implicit evaluations, resulting in an especially positive implicit association for high-SES Whites relative to other race–status combinations. This work complements the broader literature on implicit bias and previous findings showing that race can influence deliberative evaluations of individuals who are otherwise equal in status (e.g., Kunstman

et al., 2016; Livingston & Pearce, 2009). In this section, we discuss the boundary conditions and potential mechanisms giving rise to interactions between race and status in implicit evaluative bias.

Boundary conditions. Over four experiments, one key takeaway is that the antecedents used to convey status are important. First, race and status contributed interactively to implicit associations in experiments where task training minimized an early focus on status cues. Previous work has indicated that shifting attention toward another simultaneously perceived attribute can attenuate implicit racial bias on a similar priming paradigm (Gawronski et al., 2010). It is possible that the status–color association training used in Experiments 1 and 2 prompted greater attention to status, attenuating the effect of race on status-based priming in Experiment 1 and eliminating implicit race priming altogether in Experiment 2 (but see Supplemental Material S2.2). When this training was substantially reduced in Experiments 3 and 4, we observed a replicable interaction between race and status in our evaluative priming effects.

Second, race and status also contributed interactively to priming in experiments where the antecedents of status were relatively easy to process. This was achieved using explicit text labels in Experiment 3 and a more integrated stimulus (viz., t-shirt color instead of background color) in Experiment 4. Although we did not explicitly test ease of processing in our experiments, we note that the grand mean RTs in Experiments 3 and 4 ($M_3 = 576$, $M_4 = 546$) were well below the grand means observed in Experiments 1 and 2 ($M_1 = 598$, $M_2 = 609$). Although there is some evidence that evaluative priming can be elicited at far briefer stimulus-onset asynchronies (SOAs) than the standard 300 ms used in the present study (Murphy & Zajonc, 1993), the null three-way interactions from Experiments 1 and 2 make it unclear whether this standard SOA is always sufficient for integrated processing of primes comprising multiple related attributes whose combined meaning may be greater than the sum of their parts. Indeed, both theoretical accounts (Freeman & Ambady, 2011) and findings from the electroencephalography literature (Ito & Urland, 2003) suggest that simultaneously perceived categories can be processed in parallel as early as 100 ms postonset, but additional time may be required to process relationships between these categories (Freeman & Ambady, 2011; Ito & Urland, 2003). For example, previous work using the status cues from Experiments 1 and 2 suggests that interactive effects in person evaluation may arise 350 to 800 ms post–stimulus onset (i.e., P300; Gyurovski et al., 2017). In summary, further study is needed to better understand the time course by which perceived status and categories such as race contribute to social evaluation in an integrative rather than additive fashion. The present findings raise the possibility that cues that are easier to process may facilitate such evaluative integration.

Possible mechanisms. Although multiple factors may contribute to an especially positive implicit evaluation of high-SES Whites, we highlight at least two possibilities that merit further study. First, in nonthreatening evaluative contexts, where the salience of status is minimal (e.g., Experiments 3 and 4), one possibility is that evaluative responses to status may arise only in members of one's (racial) ingroup. This possibility is consistent with social–cognitive models emphasizing motivated individuation of ingroup members (Chaiken & Trope, 1999; Hugenberg, Young, Bernstein, & Sacco, 2010). As suggested above, such a tendency may also be enhanced in instances where the perceiver is better able to process and integrate the stimulus person's multiple attributes.

An alternative account of interactions between race (or any other simultaneously presented social category) and status comes from the density hypothesis in person evaluation (Unkelbach, Fiedler, Bayer, Stegmüller, & Danner, 2008). In brief, this account is based on the observation that the number and diversity of negative attributes far exceeds that of positive attributes. Research inspired by the density hypothesis has revealed valence asymmetries, with greater similarity among positively evaluated individuals than among negatively evaluated individuals (Alves, Koch, & Unkelbach, 2017). It is thought that this greater similarity for positive items makes them easier to process, resulting in faster responses for positive (vs. negative) targets and larger priming effects for positive (vs. negative) targets even in the presence of significant priming for negative targets (Unkelbach et al., 2008). Some of these effects were also observed in the present series of experiments (e.g., main effects of valence). Interestingly, we are not aware of any applications of the density hypothesis to the evaluation (implicit or otherwise) of targets with multiple attributes. The present findings suggest that the most positive or hegemonic combination of attributes (i.e., high-status Whites) may represent the positive end of a valence asymmetry relative to other available combinations of attributes.

Future Directions in Status-Based Evaluation

Looking beyond the intersection of race and status, additional work is needed to fully parse the boundary conditions of implicit status-based evaluation. In this final section, we survey some promising directions for ongoing investigations into the evaluative consequences of perceived status, drawing from our proposed social neuroscience framework for the study of perceived status (Mattan et al., 2017). Central to this framework is the notion that an individual's status level (i.e., rank) can be inferred along any number of dimensions. For example, someone who is high in financial status (e.g., the high-SES primes used in the present study) may not necessarily be high in status on other potential status dimensions such as moral character (Cloutier, Ambady, Meagher, & Gabrieli, 2012; Cloutier & Gyurovski, 2014) or physical

formidability (Lukaszewski, Simmons, Anderson, & Roney, 2016). Status on any given dimension may be inferred from antecedents that are perceptible (e.g., clothing; Moore-Berg et al., 2017) or knowledge based (e.g., corporate rank; Kumaran, Melo, & Duzel, 2012). Ultimately, inferring a target's status level on a given dimension has consequences for how she or he is evaluated and attended by the perceiver, depending on the social context.

In the context of above framework, we will highlight new horizons in the investigation of how perceived status influences person evaluation. Specifically, we discuss three factors that may affect implicit status-based evaluations: (a) social categories as status antecedents, (b) perceiver characteristics, and (c) social context.

Social categories as status antecedents. As mentioned previously, race and social status may be stereotypically linked (Freeman et al., 2011; Lei & Bodenhausen, 2017; Penner & Saperstein, 2008; Shutts et al., 2016). However, it is also important to consider that these constructs can be related not just within individuals, but also at the societal level (Fiske et al., 2016). Allport (1954) once described race in the American context as a socioeconomic caste. If race can be an antecedent of social status, then the variability in implicit race bias across experiments may be associated with the degree to which participants construe race as an antecedent of status. One way to examine this possibility would be to examine individual differences in SES-based race stereotyping as a predictor of implicit racial bias. Although the present study did not directly examine stereotyping, we did observe a tendency in Experiments 1 and 2 for stereotypic primes (i.e., high-status White, low-status Black) to facilitate RTs relative to nonstereotypic primes, irrespective of target valence (see Supplemental Material S1.4). This suggests that implicit stereotyping may operate simultaneously with implicit evaluations in the present paradigm (see Murphy & Zajonc, 1993). Notably, race is not the only social category with stereotypic and structural ties to status. Gender (Eagly & Steffen, 1984) can also be construed as an antecedent of status. Further work is needed to understand how such social categories may be used to infer status and guide status-based evaluations.

Perceiver characteristics. Findings from the race literature suggest that characteristics such as level of contact with outgroup members (Blascovich, Mendes, et al., 2001; Cloutier, Li, & Correll, 2014; Kubota et al., 2017; Tropp & Pettigrew, 2005) or motivation (Li, Cardenas-Iniguez, Correll, & Cloutier, 2016; Mattan, Kubota, Dang, & Cloutier, 2018; Mattan, Kubota, Li, et al., 2018) can have considerable impact on the explicit and implicit evaluations we form of others. In addition, other work indicates that perceiver beliefs about the extent of economic inequality (Kraus et al., 2017; Krosch & Amodio, 2014) and social mobility (Craig & Richeson, 2014; Davidai & Gilovich, 2015; Wilkins & Kaiser, 2014) may have an impact on our evaluations of others based on either race or social status. At the request of an anonymous reviewer, we analyzed several exploratory individual difference measures in Experiment 1R (see Supplemental Material S2.1 for a full list). With few exceptions (see Supplemental Material S2.5), most of these exploratory measures failed to yield any significant findings. Accordingly, we dropped many of these measures from subsequent studies. Nonetheless, it is possible that Experiment 1R was insufficiently powered to detect such effects.

Social context. There are potentially many ways to alter status-based evaluations ranging from different construals of status to direct bias reduction interventions. Regarding the present findings, it is possible that interactions between perceived race and status may differ depending on the evaluative context and level of evaluation (e.g., implicit vs. explicit). For example, interactions between perceived race and status have been observed in explicit evaluative contexts such as hiring, where job candidates who violated expectations (e.g., high-status Blacks) were evaluated more favorably than their high-status White counterparts (Jussim et al., 1987). In the inherently threat-relevant context of decisions to shoot (Correll et al., 2011; Moore-Berg et al., 2017), it appears that racial bias is observed for high-SES targets but not for low-SES targets. Notably, this same pattern was also observed in Experiments 3 and 4. Future work is needed to assess the role of physical (Correll et al., 2011; Moore-Berg et al., 2017) and hierarchical (Craig & Richeson, 2014; Wilkins & Kaiser, 2014) threat in implicit evaluations of simultaneously perceived race and status cues.

Another open question is whether high status along dimensions other than SES may similarly carry a positive implicit evaluation. Previous neuroimaging and behavioral work suggests that the evaluative consequences of high status can vary in experimental contexts that involve multiple dimensions of status (e.g., financial vs. moral status; Cloutier et al., 2012; Cloutier & Gyurovski, 2014) and/or intergroup conflict (e.g., Re, DeBruine, Jones, & Perrett, 2013). Moreover, alternative construals of SES (e.g., in terms of stereotypical warmth or honesty; see Swencionis et al., 2017) may activate more positive aspects of low status and negative aspects of high status, potentially diminishing positive implicit biases toward high-status targets. It will also be important to consider whether status-based implicit biases have consequences for real-world interactions as observed in the race literature (e.g., Greenwald, Banaji, & Nosek, 2015), especially when social status is identified without the assistance of explicit visual cues (e.g., Kumaran et al., 2012).

Finally, previous work from the race literature suggests that racial biases are sometimes sensitive to interventions such as individuation (Mattan, Wei, et al., 2018; Senholzi & Kubota, 2016). Other interventions aimed at reducing racial

bias, however, are not always effective (Lai et al., 2016). It remains to be determined the degree to which interventions may influence evaluative biases as a function of perceived status.

Conclusion

Across all experiments, the present study provides important evidence that perceived high SES elicits positive implicit associations, even in the simultaneous presence of race cues and implicit racial bias. Moreover, under conditions that may facilitate the processing and integration of status with race cues, we observed an especially positive implicit association for high-SES Whites relative to other race–status combinations. Understanding the extent and malleability of these implicit status biases is particularly timely as race-based income inequality continues to widen, with disproportionately negative consequences for low-status individuals and groups (Neighbors, 1986). Beyond their relevance to the perception of race and status, these findings also invite further study on the psychological mechanisms and time course underlying the evaluation of individuals at the intersections of status with other social categories (e.g., age and gender). The inherent complexity in such intersections is exponentiated when one considers the contributions from both perception and person knowledge (Freeman & Ambady, 2011; Freeman, Johnson, Adams, & Ambady, 2012). The present approach, therefore, represents a promising first step in the examination how multiple social cues can potentially elicit dynamic and interactive evaluative associations at the implicit level.

Authors' Note

Bradley D. Mattan and Jennifer T. Kubota contributed equally to the work.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Note

1. We failed to replicate this effect in our other samples of White participants (see Supplemental Material S1.7). We speculate that the interactions between perceiver race and perceiver status on status-based priming from Experiment 2 may have been driven by our Black participants and/or by the heightened focus on status in Experiment 2 (see discussion of boundary conditions).

Supplemental Material

Supplemental material is available online with this article.

ORCID iD

Jennifer T. Kubota https://orcid.org/0000-0002-0366-8490

References

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*, 586-592.

Allport, G. W. (1954). *The nature of prejudice*. New York, NY: Basic Books.

Alves, H., Koch, A., & Unkelbach, C. (2017). The "common good" phenomenon: Why similarities are positive and differences are negative. *Journal of Experimental Psychology: General*, *146*, 512-528.

Amodio, D. M., & Swencionis, J. K. (2018). Proactive control of implicit bias: A theoretical model and implications for behavior change. *Journal of Personality and Social Psychology*, *115*, 255-275.

Ashburn-Nardo, L., Knowles, M. L., & Monteith, M. J. (2003). Black Americans' implicit racial associations and their implications for intergroup judgment. *Social Cognition*, *21*, 61-87.

Ashburn-Nardo, L., Voils, C. I., & Monteith, M. J. (2001). Implicit associations as the seeds of intergroup bias: How easily do they take root? *Journal of Personality and Social Psychology*, *81*, 789-799.

Bar-Anan, Y., & Nosek, B. A. (2014). A comparative investigation of seven indirect attitude measures. *Behavior Research Methods*, *46*, 668-688.

Bates, D., Maechler, B., Bolker, B., & Walker, S. (2015). Fitting linear mixed-effects models using lme4. *Journal of Statistical Software*, *67*, 1-48.

Blascovich, J., Mendes, W. B., Hunter, S. B., Lickel, B., & Kowai-Bell, N. (2001). Perceiver threat in social interactions with stigmatized others. *Journal of Personality and Social Psychology*, *80*, 253-267.

Blascovich, J., Spencer, S. J., Quinn, D., & Steele, C. (2001). African Americans and high blood pressure: The role of stereotype threat. *Psychological Science*, *12*, 225-229.

Brannon, T. N., & Markus, H. R. (2013). Social class and race: Burdens but also some benefits of chronic low rank. *Psychological Inquiry*, *24*, 97-101.

Chaiken, S., & Trope, Y. (1999). *Dual-process theories in social psychology*. New York, NY: Guilford Press.

Cloutier, J., Ambady, N., Meagher, T., & Gabrieli, J. D. E. (2012). The neural substrates of person perception: Spontaneous use of financial and moral status knowledge. *Neuropsychologia*, *50*, 2371-2376.

Cloutier, J., & Gyurovski, I. (2014). Ventral medial prefrontal cortex and person evaluation: Forming impressions of others varying in financial and moral status. *NeuroImage*, *100*, 535-543.

Cloutier, J., Li, T., & Correll, J. (2014). The impact of childhood experience on amygdala response to perceptually familiar Black and White faces. *Journal of Cognitive Neuroscience*, *26*, 1992-2004.

Correll, J. (2011). Order from chaos? 1/f noise predicts performance on reaction time measures. *Journal of Experimental Social Psychology*, *47*, 830-835.

Correll, J., Wittenbrink, B., Park, B., Judd, C. M., & Goyle, A. (2011). Dangerous enough: Moderating racial bias with contextual threat cues. *Journal of Experimental Social Psychology*, *47*, 184-189.

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*, 1189-1197.

Davidai, S., & Gilovich, T. (2015). Building a more mobile America—One income quintile at a time. *Perspectives on Psychological Science*, *10*, 60-71.

Eagly, A. H., & Steffen, V. J. (1984). Gender stereotypes stem from the distribution of women and men into social roles. *Journal of Personality and Social Psychology*, *46*, 735-754.

Ellemers, N., Wilke, H., & van Knippenberg, A. (1993). Effects of the legitimacy of low group or individual status on individual and collective status-enhancement strategies. *Journal of Personality and Social Psychology*, *64*, 766-778.

Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology*, *69*, 1013-1027.

Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual Review of Psychology*, *54*, 297-327.

Fiske, S. T. (2010). Interpersonal stratification: Status, power, and subordination. In S. T. Fiske, D. T. Gilbert, & G. Lindzey (Eds.), *Handbook of social psychology* (pp. 941-982). Hoboken, NJ: John Wiley.

Fiske, S. T., Dupree, C. H., Nicolas, G., & Swencionis, J. K. (2016). Status, power, and intergroup relations: The personal is the societal. *Current Opinion in Psychology*, *11*, 44-48.

Forscher, P. S., Cox, W. T. L., Graetz, N., & Devine, P. G. (2015). The motivation to express prejudice. *Journal of Personality and Social Psychology*, *109*, 791-812.

Freeman, J. B., & Ambady, N. (2011). A dynamic interactive theory of person construal. *Psychological Review*, *118*, 247-279.

Freeman, J. B., Johnson, K. L., Adams, R. B., & Ambady, N. (2012). The social-sensory interface: Category interactions in person perception. *Frontiers in Integrative Neuroscience*, *6*, 1-13.

Freeman, J. B., Penner, A. M., Saperstein, A., Scheutz, M., & Ambady, N. (2011). Looking the part: Social status cues shape race perception. *PLoS ONE*, *6*(9), e25107.

Garcia, S. M., Weaver, K., & Chen, P. (2018). The status signals paradox. *Social Psychological and Personality Science*. Advance online publication. doi:10.1177/1948550618783712

Gawronski, B., & Bodenhausen, G. V. (2011). The associative-propositional evaluation model: Theory, evidence, and open questions. *Advances in experimental social psychology*, *44*, 59-127.

Gawronski, B., Cunningham, W. A., LeBel, E. P., & Deutsch, R. (2010). Attentional influences on affective priming: Does categorisation influence spontaneous evaluations of multiply categorisable objects? *Cognition and Emotion*, *24*, 1008-1025.

Greenwald, A. G., Banaji, M. R., & Nosek, B. A. (2015). Statistically small effects of the Implicit Association Test can have societally large effects. *Journal of Personality and Social Psychology*, *108*, 553-561.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: The implicit association test. *Journal of Personality and Social Psychology*, *74*, 1464-1480.

Gyurovski, I., Kubota, J. T., Cardenas-Iniguez, C., & Cloutier, J. (2017). Social status level and dimension interactively influence person evaluations indexed by P300s. *Social Neuroscience*. doi:10.1080/17470919.2017.1326400

Hugenberg, K., Young, S. G., Bernstein, M. J., & Sacco, D. F. (2010). The categorization-individuation model: An integrative account of the other-race recognition deficit. *Psychological Review*, *117*, 1168-1187.

Ito, T. A., & Urland, G. R. (2003). Race and gender on the brain: Electrocortical measures of attention to the race and gender of multiply categorizable individuals. *Journal of Personality and Social Psychology*, *85*, 616-626.

Ivanic, A. S., Overbeck, J. R., & Nunes, J. C. (2011). Status, race, and money: The impact of racial hierarchy on willingness to pay. *Psychological Science*, *22*, 1557-1566.

Jost, J. T., Pelham, B. W., & Carvallo, M. R. (2002). Non-conscious forms of system justification: Implicit and behavioral preferences for higher status groups. *Journal of Experimental Social Psychology*, *38*, 586-602.

Jussim, L., Coleman, L. M., & Lerch, L. (1987). The nature of stereotypes: A comparison and integration of three theories. *Journal of Personality and Social Psychology*, *52*, 536-546.

Kraus, M. W., Park, J. W., & Tan, J. J. X. (2017). Signs of social class: The experience of economic inequality in everyday life. *Perspectives on Psychological Science*, *12*, 422-435.

Krosch, A. R., & Amodio, D. M. (2014). Economic scarcity alters the perception of race. *Proceedings of the National Academy of Sciences of the United States of America*, *111*, 9079-9084.

Kubota, J. T., Banaji, M. R., & Phelps, E. A. (2012). The neuroscience of race. *Nature Neuroscience*, *15*, 940-948.

Kubota, J. T., Peiso, J., Marcum, K., & Cloutier, J. (2017). Intergroup contact throughout the lifespan modulates implicit racial biases across perceivers' racial group. *PLoS One*, 12(7), e0180440.

Kumaran, D., Melo, H. L., & Duzel, E. (2012). The emergence and representation of knowledge about social and nonsocial hierarchies. *Neuron*, *76*, 653-666.

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*, 230-243.

Kuznetsova, A., Brockhoff, P. B., & Christensen, R. H. B. (2016). lmerTest: Tests in linear mixed effects models. Retrieved from https://cran.r-project.org/package=lmerTest

Lai, C. K., Skinner, A. L., Cooley, E., Murrar, S., Brauer, M., Devos, T., . . . Nosek, B. A. (2016). Reducing implicit racial preferences: II. Intervention effectiveness across time. *Journal of Experimental Psychology: General*, *145*, 1001-1016.

Lei, R. F., & Bodenhausen, G. V. (2017). Racial assumptions color the mental representation of social class. *Frontiers in Psychology*, *8*, 519.

Li, T., Cardenas-Iniguez, C., Correll, J., & Cloutier, J. (2016). The impact of motivation on race-based impression formation. *NeuroImage*, *124*(A), 1-7.

Livingston, R. W. (2002). The role of perceived negativity in the moderation of African Americans' implicit and explicit racial

attitudes. *Journal of Experimental Social Psychology*, *38*, 405-413.

Livingston, R. W., & Pearce, N. A. (2009). The teddy-bear effect: Does having a baby face benefit black chief executive officers? *Psychological Science*, *20*, 1229-1236.

Lukaszewski, A. W., Simmons, Z. L., Anderson, C., & Roney, J. R. (2016). The role of physical formidability in human social status allocation. *Journal of Personality and Social Psychology*, *110*, 385-406.

Ly, M., Haynes, M. R., Barter, J. W., Weinberger, D. R., & Zink, C. F. (2011). Subjective socioeconomic status predicts human ventral striatal responses to social status information. *Current Biology*, *21*, 794-797.

Mattan, B. D., Kubota, J. T., & Cloutier, J. (2017). How social status shapes person perception and evaluation: A social neuroscience perspective. *Perspectives on Psychological Science*, *12*, 468-507.

Mattan, B. D., Kubota, J. T., Dang, T. P., & Cloutier, J. (2018). External motivation to avoid prejudice alters neural responses to targets varying in race and status. *Social Cognitive and Affective Neuroscience*, *13*, 22-31.

Mattan, B. D., Kubota, J. T., Li, T., Dang, T. P., & Cloutier, J. (2018). Motivation modulates brain networks in response to faces varying in race and status: A multivariate approach. *ENeuro*, *5*. doi: 10.523/ENEURO.0039-18.2018

Mattan, B. D., Wei, K. Y., Cloutier, J., & Kubota, J. T. (2018). The social neuroscience of race-based and status-based prejudice. *Current Opinion in Psychology*, *24*, 27-34.

Moore-Berg, S. L., & Karpinski, A. (2019). An intersectional approach to understanding how race and social class affect intergroup processes. *Social and Personality Psychology Compass*, *13*, e12426.

Moore-Berg, S. L., Karpinski, A., & Plant, E. A. (2017). Quick to the draw: How suspect race and socioeconomic status influences shooting decisions. *Journal of Applied Social Psychology*, *47*, 482-491.

Murphy, S. T., & Zajonc, R. B. (1993). Affect, cognition, and awareness: Affective priming with optimal and suboptimal stimulus exposures. *Journal of Personality and Social Psychology*, *64*, 723-739.

Neighbors, H. W. (1986). Socioeconomic status and psychologic distress in adult Blacks. *American Journal of Epidemiology*, *124*, 779-793.

Nosek, B. A., Banaji, M. R., & Greenwald, A. G. (2002). Harvesting implicit group attitudes and beliefs from a demonstration web site. *Group Dynamics: Theory, Research, and Practice*, *6*, 101-115.

Penner, A. M., & Saperstein, A. (2008). How social status shapes race. *Proceedings of the National Academy of Sciences of the United States of America*, *105*, 19628-19630.

Petty, R. E., Briñol, P., Tormala, Z. L., & Jarvis, W. B. G. (2006). Implicit ambivalence from attitude change: An exploration of the PAST model. *Journal of Personality and Social Psychology*, *90*, 21-41.

R Core Team. (2018). R: A language and environment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing. *Available* from https://www.r-project.org/

Re, D. E., DeBruine, L. M., Jones, B. C., & Perrett, D. I. (2013). Facial cues to perceived height influence leadership choices in simulated war and peace contexts. *Evolutionary Psychology*, *11*, 89-103.

Schmader, T., Johns, M., & Forbes, C. (2008). An integrated process model of stereotype threat effects on performance. *Psychological Review*, *115*, 336-356.

Senholzi, K. B., & Kubota, J. T. (2016). The neural mechanisms of prejudice intervention. In J. R. Absher & J. Cloutier (Eds.), *Neuroimaging personality, social cognition, and character* (pp. 337-354). Amsterdam, Netherlands: Elsevier.

Shutts, K., Brey, E. L., Dornbusch, L. A., Slywotzky, N., & Olson, K. R. (2016). Children use wealth cues to evaluate others. *PLoS ONE*, *11*(3), e0149360.

Smedley, J., & Bayton, J. (1978). Evaluative race–class stereotypes by race and perceived class of subjects. *Journal of Personality and Social Psychology*, *36*, 530-535.

Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology*, *69*, 797-811.

Swencionis, J. K., Dupree, C. H., & Fiske, S. T. (2017). Warmth-competence tradeoffs in impression management across race and social-class divides. *Journal of Social Issues*, *73*, 175-191.

Tropp, L. R., & Pettigrew, T. F. (2005). Relationships between intergroup contact and prejudice among minority and majority status groups. *Psychological Science*, *16*, 951-957.

Unkelbach, C., Fiedler, K., Bayer, M., Stegmüller, M., & Danner, D. (2008). Why positive information is processed faster: The density hypothesis. *Journal of Personality and Social Psychology*, *95*, 36-49.

Van Bavel, J. J., & Cunningham, W. A. (2009). Self-categorization with a novel mixed-race group moderates automatic social and racial biases. *Personality and Social Psychology Bulletin*, *35*, 321-335.

Varnum, M. E. W. (2013). What are lay theories of social class? *PLoS ONE*, *8*(7), e70589.

Wang, J., Leu, J., & Shoda, Y. (2011). When the seemingly innocuous "stings": Racial microaggressions and their emotional consequences. *Personality and Social Psychology Bulletin*, *37*, 1666-1678.

Wilkins, C. L., & Kaiser, C. R. (2014). Racial progress as threat to the status hierarchy: Implications for perceptions of anti-white bias. *Psychological Science*, *25*, 439-446.