

When an “Educated” Black Man Becomes Lighter in the Mind’s Eye: Evidence for a Skin Tone Memory Bias

SAGE Open
 January-March 2014: 1–9
 © The Author(s) 2014
 DOI: 10.1177/2158244013516770
 sgo.sagepub.com


Avi Ben-Zeev¹, Tara C. Dennehy², Robin I. Goodrich³,
 Branden S. Kolarik³, and Mark W. Geisler¹

Abstract

We offer novel evidence that a Black man appears lighter in the mind’s eye following a counter-stereotypic prime, a phenomenon we refer to as *skin tone memory bias*. In Experiment 1, participants were primed subliminally with the counter-stereotypic word *educated* or with the stereotypic word *ignorant*, followed by the target stimulus of a Black man’s face. A recognition memory task for the target’s face and six lures (skin tone variations of $\pm 25\%$, $\pm 37\%$, and $\pm 50\%$) revealed that participants primed with “educated” exhibited more memory errors with respect to lighter lures—misidentifying even the lightest lure as the target more often than counterparts primed with “ignorant.” This skin tone memory bias was replicated in Experiment 2. We situate these findings in theorizing on the mind’s striving for cognitive consistency. Black individuals who defy social stereotypes might not challenge social norms sufficiently but rather may be remembered as lighter, perpetuating status quo beliefs.

Keywords

skin tone bias, social categorization, cognitive consistency, Afrocentric features

Phenotypic features associated with the social categorization of racial groups have been strongly linked to stereotyping, prejudice, and discrimination. Notably, individuals perceived to possess higher levels of Afrocentric features (e.g., dark skin, full lips, wide nose, coarse hair) have been subject to increased negative stereotyping (e.g., alleging heightened levels of aggression; see Blair, Chapleau, & Judd, 2005), leading to real-world repercussions, such as receiving longer prison sentences for crimes equated for severity and priors (Blair, Judd, & Chapleau, 2004; Viglione, Hannon, & DeFina, 2011).

Skin tone has emerged as the most allegedly diagnostic feature in racial judgments (and is thus perhaps the most infamous phenotypic feature; for example, Secord, Bevan, & Katz, 1956; also see Stepanova & Strube, 2009), as exemplified by a *skin tone bias* (Maddox, 2004; Maddox & Gray, 2002)—the tendency to judge a target’s membership in racial categories/subcategories and to form behavioral intentions toward the target (see Cesario, Plaks, Hagiwara, Navarrete, & Higgins, 2010) based on his or her skin tone lightness or darkness (also see Blair, Judd, Sadler, & Jenkins, 2002; Maddox & Gray, 2002; Marks, 1943; Sciara, 1983). One of the evocative characteristics of a skin tone bias is that it is pervasive across and within diverse ethnic and racial groups, including Whites, Latinos, and Blacks (see Maddox, 2004).

The link between skin tone and stereotyping has been demonstrated in a mostly unidirectional fashion, namely

from the perception of a target’s complexion to observers’ negative stereotyping of the target (but see Eberhardt, Goff, Purdie, & Davies, 2004, for bidirectional links between Black stereotypic crime-related concepts and the activation of the racial category Black). In the current article, we focus on the link between the presence of stereotype-related information for a target and observers’ recognition memory for the target’s skin tone. We ask whether encountering a Black person following a counter-stereotypic (expectancy-violating) versus a stereotypic (expectancy-congruent) prime would lead to misremembering this person’s skin tone. The idea that counter-stereotypic and stereotypic expectancies could affect perception and memory for skin tone, in a top-down fashion (for other racial markers in an ambiguous face paradigm, see MacLin & Malpass, 2001, 2003) is predicated on a seminal paper by Levin and Banaji (2006) who showed that Black/White ambiguous faces categorized as White (vs. Black) were perceived as being lighter in reflectance, lending support to the idea that social categorization affects

¹San Francisco State University, San Francisco, CA, USA

²University of Massachusetts, Amherst, MA, USA

³University of California, Davis, CA, USA

Corresponding Author:

Avi Ben-Zeev, Department of Psychology, San Francisco State University, 1600 Holloway Avenue, EP 301, San Francisco, CA 94132-4168, USA.
 Email: abenzeev@sfsu.edu

skin tone perception in the direction of a racial stereotype. Levin and Banaji invited “more research exploring how this most basic of percepts is modulated by a broad range of knowledge” (p. 511). We chose to follow Levin and Banaji’s exhortation by exploring the possible effects of a stereotype expectancy violation on recognition memory for skin tone, using a Black male target face (an unambiguous-race face). The rationale for using a paradigm that is centered on an unambiguous-race face, instead of the oft-used ambiguous-race face paradigm, is that for the former (but not for the latter) there exist clear stereotypic and counter-stereotypic expectancies.

Our experimental paradigm employed forward and backward masking procedures following Pessiglione et al. (2008). Participants were primed subliminally with a Black counter-stereotypic word (educated; expectancy-violating) or with a Black stereotypic word (ignorant; expectancy-congruent), which was followed immediately by a photograph of a Black man’s face. Participants were thus unaware of the prime before completing a speeded recognition memory task for the target photo and six lures (25%, 37%, and 50% lighter and darker in skin tone).

We contend that encountering the counter-stereotypic word educated (for education as connoting White vs. Black, see Fiske, 2005; Gaertner & McLaughlin, 1983; Wittenbrink, Judd, & Park, 1997) prior to viewing a Black person’s face would likely result in a “Whitening” of the target’s face in memory. This prediction can be situated in recent theorizing on stereotype disconfirmation and cognitive consistency. In particular, Sherman, Allen, and Sacchi (2012) argued that a counter-stereotypic instance tends to create an incompatible cognition, which is then oftentimes resolved by assimilating individuating information to the stereotype. Within Sherman et al.’s (2012) framework, encountering an educated Black male could lead to reclassification of this individual as an atypical exemplar or a subtype of his racial category, which preserves cultural beliefs about racial category structure.

From a cognitive consistency viewpoint (also see Gawronski, Peters, Brochu, & Strack, 2008), encountering the word ignorant prior to viewing the Black target’s face should not lead to memory distortions because a stereotypic prime would be congruent with societal expectations and therefore would not create an incompatible cognition that would require dissonance reduction (per Sherman et al., 2012). There is some evidence, however, that Black stereotypic primes cause people to falsely recognize more prototypical Black exemplars. Specifically, Eberhardt et al. (2004) found that (a) Black stereotypic crime-related primes elicited faster responses and more sustained attention to Black versus White faces in a dot-probe task (Studies 2 and 3) and (b) after being presented with crime-related primes, police officers were more likely to falsely identify a Black lure, which was more stereotypical than the target (Study 4). Eberhardt et al. argued that a Black stereotypic prime, such as crime, might either activate a prototypical Black male or perhaps several

Black male exemplars in memory that “seem most physically representative of the Black racial category (i.e., those who look highly stereotypical)” (p. 877; also see Osborne & Davies, 2013, for evidence that Black stereotypic crimes cause an increased misattribution of Afrocentric features to perpetrators). Despite the fact that Eberhardt et al. did not examine the effects of stereotype-driven expectancies on memory distortions for a given Black male face—they examined instead whether a Black target face would be confused with a different and more stereotypical Black male lure in a police lineup—their findings raise the possibility that encountering a stereotypic word (e.g., ignorant) prior to viewing a Black target face would result in a more stereotypic representation of that face’s features in memory, including a darker skin tone. Such a finding would beckon revising the current theorizing, which is based on a dissonance-reduction cognitive consistency framework, to include a prototype activation mechanism for stereotypic primes.

Stereotypes provide important cognitive functions such as organization and prediction (Hamilton & Sherman, 1994), ego protection (e.g., Fein & Spencer, 1997), and preparation for action in the social world (see Morsella & Ben-Zeev, 2012). Given that a skin tone memory bias would function in the service of stereotype maintenance, even partial evidence for its existence—a Black male becoming lighter or darker in the mind’s eye, following a counter-stereotypic or a stereotypic prime, respectively—would have grave implications. In other words, it is possible that a stereotype could become a prepotent response for organizing incoming visual information, resulting in a heightened “perceptual readiness” (Bruner, 1957) for distorting a person’s skin tone in the direction of that stereotype (a “visual tuning device” per Eberhardt et al., 2004). A skin tone memory bias might persevere even in the face of counter-stereotypic exemplars that might have otherwise served to defy stereotype-based expectancies, resulting in a “catch-22” between an allegedly diagnostic racial feature and social beliefs.

Experiment 1

Experiment 1 was designed to examine whether participants would evince a skin tone memory bias as a function of counter-stereotypic versus stereotypic subliminal primes, using forward and backward masking procedures based on Pessiglione et al. (2008). The use of subliminal priming affords exploring the effects of counter-stereotypic/stereotypic primes while overcoming social desirability factors that would likely be elicited with an explicit presentation of the same primes. A prime appeared for 33 ms, flanked temporally by pre- and post-masks for 67 ms each. The presentation of the prime was designed to occur below the threshold of conscious awareness and the sequence appeared to be a static supraliminal image of the pattern mask (see Figure 1b). The subliminal primes were presented in black font using 40-point Helvetica and displayed centrally on a 50.8 cm

Apple iMac monitor with a viewing distance of approximately 48 cm. The priming procedures were pilot-tested with respect to stimulus durations ($N=17$) to ensure that the prime was below the threshold of conscious awareness (no pilot participants reported seeing the prime at 33 ms). Primes (educated, ignorant, and athletic) were selected from the literature (Wittenbrink et al., 1997) and were pilot-tested ($N=36$) with regard to stereotypicality. We purposely selected the words educated and ignorant given prevalent stereotypes alleging intellectual inferiority of Blacks versus Whites (Steele, 1997), but included the positively valenced word athletic to control for the possibility of an inadvertent valence effect (rather than the predicted counter-stereotypic vs. stereotypic effect) between the semantically opposite educated and ignorant primes. The prime was followed immediately by a presentation of the target photograph (see Figure 1a). On a subsequent recognition memory task, participants were presented with the Black male target¹ and six variations of the target (lighter and darker in skin tone), which served as lures.

In accordance with a cognitive consistency framework, the educated (counter-stereotypic or expectancy-violating) prime, as compared with the ignorant and athletic (stereotypic or expectancy-congruent) primes, was expected to lead to heightened memory errors (i.e., the proportion of incorrect identifications of lures as the target) for lighter lures only, suggesting that the target's skin tone would be remembered as relatively lighter. The expected effects for the darker lures were less clear. A dissonance-reduction mechanism per cognitive consistency theorizing (Sherman et al., 2012) would suggest that there would be no effect of prime on the darker lures. However, Eberhardt et al.'s (2004) Study 4 findings offer the possibility of heightened memory errors for darker lures as well, such that the target's skin tone would be remembered as relatively darker following a stereotypic prime; perhaps resulting from the activation of a Black male prototype.

Method

Participants. Participants were 125 undergraduate students at San Francisco State University² who participated in exchange for partial course credit. All participants had normal or corrected-to-normal vision.

Materials. The stimuli consisted of seven color photographs: A target Black male and six variations of the target ($\pm 25\%$, $\pm 37\%$, and $\pm 50\%$), which served as lures.³ All photographs had 206×255 pixel off-white (128-128-128 rgb) backgrounds.

Procedure. Participants were recruited to participate in a "study on memory for faces" and randomly assigned to between-subjects subliminal prime conditions: counter-stereotypic (educated) and two stereotypic conditions (ignorant and athletic). To ensure that participants attended to the

subliminal prime, participants were instructed to focus their attention on the center of the computer screen. Following the presentation of the subliminal prime, participants were given 30 s to study the target photo for later recognition. Participants subsequently completed 16 trials of a working memory distractor task (a modified n -back task), in which they viewed random digits (from 0 to 9) presented sequentially and were prompted at random intervals to input the last three digits. Participants then completed the recognition task. Stimulus presentation was controlled using PsyScope Experiment Software (Cohen, MacWhinney, Flatt, & Provost, 1993).

The recognition task consisted of 28 trials in which the target and lures were presented 4 times each in random order. Participants were asked to indicate Yes/No to the question "Is this face IDENTICAL to the one you studied originally?" For each experimental trial, participants viewed a central fixation point (+) for 500 ms, followed by the stimulus (a target or lure) for 255 ms, which was succeeded by a question mark that remained on the screen until participants indicated a response (by pressing either the "f" or "j" key; counterbalanced across participants). The fixation point was then replaced by an equal sign (=). After 1,000 ms, the next experimental trial initiated (see Figure 1c). Finally, participants completed a funneled debriefing (Bargh & Chartrand, 2000). None of the participants reported seeing the prime.

Results and Discussion

Accuracy to the original target ($M = .734$, $SE = .024$) indicated that participants were able to consistently recognize the target, on average three out of four target presentations.

Effects of prime type on memory errors to the lightest and darkest lures. A trend analysis of the lighter lures showed that as the images increased in dissimilarity ($+25\%$, $+37\%$, $+50\%$) to the target (0%), participants' accuracy increased linearly across prime condition, $F(1, 122) = 109.786$, $p < .001$, $\eta_p^2 = .474$. A similar pattern was uncovered for the darker lures; participants' accuracy increased linearly as the images became darker, $F(1, 122) = 76.274$, $p < .001$, $\eta_p^2 = .385$. Examining whether the primes would influence memory errors to the extreme light lure ($+50\%$) and extreme dark lure (-50%) would thus constitute a conservative test for the existence of a skin tone memory bias.

A mixed ANOVA with all three primes (ignorant, educated, athletic) revealed a marginal interaction between lure and prime, $F(2, 122) = 2.959$, $p = .056$, $\eta_p^2 = .046$. As predicted, pairwise comparisons of the prime conditions revealed that ignorant and athletic did not differ, $p = .358$, indicating that the valence of the stereotypic prime was not a factor. We therefore tested the semantically opposite ignorant (stereotypic) and educated (counter-stereotypic) primes: A mixed ANOVA on the lightest versus darkest lure by prime type (ignorant vs. educated) revealed a significant interaction between lure and prime, $F(1, 86) = 5.175$, $p = .025$, $\eta_p^2 = .057$.

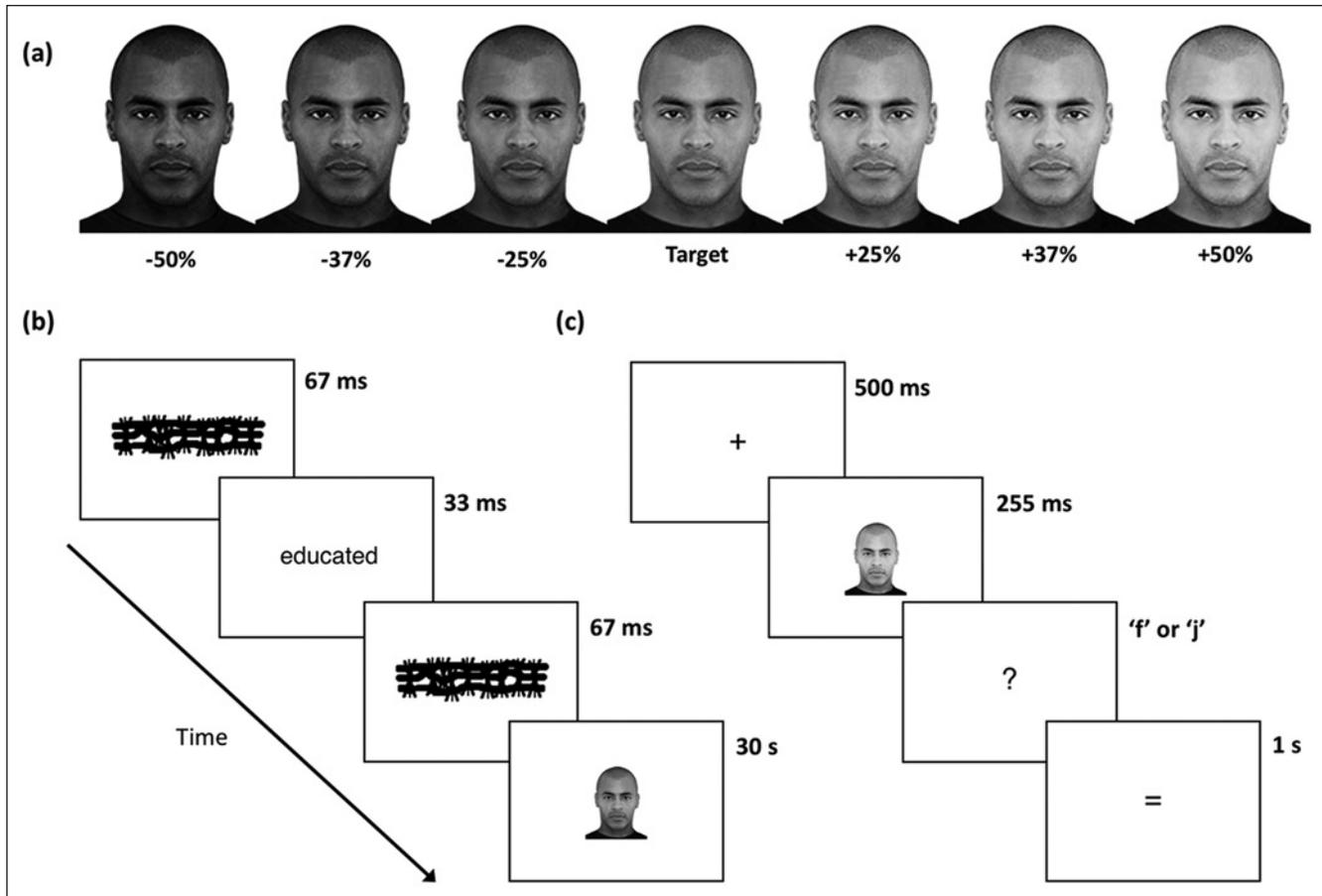


Figure 1. (a) Black male target and lures; (b) Sequence for the forward- and backward-masked prime; (c) Example recognition task trial. Note. Pre- and post-mask images courtesy of Ezequiel Morsella, San Francisco State University, <http://bss.sfsu.edu/emorsella/>.

To further investigate the effect of prime on memory errors to the lightest versus darkest lure, we tested the simple effects of prime type for each lure. As predicted from a cognitive consistency perspective, (a) an ANOVA on memory errors to the darkest lure (-50%) did not reveal an effect of prime, $F(2, 122) = 0.791, p = .456, \eta_p^2 = .013$; but (b) for the lightest lure (+50%), participants in the counter-stereotypic/educated condition evinced increased memory errors ($M = .388, SE = .048$) as compared with counterparts in both stereotypic conditions (ignorant: $M = .212, SE = .042$, and athletic: $M = .203, SE = .049$), $F(2, 122) = 5.305, p = .006, \eta_p^2 = .080$ (see Figure 2a). A planned contrast for the lightest lure revealed that participants primed with educated exhibited significantly more memory errors ($M = .388, SE = .048$) than participants in the stereotypic conditions, on average ($M = .207, SE = .032$), $t(122) = 3.257, p = .001$. To examine whether this finding held for the lightest but not the darkest lure, we conducted similar analyses on the darkest lure, which, were not significant (all p s > .10).

Memory errors for lighter versus darker lures. Composite error scores for the darker (-50%, -37%, -25%) and lighter (+25%, +37%, +50%) lures, respectively, were created to

test whether the findings for the extreme light and dark lure held for all the darker and lighter lures. An ANOVA on memory errors for darker lures (-50%, -37%, -25%) did not reveal an effect of prime, $F(2, 122) = 0.136, p = .873, \eta_p^2 = .002$. We therefore focused on memory errors for lighter lures (+25%, +37%, +50%) only, consistent with previous analyses which were conducted on the extreme light and dark lures. For the lighter lures, participants in the counter-stereotypic/educated condition evinced increased memory errors ($M = .522, SE = .039$) as compared with counterparts in both stereotypic conditions (ignorant: $M = .419, SE = .039$, and athletic: $M = .360, SE = .047$), $F(2, 122) = 4.049, p = .02, \eta_p^2 = .062$ (see Figure 2b).

Following the analyses for the lightest and darkest lures, we compared memory errors for participants in the educated condition against average memory errors for participants in both stereotypic conditions (ignorant and athletic did not differ, $t(74) = .968, p = .336$). This planned contrast revealed that participants in the educated condition exhibited significantly more memory errors ($M = .522, SE = .039$) in response to the lighter lures as compared with participants in the stereotypic conditions ($M = .390, SE = .030$), $t(122) = 2.698, p = .008$.

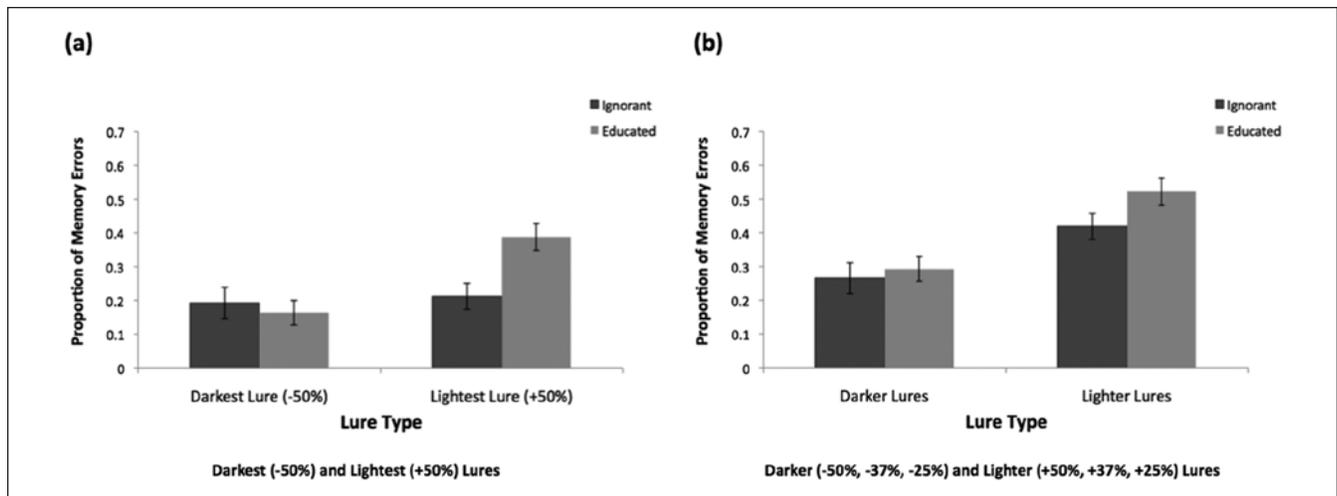


Figure 2. (a) Memory errors to the lightest (+50%) versus the darkest (−50%) lure as a function of counter-stereotypic (educated) versus stereotypic (ignorant) prime; (b) Memory errors to lighter (+25%, +37%, +50%) versus darker (−50%, −37%, −25%) lures as a function of counter-stereotypic (educated) versus stereotypic (ignorant) prime.

Taken together, data from Experiment 1 yielded evidence supporting the existence of a skin tone memory bias per a cognitive consistency but not a prototype activation framework, such that the same Black man was remembered as lighter in complexion, if contextualized as educated (vs. as ignorant or as athletic). We examine this phenomenon further in Experiment 2.

Experiment 2

In Experiment 2, we added two additional stimuli as distractors (i.e., fox and greeble targets and their respective lures) and framed this study as one that was intended to measure “color perception and visual acuity” to (a) explore whether the skin tone memory bias found in Experiment 1 would replicate and (b) attempt to rule out the possibility that the findings might have been due to the word educated itself, which perhaps has a unique association with lightness that is not specific to race-based social categorization (e.g., educated as connoting light, as illustrated by the word enlightened). We decided a priori to include only the semantically opposite primes of educated versus ignorant, which have been shown to be associated with education-related stereotypes about Black individuals (e.g., Fiske, 2005; Gaertner & McLaughlin, 1983; Wittenbrink et al., 1997). The athletic prime, which was used in Experiment 1 to rule out a valence effect, was not included because it was shown to not differ from the ignorant prime. If the skin tone memory bias found in Experiment 1 would replicate in human but not in other categories, we would expect that the Black male but not the non-human targets would be subject to heightened memory errors following the counter-stereotypic prime (educated) as compared with its semantically opposite stereotypic prime (ignorant).

Method

Participants. Thirty-five San Francisco State University undergraduate students participated in exchange for partial course credit. All participants had normal or corrected-to-normal vision.

Materials. All materials were the same as those used in Experiment 1 with the exception of two additional targets (fox and greeble) and their respective lures (see Figure 3a). We selected a red fox (*Vulpes vulpes*) as a biological kind stimulus (e.g., Medin & Ortony, 1989) and a greeble as a computer-generated stimulus documented to activate face-processing regions similarly to human faces (e.g., Gauthier, Tarr, Anderson, Skudlarski, & Gore, 1999). The original photograph of the Black male, fox, and greeble served as targets, with six variations per target ($\pm 25%$, $\pm 37%$, and $\pm 50%$) as lures. Thus, each participant viewed a total of 21 different images.

Procedure. All procedures were identical to those used in Experiment 1 with the following exceptions. Participants in Experiment 2 were randomly assigned to one of two between-subjects prime conditions: counter-stereotypic (educated) or stereotypic (ignorant). The study time for the original images following the prime was increased from 30 s to 60 s because participants were being asked to simultaneously study three target stimuli instead of one. The recognition task consisted of 84 trials in which each of the 21 pictures was randomly presented four times.

Results and Discussion

Accuracy to the Black male target was similar to that of Experiment 1 ($M = .77$, $SE = .054$) and not significantly dif-

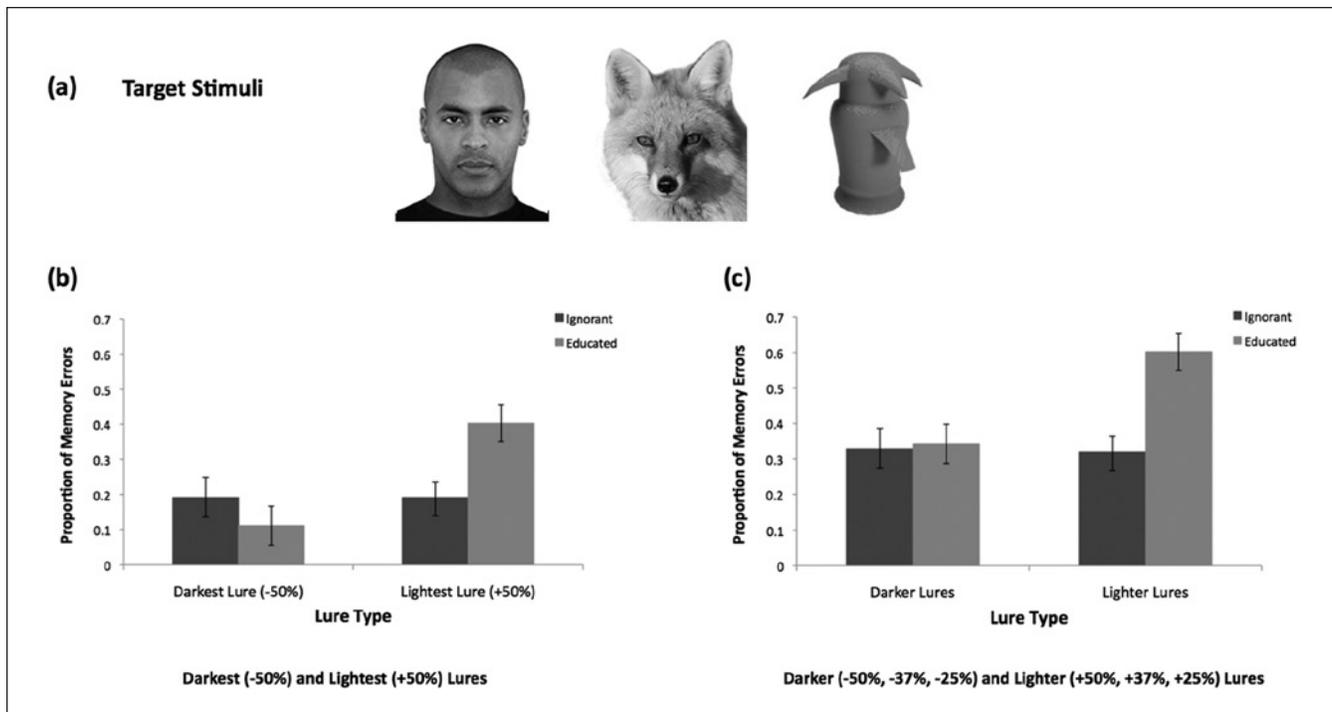


Figure 3. (a) Black male, fox, and greeble targets; (b) Memory errors to the lightest (+50%) versus the darkest (-50%) lure as a function of counter-stereotypic (educated) versus stereotypic (ignorant) prime; (c) Memory errors to lighter (+25%, +37%, +50%) versus darker (-50%, -37%, -25%) lures as a function of counter-stereotypic (educated) versus stereotypic (ignorant) prime.

Note. Greeble stimulus image courtesy of Michael J. Tarr, Center for the Neural Basis of Cognition and Department of Psychology, Carnegie Mellon University, <http://www.tarrlab.org/>.

ferent from accuracy to the fox ($M = .71$, $SE = .052$) or greeble ($M = .69$, $SE = .045$), $F(2, 68) = 1.653$, $p = .20$.

Effects of prime type on memory errors to the lightest and darkest lures. Similarly to Experiment 1, trend analyses showed that as the images increased in dissimilarity ($\pm 25\%$, $\pm 37\%$, $\pm 50\%$) to the target (0%), participants' accuracy increased linearly across prime condition for both the lighter, $F(1, 33) = 20.577$, $p < .001$, $\eta_p^2 = .384$, as well as the darker lures, $F(1, 33) = 49.479$, $p < .001$, $\eta_p^2 = .60$. Following the same rationale as in Experiment 1, we examined whether the primes would influence memory errors to the extreme light (+50%) and extreme dark (-50%) lures. A mixed ANOVA on the lightest versus darkest lure by prime type (ignorant vs. educated) revealed a significant interaction between lure and prime, $F(1, 33) = 8.825$, $p = .006$, $\eta_p^2 = .211$.

As in Experiment 1, we examined whether the lightest Black male lure (+50%) would by itself still elicit differential memory errors as a function of prime to conservatively test for a skin tone memory bias. A one-way ANOVA on memory errors as a function of prime condition was significant, $F(1, 33) = 5.536$, $p = .025$, $\eta_p^2 = .144$, such that participants primed with educated exhibited significantly more memory errors ($M = .403$, $SE = .063$) to the lightest lure than participants primed with ignorant ($M = .191$, $SE = .064$). Analyses

on the darkest lure were not significant (all $ps > .10$; see Figure 3b).

Memory errors for lighter versus darker Black male lures. Similarly to Experiment 1 and as predicted from a cognitive consistency perspective, an ANOVA on memory errors for darker Black male lures (-50%, -37%, -25%) did not reveal an effect of prime, $F(1, 33) = 0.032$, $p = .860$, $\eta_p^2 = .001$. Thus, we focused on memory errors for lighter lures (+25%, +37%, +50%) only. For these lures, participants in the counter-stereotypic educated condition evinced increased memory errors ($M = .602$, $SE = .052$) as compared with counterparts in the stereotypic ignorant condition ($M = .319$, $SE = .045$), $F(1, 33) = 16.867$, $p < .001$, $\eta_p^2 = .338$ (see Figure 3c).

Educated does not equal "lightness": The case of foxes and greebles. We conducted analogous ANOVAs on memory errors for the lighter fox and greeble stimuli and found no effects of prime for either the lighter fox images, $F(1, 33) = 0.928$, $p = .324$, $\eta_p^2 = .027$, or for the lighter greeble images, $F(1, 33) < 0.001$, $p = .990$, $\eta_p^2 < .001$. As expected, analyses on the darker images were also non-significant. Thus, the skin tone memory bias was replicated for the Black male target only, likely due to what the word *educated* connotes, culturally, in relation to race.

Experiment 2 data thus corroborate the findings from Experiment 1 and provide further support for the hypothesis that a skin tone memory bias exists and is specific to racial categorization, such that—in line with cognitive consistency theorizing—a counter-stereotypical Black male is remembered as lighter in complexion.

General Discussion

Taken together, the present data provide evidence that a counter-stereotypic Black male tends to be remembered as “Whiter” in accordance with cultural beliefs and thus offer support for the existence of a skin tone memory bias. We use Whiter versus White, because a “one-drop” rule has been documented to guide automatic judgments of racial category membership, such that a Black–White biracial individual tends to be perceived as Black (Peery & Bodenhausen, 2008; also see Halberstadt, Sherman, & Sherman, 2011, for a categorization-based account of hypodescent). These findings—a counter-stereotypic (expectancy-violating) but not a stereotypic (expectancy-congruent) effect—are consistent with the mind’s striving for cognitive consistency or the tendency to attempt to resolve an incompatible cognition in the direction of a stereotype (Sherman et al., 2012). Whereas encountering a Black individual after being primed with the word educated might pose a challenge to existing beliefs, encountering a Black individual after being primed with the word ignorant would likely not require resolution or a misremembering of skin tone to align with these beliefs; especially in light of work on hypodescent (Halberstadt et al., 2011; Peery & Bodenhausen, 2008).

A caveat is in order, however. It is possible that our current stimuli and paradigm were not sensitive enough to uncover a stereotypic-driven expectancy-congruent skin tone memory bias. Education-related primes might have differential effects on memory distortions of Black targets than do crime-related primes, such as those used by Eberhardt et al. (2004). A Black target primed as a criminal (vs. as being uneducated) might be perceived as more threatening, perhaps causing an activation of a Black male prototype (see Eberhardt et al., 2004, for how some concepts might be more central to the activation of a group prototype), and any ensuing effects on memory for skin tone. In addition, the present experiments required participants to study a single Black male face while being informed that they would later be given a recognition test for this target face, whereas Eberhardt et al. (Study 4) used five Black faces (the target and four lures: two that were less stereotypic than the target and two that were more stereotypic than the target) and used an incidental memory paradigm. Eberhardt et al. argued that priming police officers with crime “led them to envision a Black face that was even more strongly representative of the Black racial category than the Black face to which they were actually exposed” (p. 888). It is thus possible that a stereotypic-driven skin tone memory bias could occur under certain

conditions, such as in the process of selecting a target face from a set of different Black males who vary systematically with regard to stereotypicality (as in Eberhardt et al.’s lineup). We thus advocate for further research on the nuanced nature of a skin tone memory bias and its underlying mechanisms, which should use a variety of primes, stimuli, and paradigms, as well as measure people’s experience of dissonance directly.

Uncovering a skin tone memory bias, in which an educated Black man becomes lighter in the mind’s eye, is worthwhile in its own right given the documented detrimental effects of a skin tone bias held by White perceivers as well as by people of color (Maddox, 2004). Of equal import, a skin tone memory bias fits within a broader tradition of what is now considered to be classical work on the effects of social context on perception and memory (Bruner, 1957; Bruner & Goodman, 1947; Sherif, 1935; Tajfel & Wilkes, 1963) and its recent re-incarnation (a revitalized “new look” perspective, see Corneille, Hugenberg, & Potter, 2007, p. 348), a body of work on how social categorization-based predictions bias perception and memory of socially diagnostic stimuli, including physical features, objects, and expressions of affect (also see Becker, Neel, & Anderson, 2010; Corneille, Huart, Becquart, & Brédart, 2004; Eberhardt et al., 2004; Hugenberg & Bodenhausen, 2004; Levin & Banaji, 2006; MacLin & Malpass, 2003).

In sum, a skin tone memory bias reinforces the bidirectional interplay between social contextual cues and memory for an allegedly diagnostic racial feature, which conspires to affect judgments about and actions toward stigmatized individuals—especially intellectually successful Black individuals who are susceptible to being perceived as “an exception to their race” (e.g., Fowler, 2001)—in the direction of preserving existing beliefs.

Acknowledgments

The authors would like to thank Jim Seishas, Kelley Ramsey, Sierra Niblett, Eric Splan, Curtis Shelton, Jason Samaha, and Ezequiel Morsella for their invaluable assistance and insights.

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 and/or authorship of this article.

Notes

1. The target was pilot-tested ($n = 76$) with respect to perceived race.
2. Maddox and colleagues (e.g., Maddox & Gray, 2002) have provided evidence that skin tone bias is prevalent across different ethnic and racial populations. Our sample was multi-ethnic and multi-racial: 36.3% White, 21.7% Asian/Pacific Islander,

20.4% Latino, 8.9% Black, and 12.7% Other. There were no significant (or near significant) differences in memory errors between non-White and White participants.

- To create each variation, a single pixel (serving as a reference) was isolated from the target, and its rgb values were recorded. From there, the skin area of the target was adjusted accordingly (lighter or darker), until the rgb values of the reference matched the new, correct values.

References

- Bargh, J. A., & Chartrand, T. L. (2000). The mind in the middle: A practical guide to priming and automaticity research. In H. T. Reis & C. M. Judd (Eds.), *Handbook of research methods in social and personality psychology* (pp. 253-285). New York, NY: Cambridge University Press.
- Becker, D. V., Neel, R., & Anderson, U. S. (2010). Illusory conjunctions of angry facial expressions follow intergroup biases. *Psychological Science, 21*, 938-940. doi:10.1177/0956797610373374
- Blair, I. V., Chapleau, K. M., & Judd, C. M. (2005). The use of Afrocentric features as cues for judgment in the presence of diagnostic information. *European Journal of Social Psychology, 35*, 59-68. doi:10.1002/ejsp.232
- Blair, I. V., Judd, C. M., & Chapleau, K. M. (2004). The influence of Afrocentric facial features in criminal sentencing. *Psychological Science, 15*, 674-679. doi:10.1111/j.0956-7976.2004.00739.x
- Blair, I. V., Judd, C. M., Sadler, M. S., & Jenkins, C. (2002). The role of Afrocentric features in person perception: Judging by features and categories. *Journal of Personality and Social Psychology, 83*, 5-25. doi:10.1037/0022-3514.83.1.5
- Bruner, J. S. (1957). On perceptual readiness. *Psychological Review, 64*, 123-152. doi:10.1037/h0043805
- Bruner, J. S., & Goodman, C. C. (1947). Value and need as organizing factors in perception. *Journal of Abnormal and Social Psychology, 42*, 33-44. doi:10.1037/h0058484
- Cesario, J., Plaks, J. E., Hagiwara, N., Navarrete, C. D., & Higgins, E. T. (2010). The ecology of automaticity: How situational contingencies shape action semantics and social behavior. *Psychological Science, 21*, 1311-1317. doi:10.1177/0956797610378685
- Cohen, J., MacWhinney, B., Flatt, M., & Provost, J. (1993). PsyScope: An interactive graphic system for designing and controlling experiments in the psychology laboratory using Macintosh computers. *Behavior Research Methods, Instruments, & Computers, 25*, 257-271. doi:10.3758/BF03204507
- Corneille, O., Huart, J., Becquart, E., & Brédart, S. (2004). When memory shifts toward more typical category exemplars: Accentuation effects in the recollection of ethnically ambiguous faces. *Journal of Personality and Social Psychology, 86*, 236-250. doi:10.1037/0022-3514.86.2.236
- Corneille, O., Hugenberg, K., & Potter, T. (2007). Applying the attractor field model to social cognition: Perceptual discrimination is facilitated, but memory is impaired for faces displaying evaluatively congruent expressions. *Journal of Personality and Social Psychology, 93*, 335-352. doi:10.1037/0022-3514.93.3.335
- Eberhardt, J. L., Goff, P. A., Purdie, V. J., & Davies, P. G. (2004). Seeing Black: Race, crime, and visual processing. *Journal of Personality and Social Psychology, 87*, 876-893. doi:10.1037/0022-3514.87.6.876
- Fein, S., & Spencer, S. J. (1997). Prejudice as self-image maintenance: Affirming the self through derogating others. *Journal of Personality and Social Psychology, 73*, 31-44. doi:10.1037/0022-3514.73.1.31
- Fiske, S. T. (2005). Social cognition and the normality of prejudice. In J. F. Dovidio, P. Glick, & L. A. Rudman (Eds.), *On the nature of prejudice: Fifty years after Allport* (pp. 36-53). Malden, MA: Blackwell.
- Fowler, G. (2001). If I warn't too drunk to get there . . . : On race. *Journal of American & Comparative Cultures, 24*, 49-58. doi:10.1111/j.1537-4726.2001.2401_49.x
- Gaertner, S. L., & McLaughlin, J. P. (1983). Racial stereotypes: Associations and ascriptions of positive and negative characteristics. *Social Psychology Quarterly, 46*, 23-30. doi:10.2307/3033657
- Gauthier, I., Tarr, M. J., Anderson, A. W., Skudlarski, P., & Gore, J. C. (1999). Activation of the middle fusiform "face area" increases with expertise in recognizing novel objects. *Nature Neuroscience, 2*, 568-573. doi:10.1038/9224
- Gawronski, B., Peters, K. R., Brochu, P. M., & Strack, F. (2008). Understanding the relations between different forms of racial prejudice: A cognitive consistency perspective. *Personality and Social Psychology Bulletin, 34*, 648-665. doi:10.1177/0146167207313729
- Halberstadt, J., Sherman, S. J., & Sherman, J. W. (2011). Why Barack Obama is Black: A cognitive account of hypodescent. *Psychological Science, 22*, 29-33. doi:10.1177/0956797610390383
- Hamilton, D. L., & Sherman, J. W. (1994). Stereotypes. In R. S. Wyer Jr. & T. K. Srull (Eds.), *Handbook of social cognition* (2nd ed., pp. 1-68). Hillsdale, NJ: Lawrence Erlbaum.
- Hugenberg, K., & Bodenhausen, G. V. (2004). Ambiguity in social categorization: The role of prejudice and facial affect in race categorization. *Psychological Science, 15*, 342-345. doi:10.1111/j.0956-7976.2004.00680.x
- Levin, D. T., & Banaji, M. R. (2006). Distortions in the perceived lightness of faces: The role of race categories. *Journal of Experimental Psychology: General, 135*, 501-512. doi:10.1037/0096-3445.135.4.501
- MacLin, O. H., & Malpass, R. S. (2001). Racial categorization of faces: The ambiguous race face effect. *Psychology, Public Policy, and Law, 7*, 98-118. doi:10.1037/1076-8971.7.1.98
- MacLin, O. H., & Malpass, R. S. (2003). The ambiguous-race face illusion. *Perception, 32*, 249-252. doi:10.1068/p5046
- Maddox, K. B. (2004). Perspectives on racial phenotypicity bias. *Personality and Social Psychology Review, 8*, 383-401. doi:10.1207/s15327957pspr0804_4
- Maddox, K. B., & Gray, S. A. (2002). Cognitive representations of Black Americans: Reexploring the role of skin tone. *Personality and Social Psychology Bulletin, 28*, 250-259. doi:10.1177/0146167202282010
- Marks, E. S. (1943). Skin color judgments of Negro college students. *Journal of Abnormal and Social Psychology, 38*, 370-376. doi:10.1037/h0060828
- Medin, D. L., & Ortony, A. (1989). Psychological essentialism. In S. Vosniadou & A. Ortony (Eds.), *Similarity and analogical reasoning* (pp. 179-195). New York, NY: Cambridge University Press. doi:10.1017/CBO9780511529863.009

- Morsella, E., & Ben-Zeev, A. (2012). Cognition and action in the social world. In S. T. Fiske & C. N. Macrae (Eds.), *SAGE handbook of social cognition* (pp. 278-294). Thousand Oaks, CA: Sage.
- Osborne, D., & Davies, P. G. (2013). Eyewitness identifications are affected by stereotypes about a suspect's level of perceived stereotypicality. *Group Processes & Intergroup Relations*, *16*, 488-504. doi:10.1177/1368430212454927
- Peery, D., & Bodenhausen, G. V. (2008). Black + White = Black: Hypodescent in reflexive categorization of racially ambiguous faces. *Psychological Science*, *19*, 973-977. doi:10.1111/j.1467-9280.2008.02185.x
- Pessiglione, M., Petrovic, P., Daunizeau, J., Palminteri, S., Dolan, R. J., & Frith, C. D. (2008). Subliminal instrumental conditioning demonstrated in the human brain. *Neuron*, *59*, 561-567. doi:10.1016/j.neuron.2008.07.005
- Sciara, F. J. (1983). Skin color and college student prejudice. *College Student Journal*, *17*, 390-394.
- Secord, P. F., Bevan, W., & Katz, B. (1956). The Negro stereotype and perceptual accentuation. *Journal of Abnormal Psychology*, *53*, 78-83. doi:10.1037/h0048765
- Sherif, M. (1935). An experimental study of stereotypes. *Journal of Abnormal and Social Psychology*, *29*, 371-375. doi:10.1037/h0060783
- Sherman, J. W., Allen, T. J., & Sacchi, D. L. M. (2012). Stereotype confirmation and disconfirmation. In B. Gawronski & F. Strack (Eds.), *Cognitive consistency: A fundamental principle in social cognition* (pp. 390-423). New York, NY: Guilford.
- Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, *52*, 613-629. doi:10.1037/0003-066X.52.6.613
- Stepanova, E. V., & Strube, M. J. (2009). Making of a face: Role of facial physiognomy, skin tone, and color presentation mode in evaluations of racial typicality. *Journal of Social Psychology*, *149*, 66-81. doi:10.3200/SOCP.149.1.66-81
- Tajfel, H., & Wilkes, A. L. (1963). Classification and quantitative judgment. *British Journal of Psychology*, *54*, 101-114. doi:10.1111/j.2044-8295.1963.tb00865.x
- Viglione, J., Hannon, L., & DeFina, R. (2011). The impact of light skin on prison time for black female offenders. *Social Science Journal*, *48*, 250-258. doi:10.1016/j.soscij.2010.08.003
- Wittenbrink, B., Judd, C. M., & Park, B. (1997). Evidence for racial prejudice at the implicit level and its relationship with questionnaire measures. *Journal of Personality and Social Psychology*, *72*, 262-274. doi:10.1037/0022-3514.72.2.262

Author Biographies

Avi Ben-Zeev is a Professor of Cognitive Psychology at San Francisco State University (SFSU), where he directs the Complex Cognition Lab and is the Co-Coordinator of the Mind, Brain & Behavior Program. He received his PhD degree from Yale University in 1997. Dr. Ben-Zeev's scholarship has centered on explicating cognitive underpinnings of social categorization and stereotyping, especially in regard to identifying contextual factors that cause stigmatized individuals to underperform intellectually (i.e., social identity threat). More recently, Dr. Ben-Zeev has been investigating how memory and perception conspire to distort socially diagnostic racial and gender features in the service of cognitive consistency.

Tara C. Dennehy is a doctoral student at the University of Massachusetts, Amherst. She received her MA from San Francisco State University in 2011. Tara's research interests are broadly located at the intersection of cognitive and social psychology with a focus on examining basic processes and their implications for stereotyping, prejudice, and social inequity.

Robin I. Goodrich is a doctoral student at the University of California, Davis. She received her BA from San Francisco State University in 2011. Robin's research focuses on the extent to which dissociable working memory processes rely on the hippocampus and surrounding medial temporal lobe.

Branden S. Kolarik is a doctoral student at the University of California, Davis. He received his MA from San Francisco State University in 2011. His research focuses on human episodic memory; more specifically on the neural mechanisms that support long-term memory for spatial context.

Mark W. Geisler is a Professor of Physiological Psychology at San Francisco State University (SFSU), where he directs the Cognitive Psychophysiology Lab and is the Co-Coordinator of the Mind, Brain & Behavior Program. He received his PhD degree from SUNY, Stony Brook in 1994. Dr. Geisler's scholarship has centered on human psychophysiology, specifically using electroencephalography (EEG) and event-related potentials (ERPs) in research and applied clinical settings in order to quantify and characterize human information processing, and to assess the relationship between neuropsychological and electrophysiological measures of cognition.