

Bias in the Flesh: Skin Complexion and Stereotype Consistency in Political Campaigns

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Solomon Messing (corresponding author)

Pew Research Center, 1615 L St. NW, Suite 800, Washington, DC 20036;

phone: (202) 419-4372;

email: [firstname.lastname]@gmail.com

Ethan Plaut

Department of Communication Building 120, Room 110, 450 Serra Mall, Stanford, CA
94305-2050;

phone: (650) 723-1941;

email: info@commu.stanford.edu

Maria Jabon

2029 Stierlin Court, Mountain View, CA 94043 94305-2050;

phone: (650) 687-3600;

email: info@commu.stanford.edu

AUTHOR'S NOTE:

Solomon Messing, with Maria Jabon and Ethan Plaut

SOLOMON MESSING is the Director of Data Labs at Pew Research Center, Washington, DC. (This research was conducted at Stanford University).

MARIA JABON is a Software Engineer at LinkedIn, Mountain View, CA.

ETHAN PLAUT is a Fellow at Stanford University, Stanford, CA.

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* Address all correspondence to Solomon Messing, Pew Research Center, 1615 L St. NW, Suite 800, Washington, DC 20036.

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Abstract

There is strong evidence linking skin complexion to negative stereotypes and adverse real-world outcomes. We extend these findings to political ad campaigns, in which skin complexion can be easily manipulated in ways that are difficult to detect. We devise a method to measure how dark a candidate appears in an image, and use it to examine how complexion varies with ad content during the 2008 campaign (study 1). We find that darker images were more frequent in negative ads—especially in those linking Obama to crime—which aired more frequently as election day approached. We then conduct an experiment to document how these darker images can activate stereotypes, which shows that a subtle darkness manipulation is sufficient to activate the most negative stereotypes about Blacks—even when the candidate is a famous counter-stereotypical exemplar—Barack Obama (study 2). We collect further evidence of an evaluative penalty for darker skin based on an observational study measuring affective responses to depictions of Obama with varying skin complexion, presented via the Affect Misattribution Procedure in the 2008 American National Election Study (study 3). Our work demonstrates that darker images are used in a way that complements ad content, and shows that doing so can negatively affect how individuals evaluate candidates and think about politics.

NOTE: this version contains ~~striketrough~~ corrections to Study 2 based on a reanalysis of the original data.

Introduction

At the height of the 2008 primary season, the Hillary Clinton campaign aired an ad depicting Barack Obama with darkened skin and wider facial features than in the original footage. Political blogs leveled accusations of stereotype-consistent bias and discrimination, setting off a briefly lived scandal (Troutnut 2008). Of course, the darker portrayal of Obama’s complexion and wider aspect ratio may very well have been a product of uploading the ad to the web, as Factcheck.org pointed out (Kolawole and Bank 2008). Nonetheless, the episode underscores a question of interest to those who study campaigns: how do stereotype-consistent portrayals of candidates affect how they are perceived by the voting public? The fact that stereotypes have played a part in past political campaign narratives (e.g., the Bush Campaign’s “Willie Horton” ad, Jamieson 1993) gives us reason to suspect that we might see direct manifestations of stereotype consistency in the context of the first general election campaign involving a black candidate. At the same time, the strong link between skin complexion and stereotype activation found in the psychological literature (e.g., Maddox and Gray 2002; Blair et al. 2002) suggests that such portrayals may affect how voters respond to candidates. Indeed, scholars have shown that images can activate stereotypes relevant to electoral outcomes. For example, showing images of Black males with darker skin complexion makes negative stereotypes about Blacks more salient (Maddox and Gray 2002), and indeed, a series of experimental studies found that during the early stages of the 2008 campaign, viewing political advertisements with darker images of Obama had a negative impact on respondents’ preference for Obama as a presidential candidate (Iyengar et al. 2010), replicating past findings with hypothetical candidates (Terkildsen 1993). Additionally, Mendelberg (2001) showed that pairing a picture of a Black Willie Horton with the issue of crime in the presidential campaign of 1988 primed racial considerations in candidate evaluations and policy opinions, and Valentino et al. (2002) showed that visual references to Blacks significantly affect vote choice.

We proceed as follows. We first outline an original method to examine skin complex-

ion and utilize it to document how the complexion of presidential candidates in campaign advertisements varies with content and over time. Specifically, we measure how dark a candidate’s skin appears in an image and interrogate the question of how skin complexion fits into broader contextual schema conveyed in advertisements that are consistent with widely held stereotypes about Blacks. Study 2 demonstrates that darkened images do in fact increase the salience of negative stereotypes about Blacks as measured using a word-completion task administered to respondents after viewing a light or dark image of Barack Obama. Finally, study 3 examines the public’s affective responses to images of Obama with varying levels of skin-tone darkness using data from the 2008 American National Election Study (ANES), which tested affective responses to photographs of each candidate using the Affect Misattribution Procedure (AMP). Before presenting this research, we review the literature on skin complexion and stereotypes, paying special attention to their importance in politics.

We find that darker images were more frequent in negative ads—especially in those linking Obama to crime—which aired more frequently as election day approached. Further, our subtle darkness manipulation is sufficient to activate the most negative stereotypes about Blacks—even when the candidate is as famous and counter-stereotypical as Barack Obama. Regardless of intentionality, the 2008 campaign against Obama utilized message-consistent images that primed negative racial attitudes about Blacks in ads that were most likely to air close to election day. Our findings demonstrate that presenting an image of a Black candidate with darker complexion can shape how individuals respond to political advertisements and think about politics.

Skin Complexion and Stereotypes

People use physical features to gain access to a rich source of heuristic information about others based on stereotypes ([Ashmore and Del-Boca 1979](#); [Bodenhausen and Macrae 1998](#); [Brewer 1988](#); [Fiske and Neuberg 1990](#)). People’s physical features tell us about the categories

to which they may belong, causing us to associate character traits with that person. These associations can become salient so quickly and automatically that we remain unaware of the process (Bargh et al. 1996; Klatzky et al. 1982; Spencer et al. 1998). Indeed there is evidence that our perceptual systems are biased to produce independent person and group representations of others (Zarate et al. 2008), and that out-group members are more likely to be processed under the system that assigns group representations. Furthermore, these stereotypes may diverge from conscious attitudes, especially around socially sensitive topics (Hofmann et al. 2005).

Because 2008 saw the first ever successful black candidate for president, we care especially about stereotypes related to skin complexion and race. The literature on minority groups and complexion generally finds that phenotypical features can activate minority stereotypes, especially in the case of darker skin. Maddox and Gray (2002) found that the participants listed significantly more stereotypic traits for darker-skinned Blacks than those with lighter skin and that stereotypic traits were nearly all negative (e.g., dirty, lazy, uneducated). In a series of studies, Blair et al. (2002) found that people with more Afrocentric features were more often attributed negative Black stereotypical traits, regardless of their actual racial group membership—Whites with more Afrocentric features were also judged as more likely to have attributes stereotypical of Blacks. Another study, Livingston (2002) found that Whites maintain more negative associations with Blacks than in-group members, and this was particularly so for Blacks with more prototypic features, including darker skin. Ronquillo et al. (2007) showed that among Whites, the part of the brain associated with fear conditioning, the amygdala, shows greater activation in response to pictures of darker-skinned Blacks than lighter-skinned Blacks or Whites.

The evidence of the consequences of biases related to skin complexion is startling. For example, in the nation's courts, Black criminal defendants with more stereotypical facial features, including dark skin, were more likely to receive the death penalty (Eberhardt et al. 2006). College students and police officers were found to implicitly associate criminality

more with Blacks than with Whites, and these associations were stronger for Blacks with darker skin and a more prototypic appearance (Eberhardt et al. 2004). Black perpetrators and their victims were also more memorable and produced the highest emotional concern among White subjects when the offender was darker skinned (Dixon and Maddox 2005). Even Black first-graders were better able to remember stories that portrayed dark-skinned characters negatively and light-skinned characters positively (Averhart and Bigler 1997).

Despite the extensive work in psychology on stereotyping, only a handful of studies have investigated racial bias related to skin complexion in political settings. Early studies suggested that Whites are significantly less likely to vote for a Black candidate with darker skin tone (Terkildsen 1993). In more recent work, Weaver (2012) shows that voters generally prefer lighter-skinned candidates when given a choice between two Black candidates. After the 2008 election, a series of experimental studies found that viewing political advertisements with darker images of Obama had a negative impact on respondents' preference for Obama as a presidential candidate during the early stages of the campaign (Iyengar et al. 2010).

These findings suggest that ads that portray black candidates with a darker complexion might prime negative stereotypes about Blacks, damaging the candidate's election prospects in a way that has nothing to do with political fitness for office and is difficult to detect. Indeed, many images from the 2008 presidential campaign appear to have been manipulated and/or selected in a way that produces a darker complexion for Obama—examples can be seen in the supplementary online . However, we should not be terribly concerned about a few isolated dark images. Rather, we would need to see evidence that any image manipulation and/or selection was systematic. In fact, what would be most concerning is to find images of Obama with darker skin complexion in attack advertisements that seek to portray Obama according to stereotype-consistent narratives. Hence, we characterize skin complexion in advertisements with particular attention to how complexion varies with content, then show how manipulating skin complexion matters using an experiment and an observational analysis.

Study 1: Skin Tone and Visual Cues in Attack Advertisements

We first examine skin complexion in actual campaign advertisements. We outline a method to quantify skin complexion in ads and utilize it to document how skin complexion varies with content, consistent with negative Black stereotypes suggested in the literature above, most notably content related to criminality. We also examine how skin complexion varies over the course of the campaign to interrogate the question of whether stereotype-consistent depictions increase as the campaign develops and grows increasingly negative.

The data consists of an archive compiled by the Political Communication Lab (PCL) at Stanford, and consisted of 126 English-language video ads produced by the Obama and McCain campaigns between July 1 and November 2, 2008. The data were obtained by monitoring candidate websites and YouTube channels throughout this period, gathering all ads directly posted by each campaign, in an attempt to collect a census of such ads. The National Journal website was also monitored, along with a variety of other news media sources for references to other advertisements that were not posted, and web searches were performed in order to track down such ads (though this was rare). The vast majority of depictions of presidential candidates in ads consisted of still images, not video. Accordingly, we analyze still images, and on occasion, video still image captures. In the sample of ads under investigation, there were 534 still images, 259 of Obama and 275 of McCain.¹

The aesthetic skin property of interest—darkness—corresponds to the value (brightness) measure that comprises one dimension of the HSV (hue, saturation, value) colorspace. An image of a completely white square has value (V) equal to 1, while an image of a completely dark, black square has V equal to 0. Saturation corresponds to the presence or absence of color in an image, so, for example, a black and white image would have color saturation of 0, while a full-color image would have a saturation of roughly 1 (see Figure 1). Hue corre-

¹We do not exclude any images from our analysis.

sponds to perceived location on the color spectrum. These measures should be interpreted as physical quantities, not as aesthetic properties. Brightness and color saturation combine with other elements in an image such as contrast, background, shadow, light diffusion, and other subjective elements in complicated ways to affect how humans perceive images. We utilize these metrics only as *indicators*, not measures, of stereotype consistency.

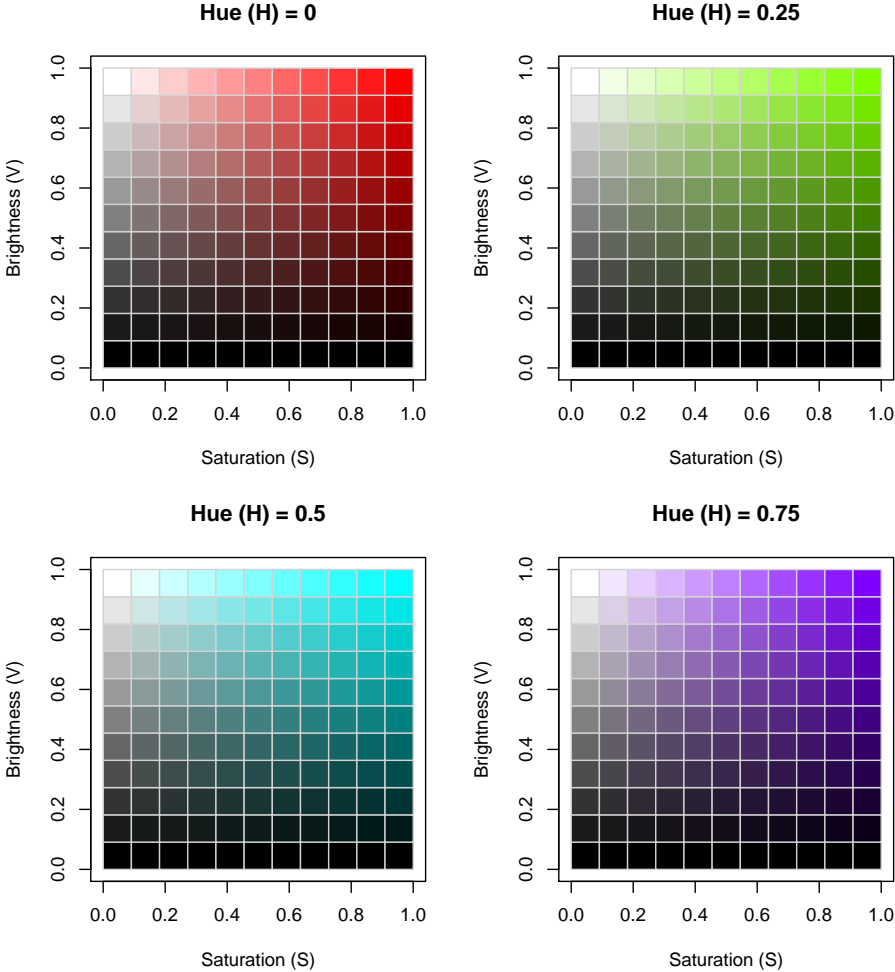


Figure 1: The Three Dimensional HSV Color Space. Hue (H) captures the actual color, saturation (S) captures the amount of color present, value (V) captures the relative lightness or darkness.

Neither hue (H), brightness (V), nor saturation (S) should be considered quantifications of overall image quality. Measurements of brightness, saturation and hue spectrum location are not indicators of subjective aesthetics of an image, which are vastly more complicated

than anything that can be described along these three dimensions.

We extracted the relevant metrics from images by using commonly available open source tools including Bio7, R, ImageJ, and EBImage to set up an interface that allows analysts to select part of an image and send the coordinates of the selection to a database for further analysis. Analysts drew a polygon around the candidate's face in each still (Figure 2). Then, red-green-blue (RGB) metrics were calculated for each pixel located inside this facial polygon.

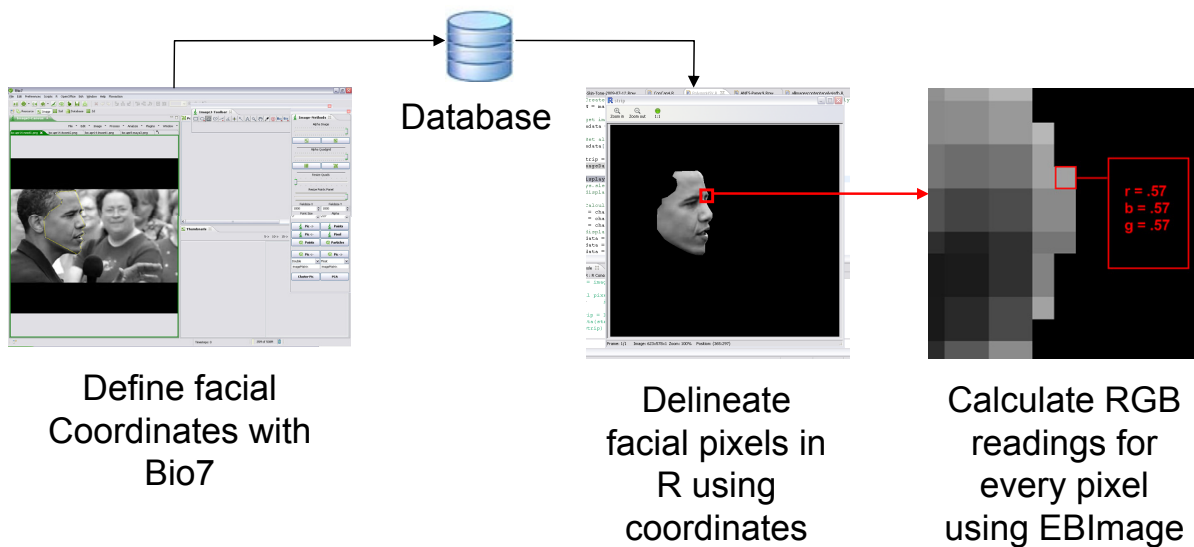


Figure 2: Data Pre-Processing

²Automated methods are under development (see OpenCV for example) that can detect a face in an image and extract such metrics, though false-positives are still a problem. For an interesting application to faces in Time magazine covers, see <http://s3.amazonaws.com/aws.drewconway.com/viz/time/index.html> and https://github.com/drewconway/shades_of_time for the underlying code.

In order to produce data that provided information about skin tone darkness, V metrics were extracted from each pixel’s RGB readings via a common mapping, as described below. Brightness simply maps to the highest RGB dimension, while color saturation corresponds to the widest difference between red, green, or blue (normalized by brightness):

$$V = \max(R, G, B)$$

$$S = \frac{V - \min(R, G, B)}{V}$$

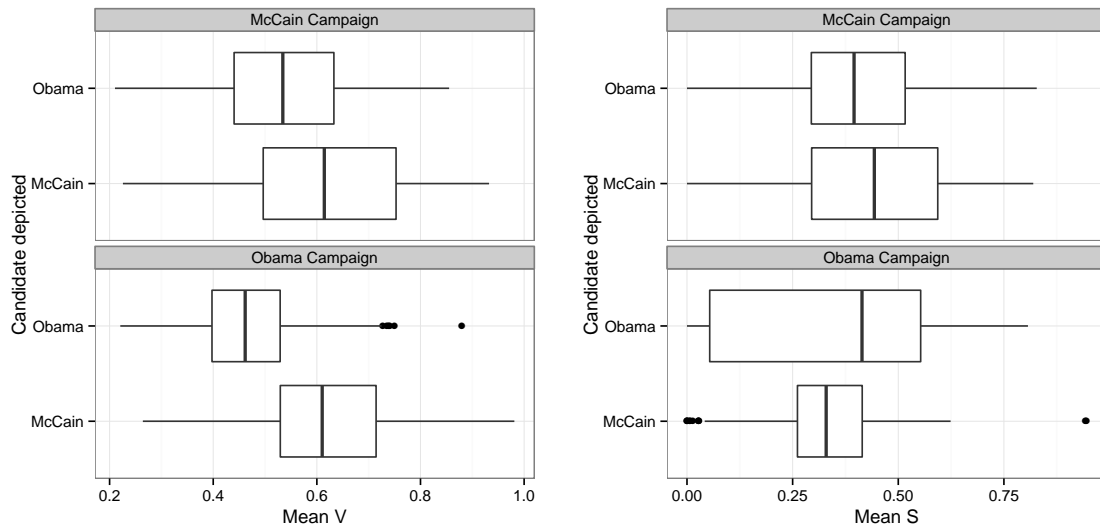
The mean brightness V calculated for facial pixels serves as a measure of the image’s depiction of a candidate’s skin complexion along the relevant light-dark dimension.³ Of course, the metrics reflect that McCain has lighter skin than Obama: in facial pixels, McCain’s average V reading is 0.62, while Obama’s is 0.51.⁴ The distribution of V in each image is quite different across each campaign for each candidate, as shown in Figure 3. Each candidate has on average lighter images of McCain, and the variance in both S and V is higher for each campaign’s opponent. Interestingly, the Obama campaign’s images of its own candidate are on average darker than the McCain campaign’s. Of course, this could be due to a number of factors unrelated to the content of the ad (e.g., differences in recording and/or video processing equipment/software); instead we care more about how skin complexion varies with content, which we examine below.⁵

³We used the R package “maps” to return the exact pixels in each image that fell within the candidate’s face-polygon (Figure 2).

⁴The difference by candidate is highly significant: $T(531.36) = 9.55, P < 10^{-19}$, two-sided.

⁵Each campaign used slightly less colorful images of its opponent (S), though we leave further examination of color saturation for future work.

Figure 3: Skin Complexion in Ads for Each Candidate



Each advertisement’s content was then classified along dimensions based on the literature. We sought to capture the overall “tone” of the ad (for negativity/attacks e.g., [Ansolabehere et al. 1994](#)), whether it contained attacks based on competence, character, or policy positions (based on appeals commonly referenced in the literature, e.g., [Popkin 1994](#)), and in particular whether the ad attempted to associate a candidate with criminal activity (based on substantial evidence linking skin complexion and stereotypes related to crime, e.g., [Gilliam et al. 1996](#); [Blair et al. 2004](#); [Dixon and Maddox 2005](#); [Eberhardt et al. 2006](#)). We also recorded the presence of stereotype-inconsistent features including a smile and formal attire in each still (see [Dasgupta and Greenwald 2001](#); [Ito et al. 2006](#), for examples of counter-stereotypical malleability with respect to both race and age). We also coded aural and visual elements within each ad (to capture “dramatic” elements of advertisements, discussed at length [Jamieson 1993](#)), whether the music sounded sinister and whether the ad depicted visuals associated with children.

The codebook was refined after two pilot sessions with student coders, after which we met to diagnose ambiguity and discuss disagreement. We then used codes from a third student coder who completed the coding task after training on the finalized codebook to avoid artificially inflating our agreement rates.

To attain measures of reliability, we compared codes attained from the trained student raters and from “master workers” on Amazon Mechanical Turk, a service often used for content analysis. Mechanical Turk serves as a market for tasks that can be done online, most often related to data collection and acquisition. Data obtained via Mechanical Turk has been shown to be a source of high quality, reliable data (yielding measures of reliability comparable to traditional samples [Sprouse 2011](#); [Buhrmester et al. 2011](#)). Master workers in particular have been certified by Amazon as having demonstrated excellence and accuracy⁶ for tasks including categorization (and command higher pay than ordinary workers). We had three master workers code each ad, so we took the modal code for each dimension,

⁶Amazon does not publish this exact criteria, presumably to minimize the risk that workers will game the system.

then computed Cohen’s κ and Krippendorff’s α to assess reliability between our trained undergraduate coders and our master workers from Mechanical Turk.⁷ Coders assessed all 126 ads and 534 still images.

Content Dimension	Cohen’s κ	Krippendorff’s α
Linking Candidate to Crime	0.76	0.76
Formal attire (button-down shirt)	0.62	0.61
Smile	0.84	0.84

We first examined message-consistency between skin complexion and content. When comparing image-level content, we simply provide estimates of the mean V. When comparing ad-level content, we constructed an indicator variable that is non-zero if the ad contains an image that falls in the darkest (lowest V) quartile of the opponent’s depictions utilized in the campaign, and use this variable to examine the probability that each ad contains a stereotype-consistent image of Obama.⁸ We use this indicator rather than simply taking the mean V for each ad because negative ads tend to display images that have been subjected to more modification in general than in other ads. Hence, the range of V should be wider for these ads—and indeed, the most negative ads have a larger interquartile range (IQR).⁹ Yet we are interested in whether an ad conveys a stereotype-consistent depiction of the author’s opponent, not in the average depiction; it is unlikely that showing a high-V image depicting Obama in a “washed out” photograph will somehow cancel out a stereotype-consistent image of Obama with darker skin (i.e., low V).¹⁰

⁷We excluded codes that did not attain sufficient reliability, e.g., our “sinister music” measure attained $\kappa = .31$; our “policy attack” measure attained $\kappa = 0.10$, and our unprepared/competence attack dimension attained $\kappa = 0.17$)

⁸Taking the number of images in an ad below the median for the candidate yields similar results. Taking the mean or median across the ad, the effects lose significance for depictions of Obama, due to higher variance in the most negative ads.

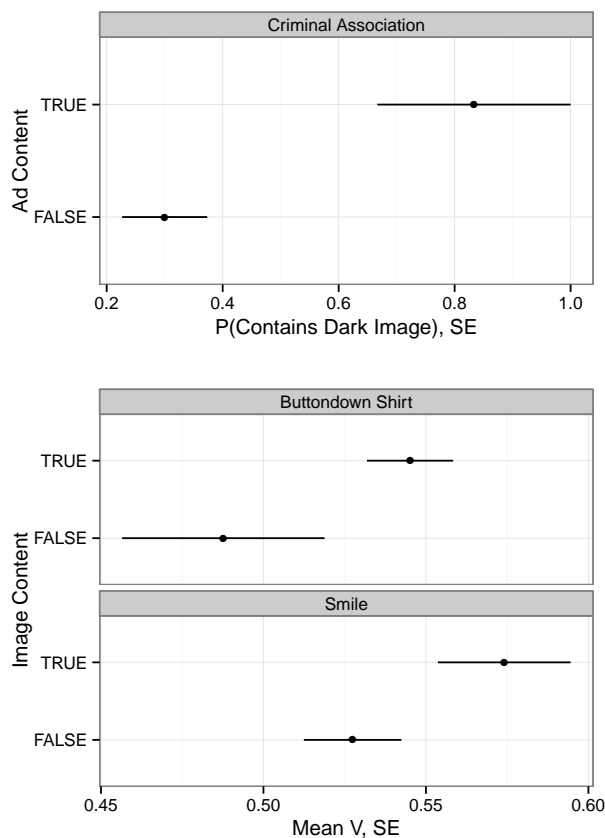
⁹In attack ads that associate Obama with criminal activity the average IQR for V is 0.091 versus 0.048 for other ads depicting Obama.

¹⁰In addition, a large literature has found that negative attributions exert a stronger influence on relevant outcomes (including political outcomes) than positive or neutral attributions, especially in response to images (Spezio et al. 2008; Lau 1982; Ansolabehere and Iyengar 1995; Ansolabehere et al. 1999).

Results

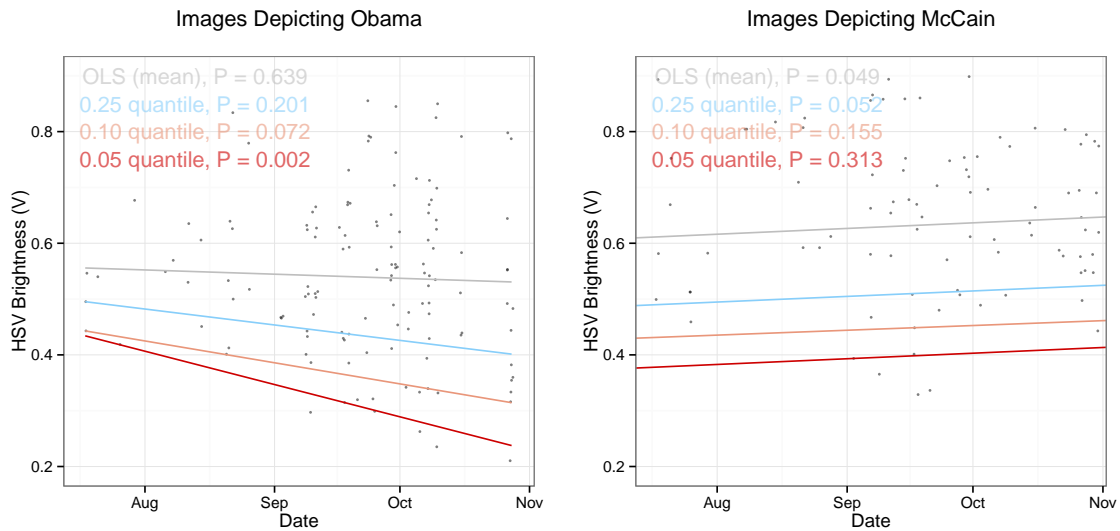
The data shows that the darkest images of Obama appear in the most negative, stereotype-consistent ads. First, we expected to see darker portrayals of Obama in ads that attempt to tie him to crime based on the stereotyping literature reviewed above. Indeed, in attack ads that associated Obama with alleged criminal activity (e.g., ads raising controversy related to William Ayers and ACORN), the probability that the ad contained one of the darkest images is 0.86, compared to 0.30 for other ads ($W = 218$, $P = 0.006$, two-sided, see Figure 4). In addition, counter-stereotypical images that depict Obama with a smile were marginally lighter ($\mu = 0.57$ versus $\mu = 0.53$, $T(71.16) = 1.84$, $P = 0.070$, two-sided), while the difference between images depicting Obama in formal attire ($\mu = 0.55$) compared to other images ($\mu = 0.49$, $T(16.39) = 1.70$, $P = 0.108$, two-sided) approaches significance.

Figure 4: Message and Skin Tone Consistency in McCain Attack Ads Depicting Obama



The trend lines plotted in Figure 5 suggest that as the election approached, attack ads featured images with darker depictions of Obama. Yet, as the OLS regression trend line indicates, on average the images did not change much. This is likely due to the fact that the images grew lighter as well, the higher variance being consistent with more exaggerated visual portrayals of Obama airing in advertisements airing closer to election day. At the same time, the McCain campaign’s own images of McCain grew on average lighter over time, suggesting that the aforementioned trends depicting Obama were not a relic of general trends toward darker campaign ads over time.¹¹ Because ads were more likely to contain stereotype-consistent images as election day approached, even short-lived effects would have been likely to be in play during the 2008 election.

Figure 5: Key longitudinal relationship in campaign ads



Limitations and Caveats

We have presented evidence that ad messages vary with visual content on dimensions related to stereotypes. In 2008, the variation was systematic, suggesting that the presence of darker images in certain advertisements is not likely to be due to chance or exogenous factors

¹¹The same was true for saturation: over time the campaign used less saturated images to depict Obama, while using more saturated images of McCain.

(e.g., a byproduct of how the opposing campaign uploaded images and video to the web). Of course, we cannot examine intentionality—it is impossible to determine whether stereotype-consistent images were included accidentally, purposefully, or incidentally, perhaps as a result of trying to make the opponent look bad.¹² This analysis also does not examine the question of differences in photographic contrast in the facial skin, which is thought to be an important element in attack advertisements (though one without clear implications for stereotype consistency). Of course, this analysis does not examine video clips, only still images and still captures from video, which though not as common as still images, could be important when constituents judge candidates.

Though there is evidence that darker images of African Americans can activate stereotypes about Blacks, we do not know whether this effect extends to individuals as well-known and as stereotype-inconsistent as Barack Obama, which we address in study 2. Lastly, though we have evidence that darker complexion can affect judgments of target stimuli in the lab, we do not know whether the effect extends to evaluations of political candidates during campaigns, with so many other considerations present—a question that we address in study 3.

Study 2: Darkened Images of Obama and Stereotype Activation

Though we've shown that darker skin was associated with stereotype-consistent depictions of Obama in the 2008 campaign, the question of whether these darker portrayals of Obama are indeed more likely to activate negative stereotypes about Blacks remains open. The research cited above finds increased negative stereotype activation in response to black target persons with darker skin ([Maddox and Gray 2002](#); [Blair et al. 2002](#); [Livingston](#)

¹²The image quantities associated with the most negative ads here are fairly typical of most elections, according to [Jamieson \(1993\)](#), who notes that the use of black and white, dark colors, shadowed lighting, and stark contrasts are typically used in attack ads.

2002; Ronquillo et al. 2007), but the targets in these studies are not well-known counter-stereotypical exemplars like Barack Obama, and skin complexion itself is not manipulated (rather, these studies use target persons with varying skin complexion). Indeed, there is evidence that the presence of a counter-stereotypical exemplar is often sufficient to regulate or prevent the activation of stereotypes (e.g., Ramasubramanian 2011). On the other hand, research examining the effect of skin complexion on how people perceive politicians (Terkildsen 1993; Iyengar et al. 2010; Weaver 2012) rely on vote choice and feeling thermometer ratings of the candidate, which could be capturing something other than stereotype activation.

In this study, we subject the skin complexion hypothesis to an even more stringent test—whether a darkened image of a well known candidate and counter-stereotypical exemplar, Barack Obama, can activate negative stereotypes about Blacks. We embed an image of Obama with either lightened or darkened skin in a survey that asked participants to consider the image and complete various words to measure stereotype activation, similar to Gilbert and Hixon (1991); Steele and Aronson (1995); Spencer et al. (1998); Sinclair and Kunda (1999).¹³ The stimulus images (Figure 6) depict Obama’s face as either lighter ($V = 0.72$) or darker ($V = 0.53$) than in the original image ($V = 0.68$, not shown). The task comprised 11 words with missing blank spaces (e.g., L A _ _). Each fragment has as one possible solution a stereotype-related completion, along with non-stereotype-related completions. The complete list follows: L A _ _ (LAZY); C R _ _ _ (CRIME); _ _ O R (POOR); R _ _ (RAP); WEL _ _ _ _ (WELFARE); _ _ C E (RACE); D _ _ _ Y (DIRTY); B R _ _ _ _ _ (BROTHER); _ _ A C K (BLACK); M I _ _ _ _ _ (MINORITY); D R _ _ (DRUG). These words were used in the stereotype activation studies cited above. We focus on the three most unambiguously negative stereotypes in this study (LAZY, DIRTY, POOR), as prior research has shown that darker skin tends to activate the most negative stereotypes about Blacks (Maddox and Gray 2002; Blair et al. 2002, these variables also ~~maximized~~ nearly maximized interclass correlation, indicating construct validity). Participants also completed a standard battery

¹³These stimuli have been used previously in (Iyengar et al. 2010).

of demographic measures.

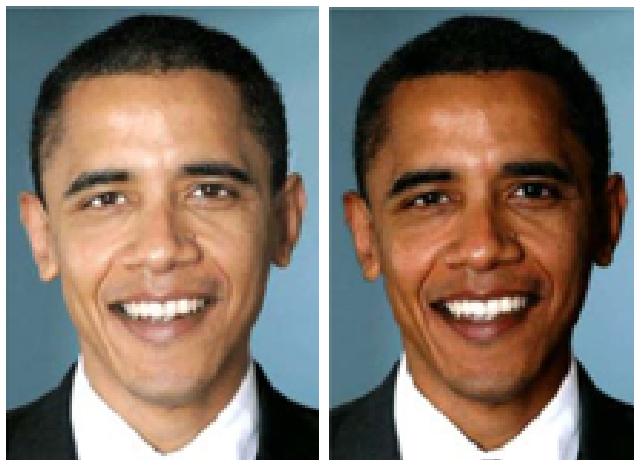


Figure 6: Stills used in the stereotype activation experiment

Since we expect the effects of our manipulation to be more subtle than the effects documented in the lab studies cited above, we require more statistical power than a student sample can provide. Student samples at our West Coast university might also be expected to over-represent the young, liberals, and individuals who effortfully avoid stereotypical thinking, for whom the effect of a darker image of Obama might be substantially weaker than in the U.S. population. While we would ideally like to obtain a nationally-representative sample for this experiment, the resources necessary to attain a sufficient number of subjects via a firm such as Knowledge Networks or YouGov were not available.

As an alternative we used Amazon’s Mechanical Turk service to recruit participants. [Berinsky et al. \(2012\)](#) show that this service provides a sample more representative than most in-person convenience samples (a finding replicated in [Grimmer et al. 2012](#)) and that Mechanical Turk experimental participants replicate experimental benchmarks. Our sample is also more diverse than a typical sample of college students, though not representative of the entire U.S. population. Further, [Grimmer et al. \(2012\)](#) show that the correlations among Mechanical Turk respondents are comparable the correlations in benchmark survey data: Democrats, Republicans, liberals, and conservatives on Mechanical Turk respond like Democrats, Republicans, liberals, and conservatives in other studies. Studies from other

fields provide additional evidence of validity, showing that Mechanical Turk subjects are nearly indistinguishable from traditional laboratory samples—both in reproducing the results of classic studies (Buhrmester et al. 2011) and replicating more recent experiments (Sproule 2011).

Our sample consisted of 630 Mechanical Turk workers, all of whom reported being over 18 and living in the U.S. The average age reported was 34; 267 identified as female while 363 identified as male; 474 identified as White, 56 as Black, 31 as Hispanic, and 17 as other. Participants were paid \$0.50, which corresponds to an hourly rate of \$8.33 for the median participant. We present our full questionnaire in the supplementary materials.

We took a variety of measures to ensure internal validity. Our between-subjects design minimizes the possibility that participants might learn the purpose of the study and alter their behavior accordingly. We checked both the unique Amazon worker ID and each respondent’s IP address against a database of all previous participants to ensure each subject took the survey only once (using QualTurk Rene Kizilcec 2013), which not only maintains the integrity of our between-subjects design but also avoids analyzing repeat subjects in violation of the IID assumption. To further increase internal validity, we employed a series of standard “attention check” questions that assess whether the subjects were engaged with our questionnaire (the 257 who failed this check were excluded); removed subjects whose IP address did not resolve to a location within the U.S. (266 26); and subjects who reported not being a native English speaker (30 10). We also removed 73 96 participants who we suspected were not paying careful attention to the study itself as indicated by completing the survey faster than those in 95th percentile (1.92 minutes), and those who we suspected may have been preoccupied as indicated by completing it at a slower pace than those in the 5th percentile (8.13 minutes).¹⁴

¹⁴Including these subjects in the analysis does not substantively alter the results.

Results

Our results suggest that darker images of Obama can indeed activate negative stereotypes about Blacks, despite the fact that Obama is a counter-stereotypical exemplar. The mean number of fragments with stereotype-consistent completions was ~~0.33~~ 0.34 in the “light” condition and ~~0.45~~ 0.41 in the “dark” condition ($T(623.66) = 2.64, P = 0.008$ $T(955.0) = 1.82, P = 0.069$, two-sided).¹⁵ In order to give the reader an intuition for the relative effect size, we provide an estimate of stereotype activation among conservatives: ~~0.55~~ 0.48 compared to ~~0.36~~ 0.35 for non-conservatives ($T(138.71) = 2.82, P = 0.005$ $T(227.5) = 2.45, P = 0.015$).¹⁶ Those in the treatment were ~~36%~~ 20% more likely to complete an additional ambiguous word in a stereotype-consistent way, compared to ~~53%~~ 29% among conservatives. Thus, we find clear evidence that darker images of candidates can increase stereotype activation.

We did not expect nor find evidence of direct effects of skin complexion on additional outcomes beyond main focus of the study: judgements of competence, self-reports of trust in Obama, and thermometer ratings. However, we found limited and preliminary evidence that the effect could be moderated via the implicit channel of stereotype activation, consistent with Iyengar et al. (2010). When analyzing all respondents who passed the attention check, we observed some evidence of interactions between the treatment and stereotype activation for the feeling thermometer ($\beta = -6.535, T(981) = -1.833, P = 0.0672$ $\beta = -6.33, T(857) = -1.655, P = 0.098$, two-tailed), trust ($\beta = -0.296, T(979) = -1.903, P = 0.0574$ $\beta = -0.28, T(857) = -1.71, P = 0.088$, two-tailed), and competence ($\beta = -0.226, T(980) = -1.478, P = 0.140$, $\beta = -0.15, T(857) = -0.95, P = 0.34$, two-tailed). This evidence should be taken with the substantial caveat that there could be estimation problems in this specification (as the

¹⁵Including the subset of completions that maximized alpha reliability (rather than interclass correlation) — lazy, black, poor, welfare, crime, and dirty and race — produces slightly noisier results: the means were ~~0.97~~ 0.87 (light) versus ~~1.11~~ 0.91 (dark), $T(626.72) = 1.77, P = 0.078$ $T(839.1) = 0.77, P = 0.439$, two-sided.

¹⁶Including the subset of variables that maximized alpha reliability (rather than interclass correlation) again produces noisier results: the means were ~~1.00~~ 0.86 (non-conservative) versus ~~1.29~~ 1.05 (conservative), $T(142.66) = 2.66, P = 0.009$ $T(214.3) = 2.47, P = 0.014$, two-sided.

treatment causes stereotype activation), and we are hence conditioning on a post-treatment variable.

Study 3: Affective Responses to Different Images of Obama

Having established the causal effect of darker skin complexion on stereotype activation with an internally valid experiment, we turn to an additional source of data on how people respond to images of candidates with varying depictions of skin complexion, collected at the height of the 2008 presidential campaign. We use the Obama-McCain candidate Affect Misattribution Procedure (AMP), which exposed ANES participants to a variety of images of each candidate and collected affective responses. We emphasize that this study exploits the natural variation in skin complexion between these images, and hence should not be considered to be a randomized experiment.

The logic of the AMP follows: a respondent is asked to make a fast evaluative judgment about an ambiguous target (e.g., an abstract symbol, in this case a Chinese character) after being exposed to a prime for a split second. They are instructed to ignore the prime, and only to evaluate the symbol. However, exposure to each prime theoretically gives rise to a positive or negative evaluative reaction, and respondents' evaluations of original prime "transfer" to their reported ratings of the ambiguous target—that is, they misattribute their reaction from the original prime to the ambiguous object (Payne et al. 2005). Furthermore, this process tends to be resistant to corrective attempts.

The 2008-2009 ANES panel study, sponsored by the National Science Foundation (NSF) constitutes the data source for this study (Krosnick et al. 2009). The sample is based on random selection from a list of landlines to contact a sample of U.S. citizens.¹⁷ The AMP was

¹⁷The user guide suggests that weights be used to generalize results to the U.S. population. Weights are not applied in this analysis.

administered to respondents in waves 9 (September 2008, $N = 2586$) and 10 (October 2008, $N = 2628$) of the ANES; all interviews were conducted in English.¹⁸ We remove respondents who did not complete the AMP (wave 9 $N = 240$, wave 10 $N = 357$) or for whom AMP data was missing (wave 9 $N = 7$, wave 10 $N = 0$). When the analysis utilizes data on party identification, we remove respondents for whom such data is missing (wave 9 $N = 366$, wave 10 $N = 374$). As implemented in the 2008 ANES, the AMP measures affective responses 48 times per respondent to 16 different images of either Barack Obama or John McCain (8 images for each candidate, shown 3 times - see figure 10 for images). The images of Obama have a fairly wide range for the mean V measure, from 0.54 to 0.72.

The usual approach to the AMP is to take the mean of the responses from one set of primes and compare it to the other (e.g. pictures of Obama versus pictures of McCain) to get a sense of individual-level affect toward each set of targets. However, because this analysis aims to measure the variance in response to each photograph of each candidate, we use a multi-level modeling approach.¹⁹

We group the data by respondent, estimating a random intercept for each (which accounts for individual-level positive or negative evaluative tendencies), and then estimate fixed effects for the remaining parameters of interest (most notably the V skin tone measure).²⁰



Figure 7: Stills used in the AMP

Formally, we consider the affective response as a binary outcome variable, y_{ij} , which represents how each respondent rated the ambiguous target (a Chinese character) in the AMP (0 = pleasant, 1 = unpleasant), for the i th subject ($i = 1, \dots, n$) on the j th occasion of measurement ($j = 1, \dots, J$). We estimate affective response as a logistic-normal mixed

¹⁸The AAPOR Response Rate 1 was 16 percent for both waves.

¹⁹We use the R package “lme4” for model estimation (Bates et al. 2008).

²⁰In this case, the estimates are nearly identical when fitting a logit generalized linear model.

model, formally specified as follows:

$$\begin{aligned}\pi_{ij}|\alpha_i &= \text{logit}^{-1}(\beta_0 + \alpha_i + \beta_1x_1 + \dots + \beta_px_p) \\ \alpha_i &\sim N(0, \sigma^2)\end{aligned}$$

Where $\pi_{ij}|\alpha_i$ represents the probability that given respondent chooses the “unpleasant” response, logit^{-1} represents the logistic distribution function, α_i represents an intercept (random effect) for each respondent, each β term represents the coefficient (fixed effect) for each variable $(1, \dots, p)$ in the model.

Results

Results modeling negative affect toward Obama show that respondents are more likely to rate the target “unpleasant” in response to darker images of Obama (Table 1). Other model coefficients are in the expected direction, except that images with higher color saturation are oddly *more* likely to be rated as unpleasant. However, this could be because the AMP images of Obama where his skin appears darker are also more saturated with color (the correlation between the S and V measures in this particular set of images is -0.26).

The relationships quantified in the above within-subjects analysis of the 2008 ANES AMP data are consistent with the effects we observe in study 2. Of course, this analysis of the AMP lacks the experimental controls we have in study 1—it is possible that skin tone was correlated with facial expression and/or lighting, for example, which probably also influence affective responses to a photograph. Nonetheless, we can conclude that differences between photographs can affect how a person responds to an image of the same candidate, even during the same sitting, and even when the candidate is well known.

Table 1: Negative Affective Response to Obama

	(1)	(2)	(3)
(Intercept)	0.236 (0.130)	-0.844*** (0.216)	-1.567*** (0.230)
Mean V in Photo	-1.101*** (0.192)	-1.092*** (0.195)	-0.596** (0.202)
Black Respondent		-0.871*** (0.165)	-0.872*** (0.165)
Latino Respondent		-0.294 (0.196)	-0.294 (0.196)
Female Respondent		-0.185* (0.085)	-0.185* (0.085)
Respondent Age		0.001 (0.003)	0.001 (0.003)
7 pt. Party ID		0.426*** (0.020)	0.427*** (0.020)
Mean S in Photo			0.759*** (0.081)
Log-likelihood	-31444.164	-30148.739	-30105.748
Deviance	62888.328	60297.477	60211.496
AIC	62894.328	60313.477	60229.496
BIC	62921.493	60385.631	60310.669
N_{Obs}	63264	61032	61032
N_R	2636	2543	2543

* $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$

Discussion

Using an original method to collect data on skin complexion, we demonstrate that campaign advertisements attacking Obama used darker images in the most negative, stereotype-consistent ads, and that these images were more frequent in ads that aired closer to election day. We then present an experiment showing that darker portrayals of Obama are more likely to prime the most negative stereotypes associated with Blacks. We also find correlational evidence of the effect in an observational study that takes place at the height of the 2008 campaign. These findings help explain why darker depictions of Obama decreased support for his candidacy during the 2008 primary campaign (Iyengar et al. 2010) and why people tend not to prefer hypothetical Black candidates with a darker complexion (Terkild-

sen 1993). Together, the evidence we present shows that manipulating or selecting images of a Black candidate with a darker complexion can shape how individuals respond to political advertisements and think about politics.

Our findings underscore the importance of visual imagery in campaign advertisements. Past work has shown that campaign ads feature aesthetic qualities that match the ad’s overall tone (Jamieson 1993), that ads often feature “implicit” racial appeals (Mendelberg 2001), and that racial imagery can affect preferences Valentino et al. (2002). We show that campaign advertisements depict *candidates themselves* in ways that are consistent with the message conveyed in the ad. In this case, we find various instances in which the content in the ad and the visual depiction of the candidate are consistent with group-level stereotypes. Most notably, ads that tied Obama to crime also contained the darkest depictions of his skin complexion, both of which are linked to negative stereotypes about Blacks. Indeed, the most negative ads associating Obama with crime—including those attempting to tie Barack Obama to domestic terrorist Bill Ayers and allegations of misconduct related to the ACORN organization—contained the darkest images of Obama.

Our work also extends previous lab studies on how darkened images activate negative stereotypes about Blacks. Previous work has relied on student samples and stimuli limited to natural variation in skin complexion among targets that were unfamiliar to subjects. We extend these findings using an internally valid design that directly manipulates skin complexion, while using ecologically valid images of Barack Obama. The fact that a manipulated image of Obama can activate negative stereotypes about Blacks may come as a surprise in light of various studies suggesting that exposure to well-known racial exemplars tends to decrease subtle racial biases (for example, see Dasgupta and Greenwald 2001).²¹ Our observational study from the 2008 ANES provides further evidence that people respond negatively to images that are consistent with stereotypes, despite the fact that subjects saw all pictures

²¹In fact, Plant et al. (2009) found that during the 2008 presidential campaign, race IAT scores among study participants were not significantly different from zero. Of course, it seems quite plausible that the college student samples used in these studies were systematically different from the national sample analyzed with respect to whether and what proportion perceived Obama as a positive exemplar.

during the same sitting, and that he was so well known.

Though we present evidence that darker portrayals of Obama tend to appear in ads linking him to crime in study 1, we stress that we cannot say anything about whether this pattern reflects a purposeful attempt to trigger stereotypes, an incidental result of simply trying to make Obama look bad, or something else altogether.²² Furthermore, we are not asserting that the darker images in question have been altered; instead more shadowed images have simply been selected. Yet neither intent nor the question of manipulation versus selection are central here—rather, we focus on the effects of exposure to such images, showing that darker images of candidates can activate negative stereotypes (study 2) and providing further evidence based on natural variation between images (study 3). Of course, a common conclusion from the psychology literature on stereotyping is that the unintentional role that negative stereotypes about Blacks and other groups play in society is precisely what makes them so important to understand.

The fact that Obama won the 2008 and 2012 elections raises the question of the extent to which stereotype consistency “worked.” Of course, passing an electoral threshold does not preclude the possibility of a negative effect on electoral support. And, even if the effects of stereotype activation are short lived, the fact that darker images were more likely to appear in ads that aired immediately before the election suggests that any racial priming effects were likely in play during the election. Future work should exploit the increasingly high-quality data on what ads aired in what markets to attempt to identify the effect of such portrayals on turnout and vote margin at the district level. In the context of the rise of the Tea Party and Obama’s move away from a campaign message of bipartisan cooperation in 2012, we might expect to see even more evidence of “dirty politics” in that election. Regardless, as photographic appearance in campaigns continues to increase in importance (e.g., [Polsby](#)

²²Indeed there is evidence that strong Republicans tended to believe Obama’s skin tone was darker than did liberals during the 2008 campaign ([Caruso et al. 2009](#)), implying that the most loyal campaign managers may have simply used darker photographs in attack ads without conscious intent to create a stereotype-consistent narrative. This could help explain our results if, for example, stronger conservatives worked on later, more negative ads.

1983) and more minority candidates face cameras in high-visibility races, research on the effects of stereotype consistency will not only benefit from richer data but also speak to an entrenched—yet in some sense increasingly urgent—problem in American politics.

Supplementary Material

Supplementary materials are freely available online at <http://poq.oxfordjournals.org/>.

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