Contextual Variation in Automatic Evaluative Bias to Racially-Ambiguous Faces

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Abstract

Three studies examined the implicit evaluative associations activated by racially-ambiguous Black-White faces. In the context of both Black and White faces, Study 1 revealed a graded pattern of bias against racially-ambiguous faces that was weaker than the bias to Black faces but stronger than that to White faces. Study 2 showed that significant bias was present when racially-ambiguous faces appeared in the context of only White faces, but not in the context of only Black faces. Study 3 demonstrated that context produces perceptual contrast effects on racial-prototypicality judgments. Racially-ambiguous faces were perceived as more prototypically Black in a White-only than mixed-race context, and less prototypically Black in a Black-only context. Conversely, they were seen as more prototypically White in a Black-only than mixed context, and less prototypically White in a White-only context. The studies suggest that both race-related featural properties within a face (i.e., racial ambiguity) and external contextual factors affect automatic evaluative associations.

Racial categories are becoming increasingly less discrete in the face of a growing multiracial population. Researchers have accordingly become interested in how individuals that cannot be easily categorized into a single racial group are perceived. Recent research shows that racially-ambiguous faces are more difficult to categorize by race (Peery & Bodenhausen, 2008; Freeman et al., 2010), are more poorly recognized relative to faces of racial ingroup members (Pauker et al., 2009), and, once labeled with one of the parent categories, are assimilated to that category (Eberhardt, Dasgupta, & Banaszynski, 2003; Pauker et al., 2009; Pauker & Ambady, 2009; Willadsen-Jensen & Ito, 2010).

Many of these studies focus on issues of categorization, examining either explicit racial categorization decisions (Halberstadt, Sherman, & Sherman, 2010; Freeman et al., 2010; Peery & Bodenhausen, 2008; Webster et al., 2004), or the effects of labeling racially-ambiguous faces as members of different racial categories (Eberhardt et al., 2003; Pauker et al., 2009; Pauker & Ambady, 2009; Willadsen-Jensen & Ito, 2010). The strong historical tendency to use relatively few discrete categories to describe race makes it unclear how multiracial individuals are categorized, supporting the importance of this research emphasis. However, race perception involves processes beyond the labeling of an individual as

belonging to a particular category. Here we focus on the activation of implicit evaluative associations.

Although the activation of implicit evaluative associations following the mere presentation of racially-prototypical faces is well-established (e.g., Fazio, Jackson, Dunton, & Williams, 1995), little is known about evaluations of multiracial individuals. Extant research supports competing predictions. First, findings that racially-ambiguous individuals tend to be explicitly categorized into the racial group associated with their more socially-subordinate heritage (Halberstadt et al., 2010; Peery & Bodenhausen, 2008), reflecting a phenomenon called hypodescent (Banks & Eberhardt, 1998), suggest evaluations in line with the more socially-subordinate group. On the other hand, research on the impact of facial feature variation within racially-*prototypical* faces shows that evaluations vary more continuously as a function of subtle featural differences. For instance, individuals with more prototypic Black features elicit more negative implicit evaluations than those with less racially-prototypic features (Livingston & Brewer, 2002; Maddox & Gray, 2002; see also, Blair, Judd, Sadler, & Jenkins, 2002). Importantly, however, the faces used in these latter studies were still clearly categorizable as Black or White. Evaluations of faces that cannot be easily categorized into a single racial group have not yet been examined.

We assess this question by first considering associations occurring in an environment where racially-ambiguous, Black, and White faces occur with equal probability (Study 1). Evidence of hypodescent at the level of explicit categorization suggests that racially-ambiguous Black/White faces will elicit evaluations that are as negative as those associated with Blacks. By contrast, the featural fit perspective predicts evaluative associations that fall between those associated with Blacks and Whites because the faces possess features associated with both groups. We then examine how shifts in the context in which an individual is encountered can influence the evaluative associations that are activated. Specifically, Study 2 examines whether the surrounding context can functionally result in a racially-ambiguous face being perceived as Black or White in terms of the automatic evaluative associations it evokes. Study 3 directly assesses the effects of context on the racial perceptions of ambiguous faces.

Study 1

Methods

Participants—Eighty-five introductory psychology students took part in the study for partial course credit. One African American was omitted from data analysis, as were seven additional participants for failure to follow instructions or unusual responses[1]. The final data set included 77 participants (15 non-Whites[2], 31 males).

Materials—Male yearbook photos were edited to have a uniform blue background and black clothing. The unambiguous faces included 8 Whites and 8 Blacks that were pre-tested (n=30) within a larger set of over 100 faces for perceived race and attractiveness. Chosen faces had greater than 85% agreement on the expected racial categorization and were between ±1 Z-score for attractiveness. The racially-ambiguous faces consisted of 8 digitally morphed faces created from a 50%-50% blend of a Black and a White face, taken from Willadsen-Jensen and Ito (2006).

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[1]One subject pressed the right-hand button for every word, two incorrectly categorized two or more baseline words each time the words were presented, and four exceeded more than 3 standard deviations above their mean for two or more baseline words.
[2]Self-reported race for the non-White participants was 5 Asian Americans, 5 Latinos, 1 Middle Eastern, and 3 Other. Analyses in all three studies conducted on just White participants revealed the same pattern of results as those reported in the main text.

Racially-ambiguous faces were pre-tested for racial ambiguity in four different ways. Fifteen participants were first asked to make a dichotomous choice between "Black" and "White" for each face. Chosen stimuli were judged as Black (or White) no more than 70% of the time. Second, participants rated the faces on a scale from 1 (Black) to 7 (White). Each ambiguous face was rated between 3 and 5 by *every* pre-test participant. Third, participants wrote down the racial category they felt best described the faces and these were examined to ensure that no face was systematically categorized as a single race (e.g., Latino). Together with the forced-choice Black-White racial categorization data, these responses show that selected racially-ambiguous faces were neither consensually categorized as Black, White, nor another racial group.

Finally, in a second phase of pre-testing, 29 participants were shown two faces side by side on a computer screen and asked to judge the similarity of the faces (1=Not at all similar; 5=Very similar). Each trial paired a racially-ambiguous face with an unambiguous Black or White face. The racially-ambiguous faces were perceived as equally similar to Blacks (M=2.79) and Whites (M=2.78), $t(28)$=.15, p=.88, and of intermediate similarity to both.

The first set of pre-test participants also rated the faces on attractiveness. Only faces with Z scores between ±1 were selected. No significant attractiveness differences occurred among the three types of faces used in the main study, M_{Whites}=0.17, $M_{Racially-ambiguous}$= 0.16, M_{Black}=0.16, $F(2,23)$=.01, *ns*.

Positive and negative target words (eight each) were taken from Livingston and Brewer (2002). The nouns used were: beauty, joy, love, paradise, romance, smile, success, vacation, cockroach, despair, disgust, garbage, pest, poison, sewage, and vomit.

Design and Procedure—The design for Study 1 follows from Fazio et al. (1995). Participants were told they would be completing several computer tasks aimed at understanding the automaticity of word comprehension. To collect baseline, unprimed word response latencies, participants first categorized each target word as good or bad; target words were presented twice in a random order. Second, participants viewed faces with instructions to attend to and memorize them.[3] Participants then completed a recognition memory task consisting of eight previously-presented faces and eight foils. The fourth phase, participants were told, assessed automaticity of word comprehension by combining the first two phases. It was explained that if word comprehension is automatic, reactions would be as fast when they were distracted by faces as when there were no faces. Participants were asked to remember the faces for a subsequent memory test. For each trial, a face appeared on screen for 315 ms, followed by a blank screen for 135 ms. The target word then appeared until the "GOOD" or "BAD" button was pressed. A blank screen remained for 2.5 sec before the next trial began. Participants saw each face a total of four times—twice paired with a positive word and twice with a negative word, for a total of 96 trials. Finally, participants completed another face memory task, then were debriefed and thanked.

Results

Reaction times were scored by first dropping trials in which words were categorized incorrectly (5.06%), then dropping trials that were three standard deviations above or below the participant's mean reaction time (1%). The remaining responses were log transformed. The latencies for the fourth phase of the experiment, when the words were primed by faces,

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[3]For Studies 1 and 2, half of the participants were randomly assigned to mentally categorize each face by race following Livingston and Brewer (2002, Study 4). In the present studies, no main effects or interactions involving mental categorization occurred, and it was therefore dropped from subsequent analyses.

were subtracted from the baseline word latencies. Positive scores indicate greater facilitation when the words were primed with a particular kind of face relative to when they were unprimed. A mean facilitation score was computed for positive and for negative words primed by Black, White or racially-ambiguous faces. All analyses were computed using the log-transformed scores; for ease of interpretation, we report raw scores in milliseconds.

The mean facilitation scores were analyzed using a 3 (Prime Race: Black, White, racially-ambiguous) × 2 (Word Valence: positive, negative) repeated measures ANOVA. A significant main effect of valence was evident: $F(1,76)=6.56$, $p<.01$. Greater facilitation was obtained for negative words ($M=56.16$ ms, $SD=100.25$) as compared to positive ($M=34.54$ ms, $SD=84.92$). Of more theoretical interest, the interaction of prime race and word valence was significant: $F(2,152)=13.14$, $p<.001$ (see Figure 1). Simple effects tests showed that, for White faces, no significant effect of valence existed (*Mean* difference between facilitation to negative versus positive words$=4.97$, $SD=79.57$) $F(1,76)=.65$, $p=.57$. By contrast, a valence effect was evident for both Black ($M=38.06$, $SD=68.90$) and racially-ambiguous faces ($M=21.68$, $SD=61.50$) indicative of negative evaluative bias toward both groups. Participants were faster to categorize negative than positive words after being primed with either a Black face, $F(1,76)=18.94$, $p<.001$, or racially-ambiguous face, $F(1,76)=4.17$, p<. 05.

Of importance, direct comparisons of the degree to which the different types of faces primed responses to negative relative to positive words revealed significantly greater evaluative bias against the unambiguous Black than White or racially-ambiguous faces, $Fs(1,76)=23.79$ and 6.75, $p<.001$ and $.05$, respectively. Bias was also greater to the racially-ambiguous than White faces, $F(1,76)=7.14$, $p<.01$. Thus, evaluative bias to the racially-ambiguous faces fell in between that to Black and White faces.

Discussion

The results of Study 1 show that racially-ambiguous faces facilitate negative as compared to positive associations to a greater degree than White faces, but to a lesser degree than Black faces. Such a graded pattern demonstrates the sensitivity of implicit evaluative associations to subtle variations in facial features. Two mechanisms might account for this. First, the degree to which each racially-ambiguous face possessed features typically associated with Blacks and Whites could have directly activated the evaluations associated with that group. This would be consistent with past research in which variations in facial features have produced differences in implicit responses (Livingston & Brewer, 2002). These effects occur even when all the faces can be explicitly categorized into the same category, showing that facial features can activate implicit associations over and above categorization. Another possibility is that the racially-ambiguous faces were categorized into a third racial group (e.g., "bi-racial") which is associated with evaluations intermediate to those linked with Blacks and Whites. The present study was not designed to differentiate among these accounts. What the results do clearly indicate is that facial features matter in determining evaluative associations. Even if the evaluations were activated via a third category, classification into that category (e.g., "bi-racial") and not as Black or White would presumably be based on the individual's facial features. Thus, facial features are playing a role either by directly activating evaluations, or by activating a particular category, which in turn activated the evaluation.

By contrast, the results do not conform to a pattern of hypodescent. Racially-ambiguous Black-White faces were classified as *Black* most often in a speeded categorization task (Peery & Bodenhausen, 2008; see also Halberstadt et al., 2010) yet the implicit evaluations obtained here differentiated between the racially-ambiguous and Black faces. The divergence between these results may reflect differences in sensitivity. Implicit evaluations

can and do vary much more continuously than categorical race judgments, so there is more room for continuous variation in facial features to affect implicit evaluative responses. At the same time, the results are not wholly inconsistent with hypodescent. While the racially-ambiguous faces elicited significantly less bias than the prototypical Black faces, they still significantly facilitated negative responses. If evaluation were considered categorically as the presence of evaluative bias, the racially-ambiguous and Black faces may be seen as eliciting similar responses.

Study 2

Study 1 demonstrates that faces possessing features of both Blacks and Whites activate evaluations that are intermediate to those associated with either group. We view such effects as reflecting bottom-up influences, either in the form of direct activation of evaluations from facial features, or by the features activating a category such as "bi-racial" that is associated with relatively middling evaluations. But we do not think bottom up effects solely characterize evaluative reactions to racially-ambiguous individuals. Research demonstrating differential memory as a function of the racial label paired with an ambiguous face indicates that top-down processes matter as well (Pauker et al., 2009; Pauker & Ambady, 2009; Willadsen-Jensen & Ito, 2010). Instances in which perceivers are provided with racial information before meeting someone, as when a coworker mentions the presumed race of a new hire, support the ecological validity of these types of manipulations. However, labels represent a particular type of top-down effect, one in which racial categorization is directly manipulated. The literature on implicit racial bias demonstrates the operation of a broader range of contextual influences (Barden, Maddux, Petty, & Brewer, 2004; Maddux, Barden, Brewer, & Petty, 2005; Wittenbrink, Judd, & Park, 2001). These studies show, for instance, that viewing a Black individual within a positive context (e.g., a church interior) eliminates the typical facilitation of responses to negative stimuli. The context is thought to change how the individual is construed, resulting in the activation of different associations.

The purpose of Study 2 was to examine whether subtle contextual manipulations can also affect responses to racially-ambiguous faces. Here, context was manipulated by varying the race of the other faces being seen by presenting the racially-ambiguous faces in the context of either only Black or only White faces. Study 1 can be considered to reflect evaluations in a context in which exemplars from both the categories of Black and White were equally salient, but judgmental contrast effects show that exposure to exemplars of a single extreme category influence judgments of more ambiguous stimuli in the opposite direction. For example, stimuli judged in the context of extremely large or evaluatively positive exemplars are perceived as smaller and less favorable, respectively (e.g., Herr, Sherman, & Fazio, 1983; Herr, 1986). This may represent a general anchoring effect in which perceivers' standards of comparison are affected by the range of stimuli being judged (Ostrom & Upshaw, 1968). As applied to race perception, when racially-ambiguous faces are encountered in the context of only White faces, the standard for what constitutes a Black individual may shift to encompass less Black-prototypical faces. Likewise, a context of only Black faces may shift the standard of what constitutes a White face to encompass less White-prototypical faces. By contrast, when the same faces are perceived in the context of both Black and White faces, as in Study 1, the judgment context is anchored by extreme exemplars from both categories, leading to more moderate perceptions of the racially-ambiguous faces.

There is some evidence of contrast effects influencing perceptions of racially-ambiguous faces in the form of the degree of holistic processing and the placement of between category boundaries. In these studies, prior exposure to outgroup faces increased holistic processing of racially-ambiguous faces, a process that is typically more likely for racial ingroup faces

(Michel, Cornielle, & Rossion, 2010), and also shifted between-race category boundaries to accommodate more faces in the ingroup (Webster et al., 2004; Rhodes et al., 2010). If similar effects occur with implicit evaluations, we predict that racially-ambiguous faces seen in the context of Black faces will be evaluated more favorably than those seen in the context of only White faces. To test this, implicit evaluations of racially-ambiguous faces were measured in Study 2 using the same task as Study 1, but rather than seeing all three types of faces, participants saw the racially-ambiguous faces and either Black or White faces.

Methods

Participants—One hundred twenty-one introductory psychology students participated in this study in partial fulfillment of a course requirement. Data from 14 participants were omitted for failure to follow instructions or unusual responses.[4] The final dataset included 107 participants (14 non-Whites[5], 45 males).

Procedure and design—The procedure and design closely followed Study 1 except that participants viewed the racially-ambiguous faces in the context of only one of the racially-prototypical face groups. Context was manipulated between subjects. A total of 12 faces of each type were presented, again twice each with positive and with negative words for a total of 96 trials.

Results

Incorrect trials (4.97%) and trials greater than three standard deviations above or below the participant's mean reaction time (1.79%) were dropped, and mean facilitation times computed. A 2 (Context Condition: Black, White) $\times$ 2 (Face Ambiguity: racially-ambiguous, racially-prototypical) $\times$ 2 (Word Valence: positive, negative) mixed model ANOVA was run with Context Condition as a between subjects factor.

A main effect of Context Condition was obtained, with greater facilitation in the Black than White condition: $F(1,105)=4.48$, $p<.05$, $M_{Black}=58.84$ ms, $SD=57.83$, $M_{White}=28.07$ ms, $SD=76.44$). Facilitation also tended to be greater to negative ($M=46.84$ ms, $SD=78.84$)) than positive words ($M=36.91$ ms, $SD=74.57$), $F(1,105)=3.64$, $p=.06$. The critical 3-way interaction between Face Ambiguity, Word Valence, and Context Condition was significant: $F(1,105)=10.13$, $p<.005$ (see Figure 2). Replicating Study 1, within each Context the Face Ambiguity $\times$ Word Valence interaction was significant, indicating greater evaluative bias to the faces with more prototypically Black features. Specifically, in the White context, evaluative bias was greater for the racially-ambiguous faces ($M=19.88$, $SD=59.28$) than the White faces ($M=-4.64$, $SD=82.66$), $F(1,58)=4.14$, $p<.05$. In the Black context, evaluative bias was greater to the Black faces ($M=22.28$, $SD=75.11$) than the racially-ambiguous faces ($M=3.25$, SD=77.99), $F(1,47)=6.94$, $p<.05$. Simple tests of evaluative bias within each type of face prime indicated no bias for Whites, $F(1,58)=.10$, $p=.75$, but significant bias for Blacks, $F(1,47)=6.29$, $p<.05$, again replicating the findings from Study 1 (two outside sets of bars in Figure 2). For the racially-ambiguous faces, the valence effect was significant in the White context, $F(1,58)=6.44$, $p<.05$, but, importantly, not significant in the Black context, $F(1,47)=.00$, $p=.98$. This pattern of results is consistent with category-based contrast effects, whereby perceptions of a stimulus (in this case the racially-ambiguous faces) are shifted as a function of the surrounding context. When embedded in the White face context, racially-ambiguous faces appear more Black and substantial evaluative bias occurs. When embedded

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[4]Five participants were dropped for incorrectly categorizing, or responding more than 3 standard deviations above their mean reaction time to more than two baseline words, three because the research assistant indicated they were non-compliant, and six because 20% or more of the words during the face primed trials were categorized incorrectly, suggesting inattention.
[5]Self-reported race for the non-White participants was 4 Asian Americans and 10 Latinos.

in the Black face context, the racially-ambiguous faces appear more White, and no significant evaluative bias is obtained.

Discussion

The patterns of evaluative bias in Study 2 replicate those of Study 1, while also showing sensitivity to the context in which the faces appeared. Overall, the racially-ambiguous faces elicited a level of bias intermediate to that associated with Blacks and Whites. But critically, this depended on context. When presented in the context of only White faces, evaluative bias to the racially-ambiguous faces was significant, and significantly *greater* than bias to the White faces. When presented in the context of Black faces, evaluative bias to the racially-ambiguous faces was nonsignificant, and significantly *less* than bias to the Black faces. As in Study 1, significant evaluative bias was present for the Black faces, whereas no bias occurred for the White faces. Prior research has shown that perceptions of racially-ambiguous faces can be altered through direct racial labeling. The current study shows similar effects but in this case through shifting the context in which the faces appeared with no explicit labeling of the faces as Black or White.

Study 3

The effects of Study 2 are directly in line with a judgmental contrast mechanism. To provide further evidence that this is the mechanism through which the effects occurred, Study 3 again manipulated context, but this time measured perceptions of racial prototypicality. In addition to conditions in which only one other racial group was seen, a third condition in which both Blacks and Whites were seen was included, with the expectation that anchoring with both groups would result in more moderate perceptions of racially-ambiguous faces.

Methods

Participants—Seventy-three introductory psychology students participated in this study in partial fulfillment of a course requirement (13 non-Whites[6], 22 males).

Procedure and design—Participants viewed racially-ambiguous faces within one of three judgmental contexts: (1) both Black and White faces (full context), (2) just Black faces (Black context), (3) or just White faces (White context). Stimuli were identical to those used in Study 2, with participants in the full context condition viewing 36 total faces and those in the Black or White context conditions viewing 24 faces.

To become familiar with the faces, participants initially viewed all faces on a computer once in a randomized order for 1000 ms each, with a 1500 ms inter-trial interval. Following the preview, participants were told they would view the faces again and be asked to make separate judgments of how prototypical each face was of African Americans and White Americans. They were instructed to consider factors such as skin color, facial features, eye color, and hair texture (see Livingston & Brewer, 2002), and were told that ratings were completely subjective. Participants then saw each face once, with the face remaining on screen as the two ratings were made consecutively in the same order for each face. Question order was counterbalanced between participants. Ratings were made on a 5-point scale anchored by low and high prototypicality. The next face appeared after 1500 ms.

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[6]Self-reported race for the non-White participants was 4 Asian Americans, 5 Latino, and 1 each of Asian, Arab, Kuwaiti, and Multiracial.

Results

Perceptions of Black and White faces—As is clear from Figure 3 (see also Table 1), context had no effect on perceptions of Black and White faces. The White faces were rated as highly prototypical of Whites and not prototypical of Blacks, $F(1,45)=1734.14$, $p<.0001$, whereas the Black faces were highly prototypical of Blacks and not prototypical of Whites, $F(1,45)=1675.92$, $p<.0001$, and this was true regardless of context.

Perceptions of racially-ambiguous faces—In contrast to the racially-prototypical faces, racial perceptions of the racially-ambiguous faces showed a graded influence of context (Figure 4, Table 2). Specifically, racially-ambiguous faces were perceived as possessing middling and equal levels of Black and White prototypicality when viewed in the context of both Black and White faces. These same faces, though, were viewed quite differently when seen in the context of exemplars from only one extreme category, showing contrast effects as a function of context condition.

Prototypicality ratings of the racially-ambiguous faces were analyzed with a 3 (Context: Full context, Black context, White context) × 2 (Rating Order: Black 1st, White 1st) × 2 (Type of Rating: Black prototypicality, White prototypicality) ANOVA, with the first two factors between-subjects and the last one within-subject. A main effect of Type of Rating was obtained, $F(1,67)=5.29$, $p<.05$, qualified by the predicted Context × Type of Rating interaction, $F(2,67)=30.24$, $p<.001$. Looking first at the Black prototypicality ratings, compared to perceptions in the full context, the same racially-ambiguous faces were perceived as more Black in the White context but less Black in the Black context, ts(47)=3.12 and 3.85, respectively, ps<.005. The inverse pattern was obtained for White prototypicality ratings. Compared to the full context, racially-ambiguous faces were perceived as less White in the White context, but more White in the Black context, ts(47)=3.70 and 2.96, respectively, ps<.005.

Looking within a given context, racially-ambiguous faces were perceived as more prototypical of Whites than Blacks in the Black context, $t(23)=6.48$, $p<.0001$, but as more prototypical of Blacks than Whites in the White context, $t(23)=4.58$, $p<.0001$. They were viewed as equally prototypical of Blacks and Whites in the full context, $t(24)=1.37$, $p=.18$, and both prototypicality ratings were near the scale midpoint of 3.

Finally, to explore the perceptions analogous to those experienced by participants in Study 1, we compared the racially-ambiguous, White, and Black faces in the full context. For the ratings of Black prototypicality, Black faces were perceived as significantly more Black than the racially-ambiguous faces, which were in turn perceived as more Black than the White faces, ts(24)=22.67 and 15.37, ps<.0001. Similarly, for ratings of White prototypicality, White faces were perceived as significantly more White than the racially-ambiguous faces, which were in turn perceived as more White than the Black faces, ts(24)=17.83 and 13.71, ps<.0001.

Discussion

This study provides direct evidence of context effects on the perceptions of racially-ambiguous faces. When viewed in the context of both Black and White faces, racially-ambiguous faces were perceived as equally prototypical of both racial groups. By contrast, racial perceptions of those same faces shifted when viewed in the context of only one racial group. Racially-ambiguous faces were perceived as more White (and less Black) when viewed in the context of only Black faces, but more Black (and less White) when perceived in the context of only White faces. In short, racial perception shows a perceptual contrast effect that directly mirrors the patterns of evaluative bias obtained across Studies 1 and 2.

General Discussion

Americans have a history of using a relatively small number of discrete categories to parse racial differences, and these categories typically do not include separate classifications for multiracial individuals. Within this current racial milieu, we wondered what kind of implicit evaluative reactions are quickly activated by racially-ambiguous faces. One relatively straightforward prediction is that because explicit categorization judgments about multiracial individuals often show a pattern of hypodescent, evaluations would as well. The present results, however, demonstrate a more nuanced pattern. Study 1 shows a graded pattern of evaluations, in which the magnitude of evaluative bias following racially-ambiguous faces fell in between that for Black and White faces, suggesting sensitivity to the continuously varying race-related facial features. This outcome could arise either because the features directly activate evaluations associated with the racial groups of which they are prototypical (cf., Blair et al., 2002; Maddox & Grey, 2002; Livingston & Brewer, 2002), or because the mixture of Black and White features activates a category like "bi-racial" "that is associated with evaluations of moderate negativity.

It is worth considering why the evaluative responses measured here fail to reveal a strong pattern of hypodescent when memory and explicit categorization judgments have shown an assimilation of racially-ambiguous Black-Whites to the category "Black". That is, racially-ambiguous Black-White faces are remembered as poorly as Black faces (Pauker et al., 2009) and are more often categorized as *Black* than *White*, especially in speeded judgments (Peery & Bodenhausen, 2008; see also Halberstadt et al., 2010). The more graded pattern obtained here may be influenced by the nature of the response being measured. As we noted earlier, the ability of evaluative responses to vary more continuously than recognition accuracy or racial categorization may allow the former to be more sensitive to variations in racial features. Indirect measurement may also be relevant, as the less categorical responses obtained here occurred with a procedure in which participants were not asked to explicitly evaluate the racially-ambiguous individuals. Theoretically, the different patterns that have been obtained on memory, categorization, and implicit evaluations demonstrate that while the processes can be interrelated (e.g., racial categorization can affect memory, Hugenberg et al., 2010) they are distinct processes that can be influenced by racial cues in dissociable ways.

Although Study 1 shows the influence of facial features, we do not think the evaluations of racially-ambiguous faces are rigidly fixed to some point intermediate to the related racial groups (in this case, Black and White). Study 2 demonstrates how evaluations can meaningfully change depending on surrounding cues. When racially-ambiguous faces appeared in the context of only White faces, significant bias was obtained to these faces, and the magnitude of bias was greater to the racially-ambiguous than White faces. When these same racially-ambiguous faces appeared in the context of only Black faces, bias was not statistically different from zero, and it was significantly smaller than that to Black faces. Study 3 provides evidence that changes in the racial perceptions of the faces as a function of context underlie these evaluative differences. The same racially-ambiguous faces were perceived as more prototypical of Blacks when in the context of White faces, but more prototypical of Whites when in the context of Black faces. Context effects on implicit evaluations have similarly been obtained with racially-prototypical faces (Barden et al., 2004; Maddux et al., 2005; Wittenbrink et al., 2001), but in those cases, it is unlikely that context changed the explicit racial categorization of the individual. Instead, these effects have been hypothesized to operate by changing the race-based associations that are brought to mind (e.g., by activating a positive aspect of the Black stereotype). Study 3, however, shows that context can lead to a completely different racial construal for racially-ambiguous

faces. As a consequence, context has the potential to exert even larger effects on racially-ambiguous than prototypical faces.

The present results are the first to our knowledge to investigate the processes that influence implicit evaluative reactions to racially-ambiguous faces. On balance, the results show that reactions to multiracial are likely be a function both of the particular race-prototypical features possessed by that individual and the context in which they are perceived. On a practical level, it seems quite plausible that the same individual could experience very different reactions depending on the context in which he or she is encountered. Two teachers might have meaningfully different evaluative reactions to the same multiracial individual depending on the racial composition of their respective classrooms. That such reactions are evoked automatically suggests that profound effects might emerge independent of the targets' actual behavior.

Acknowledgments

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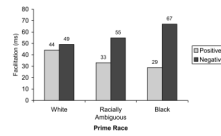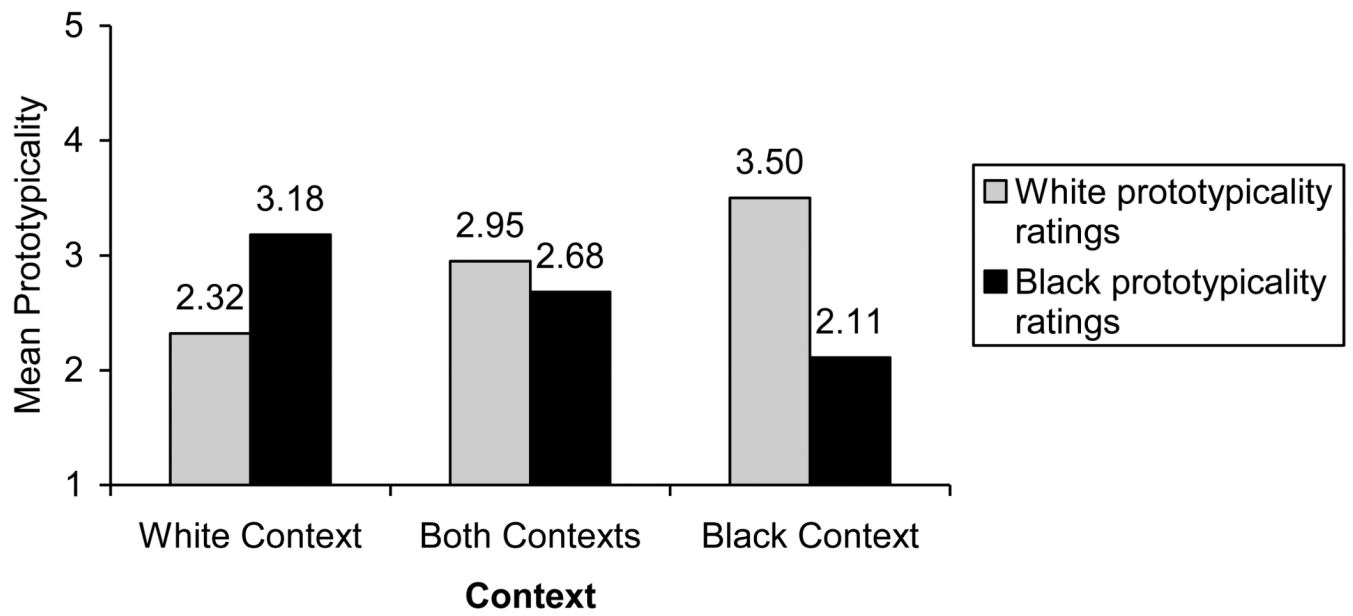
Figure 1.
Facilitation scores for positive and negative words primed by White, racially-ambiguous, and Black faces (Study 1). The effect sizes for bias, indicating the relative facilitation of negative as compared to positive responses following each prime, are *d*=0.09, 0.23, and 0.49, respectively.
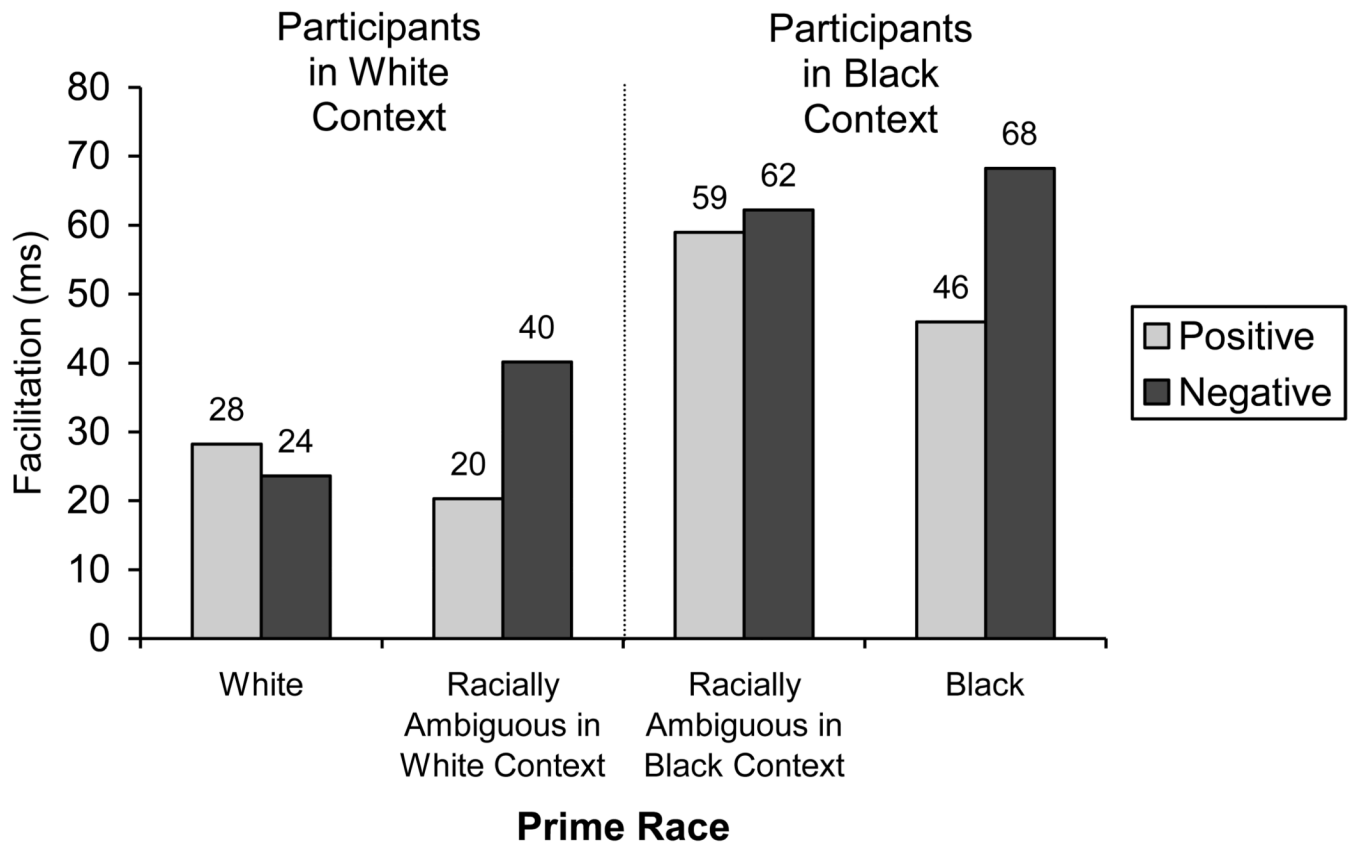
Figure 2.
Facilitation scores for positive and negative words primed by White and racially-ambiguous faces in the White Context, and racially-ambiguous and Black faces in the Black Context (Study 2). The four left-most bars show responses from participants in the White context condition. The four right-most bars show responses from participants in the Black context condition. The effect sizes for bias, indicating the relative facilitation of negative as compared to positive responses following each prime, are $d_{\text{White}}=-0.04$, $d_{\text{racially-ambiguous in White context}}=0.33$, $d_{\text{racially-amibigous in Black context}}=0.002$, $d_{\text{Black}}=0.36$.
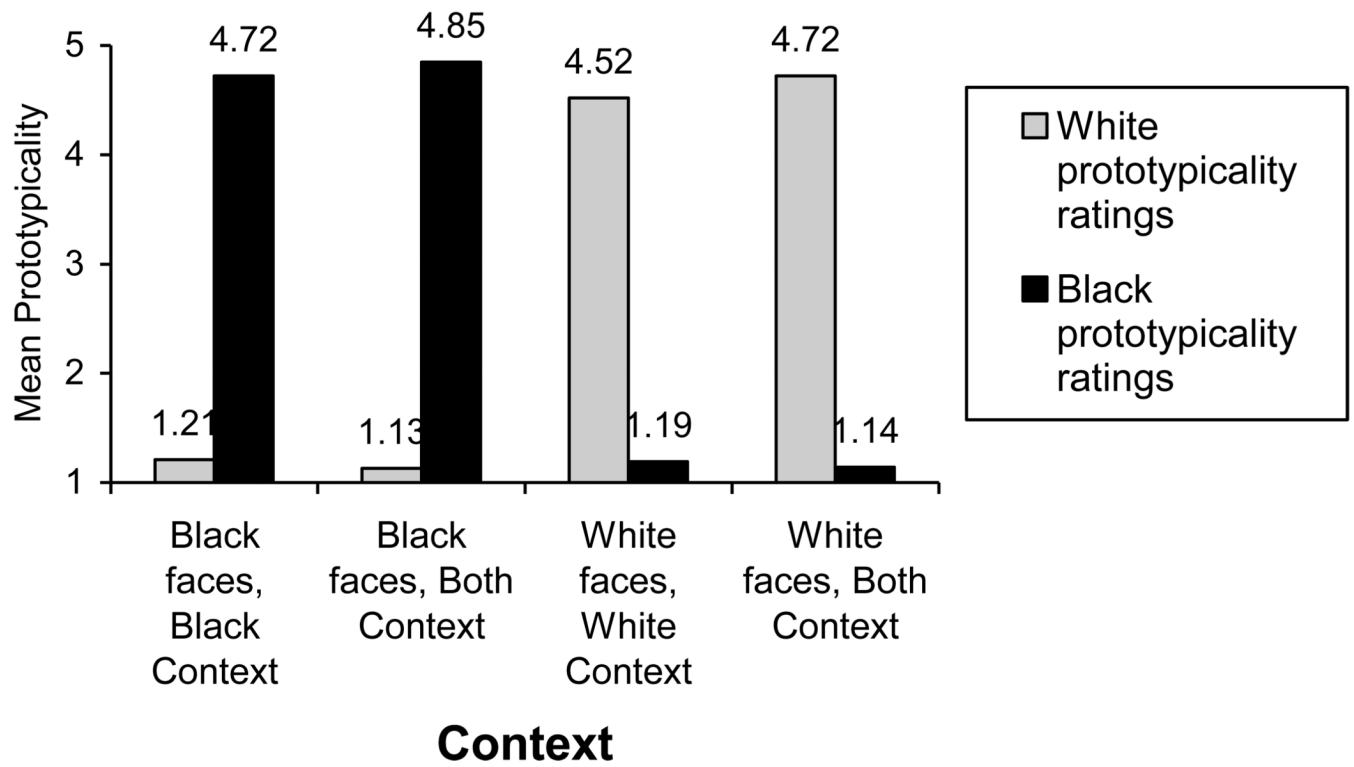
Figure 3.
White and Black prototypicality ratings for Black and White faces in the single versus both race face contexts.

Figure 4.
White and Black prototypicality ratings for racially-ambiguous faces in the White-only, Both, or Black-only face contexts.

Table 1
Mean ratings of Black and White Prototypicality

for Black and White faces in the Black-only, Both, or White-only face contexts (standard deviations are in parentheses).

	Rating	
	Black prototypicality	**White prototypicality**
Black Faces		
Black context	4.72 (0.58)	1.21 (0.33)
Black and White context	4.85 (0.19)	1.22 (0.32)
White Faces		
White context	1.19 (0.36)	4.52 (0.44)
Black and White context	1.14 (0.21)	4.72 (0.30)

Table 2
Mean ratings of Black and Prototypicality White

for racially-ambiguous faces in the Black-only, Both, or White-only face contexts (standard deviations are in parentheses).

	Rating	
	Black prototypicality	White prototypicality
Black context	2.11 (0.47)	3.50 (0.63)
Black and White context	2.68 (0.55)	2.95 (0.65)
White context	3.18 (0.57)	2.32 (0.54)