Emotion
2014, Vol. 14, No. 6, 1115–1124

1528-3542/14/$12.00 http://dx.doi.org/10.1037/a0038214

The Role of Expression and Race in Weapons Identification

Jennifer T. Kubota
University of Chicago

Tiffany A. Ito
University of Colorado Boulder

Emotional expressions can signal intentions and so possess the power to moderate social inferences. Here, we test whether stereotypes implicitly elicited by a stigmatized racial outgroup member are moderated by facial expression. Participants classified pictures of guns and tools that were primed with pictures of Black and White male faces posing angry, happy, and neutral expressions. Across the 3 measures examined—response latencies, error rates, and automatic processing, facial expression modulated implicit stereotyping (Study 1, $n = 71$; Study 2, $n = 166$). A Black angry prime elicited implicit stereotyping, while a Black happy prime diminished implicit stereotyping. Responding after neutral primes varied as a function of the expression context. When viewed alongside more threatening expressions (Study 1), neutral Black targets no longer elicited implicit stereotyping, but when viewed alongside more threatening expressions (Study 2), neutral Black targets primed crime and danger-relevant stereotypes. These results demonstrate that an individual can activate different associations based on changes in emotional expression and that a feature present in many everyday encounters (a smile) attenuates implicit racial stereotyping.

Keywords: facial expressions, stereotyping, implicit bias, race, emotion, race bias malleability

Emotional expression is one of many socially salient signals in human interaction. Expression can signal intentions and, at the most basic level, facilitates decisions about approach and avoidance indictors when encountering a stranger (Lang, Bradley, & Cuthbert, 1997). Racial information is another very salient, affectively laden signal prioritized in face processing, capable of triggering implicit stereotypes (Allport, 1954; Devine, 1989; Ito & Urland, 2003; Kubota & Ito, 2007). A similar network of neural regions process emotion and race (see Greer, Vendemia, & Stancil, 2012; Ito & Bartholow, 2009; Kubota, Banaji, & Phelps, 2012) and both influence the speed and allocation of attention (Eberhardt, Goff, Purdie, & Davies, 2004; Kubota & Ito, 2007; Lang, Davis, & Ohman, 2000; Ohman, 1997; Ohman, Dimberg, & Ost, 1985; Richeson & Trawalter, 2008). Given the potential functional and temporal similarity of emotion and race perception, we investigate here the interaction between the two to determine whether emotional expression, a naturalistically varying cue that conveys important information about intentions, moderates implicit stereotype activation.

Jennifer T. Kubota, Department of Psychology and The Center for the Study of Race, Politics, and Culture, University of Chicago; Tiffany A. Ito, Department of Psychology and Neuroscience, University of Colorado Boulder.

This research was supported by a Ford Foundation Predoctoral Fellowship to Jennifer T. Kubota and National Institute of Mental Health Grant R01MH071257 to Tiffany A. Ito. We thank the University of Colorado Stereotyping and Prejudice Lab at the University of Colorado Boulder for helpful comments on these projects.

Correspondence concerning this article should be addressed to Jennifer T. Kubota, University of Chicago, Department of Psychology, Center for the Study of Race, Politics, and Culture, 5848 South University Avenue, Chicago, IL 60637. E-mail: jennifer.kubota@gmail.com

Early research on the automatic activation of race-based associations implied a bleak outlook for intergroup relations, suggesting the inevitable retrieval and application of often negative group-based associations (Bargh, 1999; Devine & Monteith, 1999; Fiske, 1989). More recent research demonstrates that stereotype activation is in fact conditional (Blair, 2002; Dasgupta, 2009). The promise in this research is encouraging; however, many of the techniques for shifting implicit racial bias are time-consuming (e.g., diversity training; Rudman, Ashmore, & Gary, 2001) and/or difficult to implement in casual encounters (e.g., stereotype suppression; Galinsky & Moskowitz, 2000). By contrast, emotional expression may affect perceptions with little effort or intention.

Consistent with this proposition, emotional expression moderates a variety of findings in the intergroup literature, including racial categorization (Hugenberg & Bodenhausen, 2003; Kubota & Ito, 2007), evaluations (Chiu, Ambady, & Deldin, 2004; Dasgupta, DeSteno, Williams, & Hunsinger, 2009; Weisbuch & Ambady, 2008), facial mimicry (van der Schalk et al., 2011), cross-race memory (Ackerman et al., 2006; Young & Hugenberg, 2012), explicit trait ratings (Zebrowitz, Kikuchi, & Fellous, 2010), and fear conditioning (Lindström, Selbing, Molapour, & Olsson, 2014). Although this growing body of literature explores the interaction of emotion and race, this research is largely outside of the realm of implicit stereotyping. Hugenberg and Bodenhausen (2003) have shown that implicit bias affects perceptions of the expressions of racial ingroup and outgroup members, but little research addresses the opposite question of how emotional expressions affect implicit bias. In fact, the majority of research on implicit race bias utilizes faces specifically selected to be neutral in expression (e.g., Greenwald & Banaji, 1995; Payne, 2001), yet the emotion literature clearly demonstrates that expressions shape perceptions of positivity and approachability (Ekman, 2003; Frijda, Kuipers, & ter Schure, 1989; Miles, 2009; Todorov, Baron, &

Oosterhof, 2008). Happy facial expressions, in particular, signal affiliation and approach while angry expressions signal threat and avoidance (Hess, Blairy, & Kleck, 2000; Knutson, 1996; Miles, 2009; Willis, Palermo, & Burke, 2011). Moreover, decoding of expression occurs quickly (Ekman, 2003; Vanderploeg, Brown, & Marsh, 1987), suggesting that expressions are processed fast enough to affect automatic associations.

How might expressions affect implicit bias? Livingston and Pearce (2009) suggest that physical, psychological, and behavioral traits conveying lack of threat act as disarming mechanisms, reducing perceptions of threat associated with members of stigmatized groups. Empirically, they focused on facial features indicative of baby-faceness, reasoning that more neotenous features would counteract the perceived threat associated with Black Americans, resulting in better outcomes for baby-faced than mature-faced Black Americans. They applied this theorizing to business success, finding that those Black American men achieving at the highest levels (i.e., as CEOs) were more baby-faced than their White American counterparts. Also of relevance, research on context effects demonstrates that outgroup members shown in positive settings and roles decrease implicit bias (Barden, Maddux, Petty, & Brewer, 2004; Dasgupta & Greenwald, 2001; Maddux, Barden, Brewer, & Petty, 2005; Wittenbrink, Judd, & Park, 2001) and positive mood reduces own-race bias in facial recognition (Johnson & Fredrickson, 2005; see also Ackerman et al., 2006). Moreover, outgroup facial expressions of anger and threat evoke fear expressions in perceivers and increase racial bias in perception (Miller, Maner, & Becker, 2010; van der Schalk et al., 2011). These studies converge on a prediction that anger displays will elicit implicit stereotyping.

We hypothesize that just as neotenous facial features and positive cultural associations may serve a disarming mechanism, facial expressions signaling positivity or approach (in this case, smiling expressions) can similarly decrease bias. If this is the case, a happy expression could prove important in reducing bias, representing a simple and ecologically representative cue that is frequently present when encountering strangers in everyday life (Beaupré & Hess, 2003). This is not to suggest that outgroup members should pose happy expressions, but rather given the high frequency of smiles in daily life, research may overestimate danger and threat related implicit racial stereotyping for some first encounters.

Overview of Present Research

To test this, two studies were conducted investigating how race and emotion influence implicit stereotyping using the weapons identification task (WIT; Payne, 2001). Participants classified pictures of guns and tools that were primed with pictures of Black and White faces posing angry, happy, and neutral expressions. Participants are typically faster and more accurate to classify guns after neutral Black than neutral White face primes but faster and more accurate to identify tools after neutral White than neutral Black face primes (Amodio et al., 2004; Payne, 2001), an effect we expect to vary with prime expression.

Specifically, we predicted that emotional expression would moderate implicit stereotyping. We hypothesized that the intersection of one cue associated with threat and negativity on average in the United States (Black racial category) with a cue signaling positivity and approachability (a smile) would eliminate previously obtained patterns of racial bias. By contrast, we expected angry primes to produce implicit bias, with Black primes more strongly facilitating responses to guns as compared with tools. Because that pattern of bias is typically reflected in an interaction between prime race and target object, we expected to obtain this interaction for angry but not happy primes. We expected to replicate previous research when primes were neutral.

Study 1

Study 1 was designed to test whether emotional expression modulates patterns of implicit stereotyping typically observed in both speed and accuracy of responding when Black and White primes have a neutral expression (see Payne, 2001). An additional aim of Study 1 was to explore how emotional expression affects automatic responding during the WIT. To do so, we employed the process dissociation procedure (PDP; Jacoby, 1991) that separately estimates the extent to which WIT responses are determined by control-related processes and automatic tendencies to indicate the presence of a threat. Control in the task is reflected by the extent to which participants follow task instructions, and is calculated by subtracting the probability of an error on stereotype incongruent trials (e.g., a tool following a Black face prime) from the probability of a correct response on a stereotype congruent trial (e.g., a gun following a Black face prime). The automaticity formulas represent the extent to which stereotypes determine responses when control fails and are calculated from the probability of an error on a stereotype incongruent trial, divided by one minus the control estimate. Following prior research with the WIT (Payne, 2001, 2005), separate control and automaticity estimates were computed for trials involving Black and White primes; see Payne (2001) for specific calculations. If expression affects perceptions regardless of intention and effort, we expected positive expressions to decrease the degree of automatic processing in the WIT, especially following Black primes. We were less certain how emotional expression would affect control processing and, therefore, analysis of the control estimates was exploratory (Payne, 2001).

Method

Participants. Study 1 consisted of 71 non-Black (59 White, 6 Asian, 1 Hispanic, and 5 non-Black multirace), native English speaking undergraduates enrolled in introductory psychology who participated to fulfill a course requirement.[1]

Primes. Photos for the face primes were collected from a metropolitan college and university in Colorado from 23 Black males and 25 White males, each posing three facial expressions (angry, happy, and neutral), in accordance with Ekman and Friesen's (1975) guidelines. Participants gave written consent to have their pictures used in research and were paid $5.00. Each pose was taken from a frontal orientation.

[1] In Study 1, data from 12 participants were excluded for computer problems resulting in data loss (n = 5), prior participation in a similar study (n = 6), or making too many errors (more than 50% incorrect in half of the conditions; n = 1). Only native English speakers who resided in the United States for more than 10 years were eligible to participate in the studies, as a conservative attempt to assure familiarity with the cultural stereotypes investigated.

Following collection of the photos, 21 pilot participants categorized the facial expression in each photo from the options of *happy, sad, angry, disgusted, surprised, fearful, threatening,* and *neutral,* then judged the intensity of the chosen expression on a 1 to 9 Likert scale (1 = *low intensity* to 9 = *high intensity*). In addition, participants categorized the ethnicity of each face from the options of *African American/Black, Asian American, Hispanic/Latino, White/Caucasian,* and *other,* then rated their confidence in their chosen option on a 1 to 9 Likert scale (1 = *not at all confident* to 9 = *very confident*). Angry faces selected for the main experiment were categorized as angry or threatening by the majority of participants (M_{Black} = 81.17% of participants classified the face as angry or threatening, and M_{White} = 80.73% of participants classified the face as angry or threatening) and rated as above the mean in expression intensity (M_{Black} = 6.09 and M_{White} = 6.09). The happy (M_{Black} = 97.11% and M_{White} = 98.27%) and neutral (M_{Black} = 81.27% and M_{White} = 79.28%) photos for these same individuals were then examined to ensure high agreement in the emotion displayed and high intensity ratings for the happy expressions (M_{Black} = 6.99 and M_{White} = 6.74). For more information on photo collection and piloting for these pictures please see Kubota and Ito (2007).

Based on these criteria, six Black and six White male individuals, each posing an angry, a happy, and a neutral expression, were selected for the WIT. The identity of the individual was then held constant across expressions. Selected happy facial expressions were rated as significantly more intense than the angry expressions, $F(1, 23) = 4.73$, $p < .05$, $M_{\text{angry}} = 6.03$, and $M_{happy} = 6.94$. However, it is important to note that there were no significant differences in the mean intensity ratings between each race, nor were there any significant differences between mean attractiveness ratings for Black and White faces. All faces were cropped in a similar manner as Payne's (2001) original study to eliminate the hair, ears, and neck.

Procedure. The study was described as an investigation of object recognition during a vigilance task. The WIT (presented using PsyScope) was structured such that each trial began with the presentation of a face prime for 200 ms, followed by a 100-ms interstimulus interval, then either a gun or a tool for 200 ms, followed by a pattern mask. The participant's task was to identify the target via button press as quickly and accurately as possible. Target response hand was counterbalanced. The pattern mask remained on the screen for 500 ms. A "Too Slow" message appeared in red if a response was not made when the pattern mask ended, resulting in a 700-ms response window. The next trial appeared 1,000 ms after the response or after the time window was exceeded. Participants viewed primes of all expressions and races and completed 360 trials (i.e., expression and race were manipulated within subjects). Expression and race of the primes were randomly presented across trials.

Results and Discussion

Response latencies. Analysis of response latencies proceeded after removal of incorrect trials and trials with latencies ±2.5 standard deviations relative to the grand mean (11.54% and 2.07% of trials, respectively).[2] Analyses were performed on log-transformed values, but are reported in milliseconds. A 2 (Prime Race: Black, White) × 2 (Target: gun, tool) × 3 (Emotion: angry, happy, neutral) ANOVA with all factors within-subject revealed a target main effect such that participants were faster to classify guns (M = 426.55 ms) than tools (M = 447.55 ms), $F(1, 70) = 62.24$, $p < .01$, $\eta_p^2 = .47$. There was both a Prime Race × Target interaction, $F(1, 70) = 7.03$, $p < .01$, $\eta_p^2 = .09$, and an Emotion × Target interaction, $F(2, 140) = 3.71$, $p < .05$, $\eta_p^2 = .05$. These effects were qualified by the predicted three-way interaction Prime Race × Target × Emotion, $F(2, 140) = 3.08$, $p = .05$, $\eta_p^2 = .04$ (see Table 1).

To further explore the direction of the effects, we examined the Prime Race × Target interactions separately for each expression. In support of predictions, we found a significant Prime Race × Target interaction for angry expressions, $F(1, 70) = 14.76$, $p < .01$, $\eta_p^2 = .17$. As can be seen in Figure 1, when primes displayed angry expressions, participants were faster to categorize guns after Black compared with White primes, $F(1, 70) = 11.15$, $p < .01$, $\eta_p^2 = .14$, and faster to categorize tools after White than Black primes, $F(1, 70) = 5.70$, $p < .05$, $\eta_p^2 = .08$. Also in line with predictions, the Prime Race × Target interaction was absent for happy primes, $F(1, 70) = 1.27$, $p = .27$, $\eta_p^2 = .02$, JZS Bayes factor = 5.73.[3] A JZS Bayes factor of 5.73 indicates that the null hypothesis is nearly 6 times more likely than the alternative hypothesis. Interestingly, contrary to previous research and our predictions, the Prime Race × Target interaction failed to reach significance for neutral primes, $F(1, 70) = .21$, $p = .65$, $\eta_p^2 = .003$, JZS Bayes factor = 9.64.

To further test our predictions, we directly compared the magnitude of implicit stereotyping following angry and happy primes, as reflected in the degree to which Black primes of each emotion facilitate responses to guns while Whites of the same emotion facilitate responses to tools.[4] The overall magnitude of bias was greater when the primes displayed angry than happy expressions, $F(1, 70) = 4.29$, $p < .05$, $\eta_p^2 = .06$. In addition, bias was greater when primes displayed angry compared with neutral expressions, $F(1, 70) = 5.95$, $p < .05$, $\eta_p^2 = .08$, with no difference between happy and neutral primes, $F(1, 70) = .15$, $p = .70$, $\eta_p^2 = .002$, JZS Bayes factor = 9.93). In this study, happy and neutral primes seemed to equivalently reduce implicit stereotyping compared with angry primes.

Angry primes particularly increased the degree to which Black primes facilitated responses to guns relative to White primes. The size of the race effect on responses to guns was larger following angry than happy primes $F(1, 70) = 4.53$, $p < .05$, $\eta_p^2 = .06$. The size of the race effect on responses to guns did not differ between happy and neutral primes, $F(1, 70) = .71$, $p = .40$, $\eta_p^2 = .01$, JZS

[2] The 2.5 *SD* response window includes timeout trials.

[3] The JZS Bayes factor quantifies the strength of the null hypothesis (H_0) relative to the alternative hypothesis (H_1) and allows for inferences based on the null hypothesis (Rouder & Morey, 2012; Rouder, Speckman, Sun, Morey, & Iverson, 2009). JZS Bayes factor values greater than 1 indicate evidence in favor of the null, and values less than 1 indicate evidence in favor of the alternative. For details, please see http://pcl.missouri.edu/bayesfactor. JZS Bayes factors will be reported for all nonsignificant effects, with an *r* scale factor of 1 assumed.

[4] The magnitude of racial bias was calculated as the difference in RTs between guns following White primes minus Black primes (White Prime Gun – Black Prime Gun) plus the difference in RTs between tools following Black primes minus White primes (Black Prime Tool – White Prime Tool).

Table 1
Means and Standard Deviations of Response Latencies as a Function of Race and Target for Each Expression in Study 1

	Black		White	
	M	*SD*	*M*	*SD*
Angry				
Gun	422.35	43.62	431.42	41.98
Tool	451.05	43.12	443.72	42.76
Happy				
Gun	428.85	44.73	430.24	45.07
Tool	448.78	45.63	445.37	46.87
Neutral				
Gun	420.64	45.39	425.81	43.29
Tool	446.56	45.16	449.80	43.77

Note. *M* = mean; *SD* = standard deviation. Values represent raw response latencies.

Bayes factor = 7.57, or between angry and neutral primes, $F(1, 70) = .94$, $p = .34$, $\eta_p^2 = .01$, JZS Bayes factor = 6.75.

To summarize the latency effects, emotional expression modulated implicit stereotyping, with angry expressions exacerbating this effect relative to happy expressions, particularly increasing the speed with which Black angry primes facilitated guns. Interestingly, neutral expressions failed to replicate previous research (e.g., Payne, 2001).

Error rates. We also predicted that emotional expression should modulate implicit stereotyping in the accuracy of responding. The within-subjects ANOVA on error rates revealed a target main effect, with participants making more errors on tool ($M = 15.55\%$) than gun trials ($M = 11.73\%$), $F(1, 70) = 27.47$, $p < .01$, $\eta_p^2 = .28$. There were no other main effects or two-way interactions, but, in support of the hypothesis that expression modulates implicit stereotyping, the predicted three-way interaction Prime Race × Target × Emotion was significant, $F(2, 140) = 6.52$, $p < .01$, $\eta_p^2 = .09$ (see Table 2).

Separately examining the Race × Target interactions for each emotional expression revealed implicit stereotyping only for angry expressions, $F(1, 70) = 11.39$, $p < .01$, $\eta_p^2 = .14$. Participants misidentified more guns after angry White than angry Black primes, $F(1, 70) = 11.81$, $p < .01$, $\eta_p^2 = .14$, but marginally misidentified more tools after angry Black than angry White primes, $F(1, 70) = 3.70$, $p = .06$, $\eta_p^2 = .05$, JZS Bayes factor = 1.82 (see Figure 2).[5] The Prime Race × Target interaction was not significant for happy primes, $F(1, 70) = .20$, $p = .65$, $\eta_p^2 = .003$, JZS Bayes factor = 9.69. Again, contrary to previous findings (Payne, 2001), implicit stereotyping was also absent following neutral primes, $F(1, 70) = .01$, $p = .95$, $\eta_p^2 = .00007$, JZS Bayes factor = 10.71. The accuracy results further support the hypothesis that angry expressions facilitate implicit stereotyping.

As with response latency, we computed a single contrast within each emotion to reflect the degree of racial bias in implicit stereotyping. Supporting the prediction that threat exacerbates implicit stereotyping relative to more approachable expressions, angry primes significantly exacerbated implicit stereotyping relative to happy primes (the magnitude of the Prime Race × Target effect between each expression). Implicit stereotyping was greater following angry than happy or neutral primes, $Fs(1,70) = 9.78$ and 9.14, $ps < .01$, η_p^2s = .12, respectively. There was no difference in accuracy between happy and neutral primes, $F(1, 70) = .08$, $p = .78$, $\eta_p^2 = .001$, JZS Bayes factor = 10.23.

Angry expressions particularly increased the degree to which Black primes facilitated responding to guns. The degree to which Black primes facilitated responses to guns more so than White primes was greater for angry as compared with happy primes, $F(1, 70) = 7.09$, $p < .05$, $\eta_p^2 = .09$. The size of the race effect on responses to guns did not differ between happy and neutral primes, $F(1, 70) = .35$, $p = .56$, $\eta_p^2 = .01$, JZS Bayes factor = 9.02, or between angry and neutral primes, $F(1, 70) = 2.93$, $p = .09$, $\eta_p^2 = .04$, JZS Bayes factor = 2.60.

Process dissociation estimates. Estimates of automatic and controlled processes for Black and White primes of each type of expression were calculated following Payne (2001).[6] As predicted, there was a Prime Race × Emotion interaction for automatic estimates, $F(1, 70) = 7.34$, $p < .01$, $\eta_p^2 = .10$. Tests of the simple race effects within emotion showed that automatic processing was greater for angry Black primes ($M = .63$) than angry White primes ($M = .52$), $F(1, 70) = 13.26$, $p < .01$, $\eta_p^2 = .16$. There was no difference in automatic estimates between Black and White primes for happy expressions, $F(1, 70) = 1.24$, $p = .27$, $\eta_p^2 = .02$, JZS Bayes factor = 5.86, or neutral expressions, $F(1, 70) = .20$, $p = .66$, $\eta_p^2 = .003$, JZS Bayes factor = 9.69 (see Table 3).

We also computed simple effects of emotion within each race. For Black primes, automatic processing was greater after angry than happy primes, $F(1, 70) = 8.45$, $p < .01$, $\eta_p^2 = .11$, and neutral primes, $F(1, 70) = 7.67$, $p < .01$, $\eta_p^2 = .10$. There was no difference in automatic processing between happy Black and neutral Black primes, $F(1, 70) = .13$, $p = .73$, $\eta_p^2 = .002$, JZS Bayes factor = 10.04. For White primes, automatic estimates were greater after happy than angry primes, $F(1, 70) = 5.09$, $p < .05$, $\eta_p^2 = .07$. There was no difference in automatic processing between angry White and neutral White primes, $F(1, 70) = 1.57$, $p = .21$, $\eta_p^2 = .02$, JZS Bayes factor = 4.99, or between happy White and neutral White primes, $F(1, 70) = .63$, $p = .43$, $\eta_p^2 = .01$, JZS Bayes factor = 7.88. The Prime Race × Expression interaction failed to reach significance for controlled estimates, $F(1, 70) = .62$, $p = .53$, $\eta_p^2 = .01$, JZS Bayes factor = 7.88.[7]

Summary

Across the three measures examined—response latencies, error rates, and automatic processing, a consistent pattern emerges. For all measures, facial expression modulated implicit stereotyping. A Black prime containing cues of threat elicited crime-related stereotyping while a Black prime containing cues of approachability eliminated implicit stereotyping.

[5] This simple effect of race should be interpreted with caution in light of a JZS Bayes factor greater than 1, indicating support in favor of the null hypothesis.

[6] To allow for estimation of automatic and controlled components that includes all trials, perfect performance (i.e., no errors) was adjusted by half an error (for correction of perfect performance using the PDP, see Ofan, Rubin, and Amodio (2011)).

[7] There was a marginal main effect of race for the control estimates, $F(1, 70) = 3.97$, $p = .05$, $\eta_p^2 = .05$, JZS Bayes factor = 1.60, where control was greater for the Black primes ($M = .74$) than for the White primes ($M = .72$).

Unexpectedly, across the three measures, we did not replicate previous implicit stereotyping effects when primes were neutral, instead finding no significant differences in responding following Black and White neutral primes. One possible explanation for the null result following neutral primes is contrast effects. In this study, participants viewed all possible facial expressions in an intermixed and random fashion. We explicitly designed this study to mimic daily life, where people encounter a variety of facial expressions. However, intermixing the expressions may have had the unintended consequence of establishing contrast effects, whereby the subjective perception of the valence of neutral expressions shifted from trial to trial. Study 2 was designed to address this concern, by exposing participants to only one expression context.

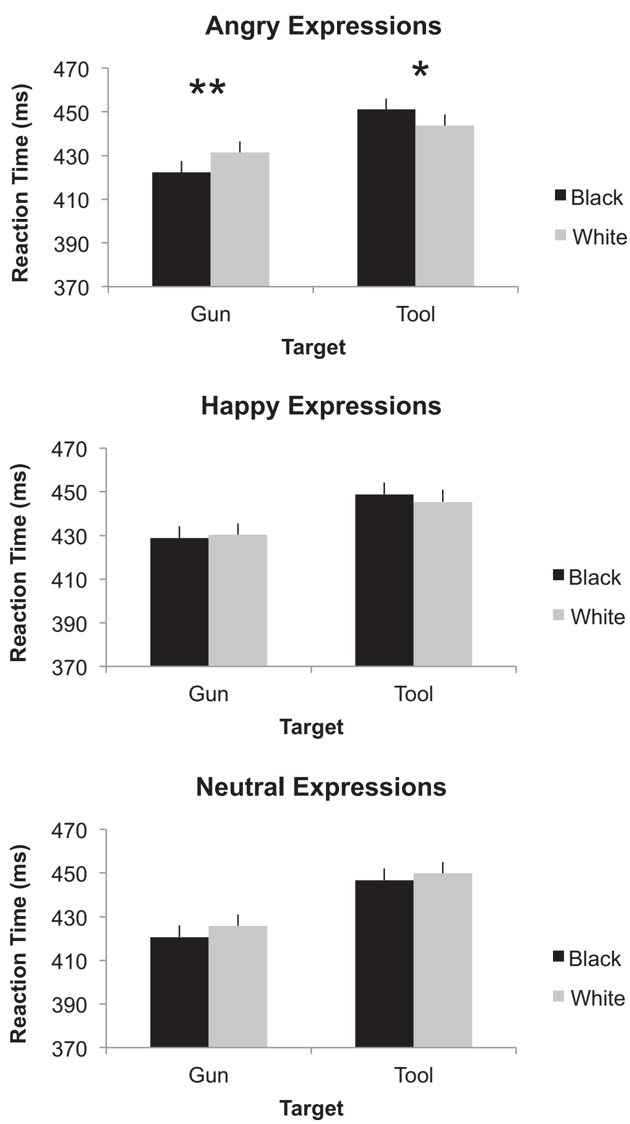

Figure 1. Reaction times in Study 1 to targets as a function of prime race, averaged across participants, for angry, happy, and neutral expressions. Error bars represent +1 standard error. $^{*}p < .05$. $^{**}p < .01$.

Table 2
Means and Standard Deviations of Accuracy as a Function of Race and Target for Each Expression in Study 1

	Black		White	
	M	*SD*	*M*	*SD*
Angry				
Gun	9.77	7.22	13.29	9.55
Tool	17.32	11.58	14.93	11.31
Happy				
Gun	11.36	7.87	11.69	9.89
Tool	14.65	9.72	15.63	10.01
Neutral				
Gun	11.60	7.87	12.77	11.31
Tool	14.84	10.92	16.10	10.66

Note. *M* = mean; *SD* = standard deviation.

Study 2

Previous research demonstrates that context can change stereotyping and prejudice (e.g., Wittenbrink et al., 2001). Because Study 1 participants viewed all expressions in an intermixed fashion, perceived valence of neutral expressions may have been more variable across trials and participants, resulting in less consistent implicit stereotyping effects. It was hypothesized that varying exposure to expression between subjects may bring the neutral effects in line with previous findings. Because angry and happy expressions are more extreme, they may be less susceptible to the influence of surrounding context producing a similar pattern of results when angry and happy primes are viewed in isolation as when they are viewed in a random and intermixed fashion. However, it is also possible that responses to angry and happy expressions depend on being viewed in contrast to other expressions, making it important to test whether the effects obtained in Study 1 remain when expressions are seen in isolation.

Method

Participants. One hundred sixty-six non-Black (143 White, 9 Asian, 9 Hispanic, and 5 non-Black multiracial), native English-speaking undergraduates enrolled in introductory psychology participated to fulfill a course requirement.[8]

Materials. The materials were identical to those used in Study 1.

Procedure. The procedures and task were identical to Study 1 in all but three ways. First, participants only viewed primes of one expression (angry, happy, or neutral). Next, to ensure that the effects observed in Study 1 were not due solely to reduced processing time, participants were now allowed as much time as needed to respond. Additionally, because primes of only one expression were seen, participants completed fewer total trials

[8] EEG recordings were obtained from 56 of these participants but are not considered here. The remaining 110 completed only the behavioral measure. There were no behavioral differences between these groups. An additional six participants completed the task, but were either dropped from or unable to be included in analyses due to a high number of errors (more than 50% incorrect in half of the cells; $n = 1$) or computer problems resulting in data loss ($n = 5$).

(120), but were presented with the same number of trials per expression condition as Study 1.

Results and Discussion

As in Study 1, analysis of response latencies proceeded after removal of incorrect trials and trials with latencies ± 2.5 standard deviations relative to the grand mean (4.07% and 2.14% of trials, respectively). Due to the small number of errors in Study 2, analyses focused on reaction times (RTs). As a consequence, we were also unable to perform analyses on PDP estimates.

Analyses were performed on log-transformed RTs, but are reported in milliseconds. A 2 (Prime Race: Black, White) × 2 (Target: gun, tool) × 3 (Emotion: angry, happy, neutral) ANOVA with the first two factors within-subject and the last between, revealed a target main effect; participants were faster to classify guns than tools (M_{gun} = 511.07 ms and M_{tool} = 535.52 ms), $F(1, 163) = 110.72$, $p < .01$, $\eta_p^2 = .40$. There was also a Prime Race × Target interaction, $F(1, 163) = 14.32$, $p < .01$, $\eta_p^2 = .08$, that was qualified by the predicted three-way interaction Prime Race × Target × Emotion, $F(2, 163) = 3.87$, $p < .05$, $\eta_p^2 = .05$. As in Study 1, we explored the three-way interaction by separately assessing the Prime Race × Target interaction within each expression. Consistent with Study 1, the interaction was significant for angry, $F(1, 49) = 11.22$, $p < .01$, $\eta_p^2 = .19$, but not happy expressions, $F(1, 58) > .001$, $p = .10$, $\eta_p^2 > .001$, JZS Bayes factor < 9.78. Unlike in Study 1, when participants were exposed to only neutral Black and White primes, we replicated previous implicit stereotyping effects for neutral primes as reflected in the Prime Race × Target interaction, $F(1, 56) = 8.46$, $p < .01$, $\eta_p^2 = .13$ (see Table 4).

As can be seen in Figure 3, tests of simple effects reveal implicit stereotyping following only the angry and neutral primes. For angry primes, participants were faster to categorize guns after angry Black compared with angry White primes, $F(1, 49) = 7.15$, $p < .05$, $\eta_p^2 = .13$, and faster to categorize tools after angry White than angry Black primes, $F(1, 49) = 4.72$, $p < .05$, $\eta_p^2 = .09$. Participants were also marginally faster to categorize guns after neutral Black compared with neutral White primes, $F(1, 56) = 3.30$, $p = .08$, $\eta_p^2 = .06$, JZS Bayes factor = 1.97,[9] and faster to categorize tools after neutral White than neutral Black primes, $F(1, 56) = 4.94$, $p < .05$, $\eta_p^2 = .08$.

An explicit comparison of the magnitude of racial bias across expressions further confirmed the exacerbation of implicit stereotyping following angry and neutral expressions relative to happy expressions. The magnitude of implicit stereotyping was significantly greater following angry and neutral expressions compared with happy expressions, $F(1, 107) = 6.80$ and $F(1, 114) = 4.38$, $ps < .05$, η_p^2s = .06 and .04, respectively, with no difference between angry and neutral primes. When viewed in isolation, only

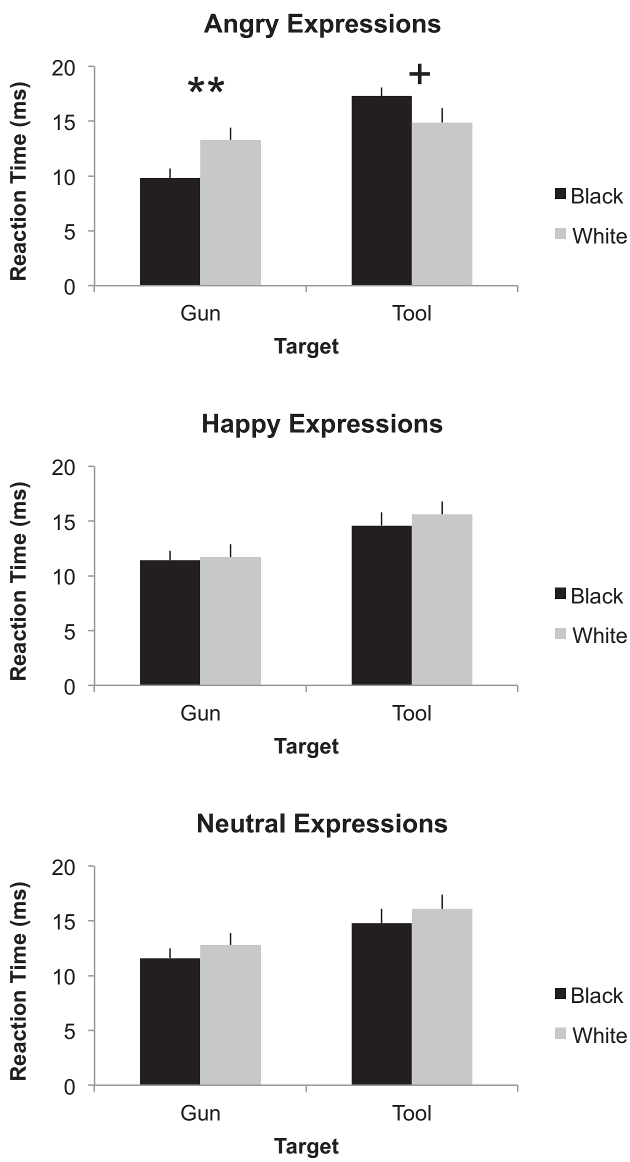

Figure 2. Error rates (in percentages) in Study 1 to targets as a function of prime race, averaged across participants, for angry, happy, and neutral expressions. Error bars represent +1 standard error. ** $p < .01$, + $p < .07$.

Table 3
Means and Standard Deviations of PDP Estimates as a Function of Race and Process for Each Expression in Study 1

	Black		White	
	M	*SD*	*M*	*SD*
Angry				
Automatic	.63	.17	.52	.19
Controlled	.73	.16	.72	.18
Happy				
Automatic	.55	.19	.58	.19
Controlled	.74	.14	.72	.17
Neutral				
Automatic	.54	.19	.55	.21
Controlled	.74	.14	.71	.16

Note. PDP = process dissociation procedure; *M* = mean; *SD* = standard deviation. The PDP estimates measure the ability of the participants to accurately identify the targets.

[9] This marginal simple effect of race should be interpreted with caution in light of a JZS Bayes factor greater than 1, indicating support in favor of the null hypothesis.

Table 4
Means and Standard Deviations of Response Latencies as a Function of Race and Target for Each Expression in Study 2

	Black		White	
	M	*SD*	*M*	*SD*
Angry				
Gun	523.37	91.47	533.87	96.18
Tool	558.92	83.05	551.83	81.46
Happy				
Gun	499.98	73.84	497.73	71.91
Tool	521.27	66.91	519.53	66.84
Neutral				
Gun	502.52	82.53	508.92	83.31
Tool	534.77	82.21	526.83	80.21

Note. *M* = mean; *SD* = standard deviation. Values represent raw response latencies.

happy primes reduced implicit stereotyping compared with angry and neutral primes, supporting a context dependency hypothesis for the neutral primes.

As in Study 1, the degree to which Black primes facilitated responses to guns more so than White primes was significantly reduced following happy as compared with angry primes, $F(1, 107) = 6.28$, $p < .05$, $\eta_p^2 = .06$. There was a trend for Black primes to facilitate responses to guns less following happy than neutral primes, but this difference failed to reach significance, $F(1, 114) = 2.83$, $p = .10$, $\eta_p^2 = .02$, JZS Bayes factor = 3.40. There was no difference in responding to guns following angry and neutral primes, $F(1, 105) = 1.23$, $p = .27$, $\eta_p^2 = .01$, JZS Bayes factor = 7.10.

In sum, across Study 1 and Study 2 emotion modulated implicit stereotyping. Black primes containing a cue of threat produced implicit stereotyping, whereas a cue of approachability eliminated this pattern. Moreover, the way in which neutral expressions affected implicit stereotyping depended on context. When viewed in isolation, neutral Black targets primed crime and danger-relevant stereotypes, but when viewed alongside more threatening expressions, neutral Black targets no longer elicited implicit stereotyping.

General Discussion

Consistent with past research showing racial bias in response to negative cues and features (Barden et al., 2004; Dasgupta & Greenwald, 2001; Maddux et al., 2005; Wittenbrink et al., 2001), priming with a stimulus containing a danger-relevant cue of threat (angry expression) resulted in implicit stereotyping. Importantly, positive cues also had the power to sway implicit stereotyping (Livingston & Pearce, 2009). Priming with a stimulus containing cues both to threat (race) and approachability (a smile) decreased previously obtained patterns of implicit stereotyping. Specifically, the tendency for Black faces to facilitate responses to guns, whereas White faces facilitate responses to tools, was ameliorated when the faces displayed happy expressions. By contrast, responses were always faster and more accurate to guns after angry Black than angry White primes, but faster and more accurate to tools after angry White than angry Black primes. As would be expected if happy expressions serve a disarming function, the reduction in bias associated with happy expressions was particularly evident in responses to guns, where the facilitation of responses to guns by Black primes was attenuated following happy primes. Moreover, happiness diminished the automatic associations elicited by Black faces, as shown in the process dissociation measures in Study 1.

We suggest that just as neotenous facial features and positive cultural associations may serve a disarming mechanism, facial expressions signaling positivity or approach (in this case, smiling expressions) can similarly decrease implicit danger-related stereotyping.

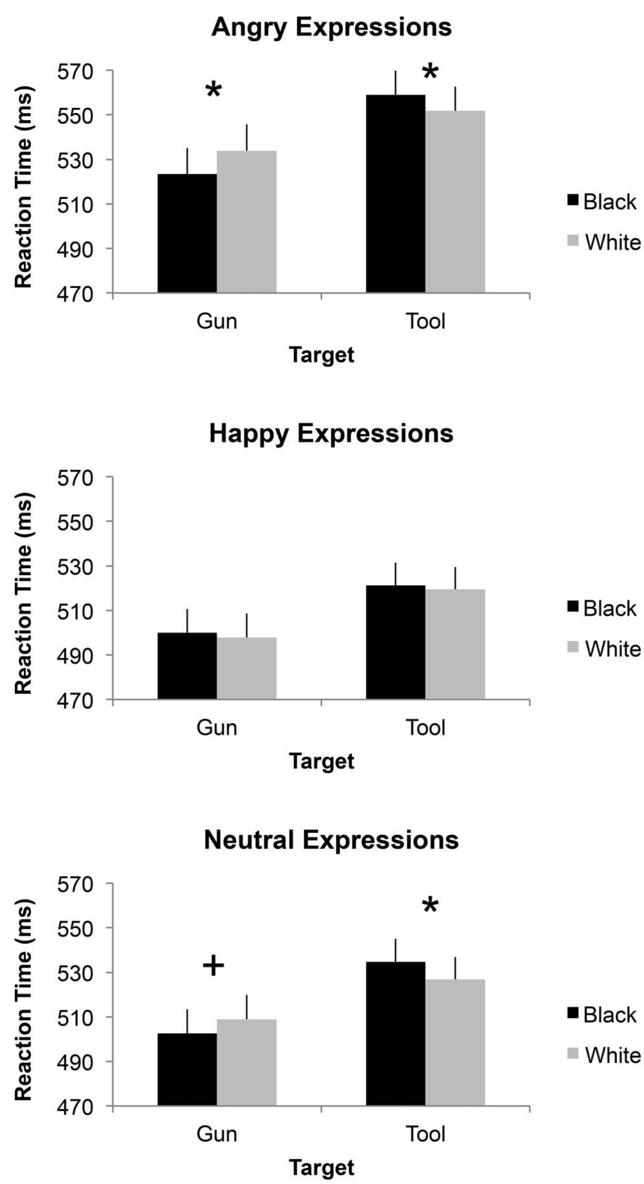

Figure 3. Reaction times in Study 2 to targets as a function of prime race, averaged across participants, for angry, happy, and neutral expressions. Error bars represent +1 standard error. * $p < .05$, + $p < .09$.

Why Do Happy Expressions Reduce Implicit Stereotyping?

Several mechanisms might account for the reduction in implicit bias when expressions are happy relative to angry. One is Gestalt perception, in which race is perceived not in isolation, but in conjunction with additional factors both internal and external to the stimulus individual (Livingston & Pearce, 2009; Wittenbrink et al., 2001). A similar explanation is that different subtypes are activated at the intersection of two social categories such as a racial category and a social role (Barden et al., 2004). From this perspective, although the global category of Black might activate negative semantic associations that facilitate responding to guns, a smiling Black individual would activate more positive associations.

The same outcome could be obtained without assuming that distinct subtypes exist or are activated as a function of emotion and race. Instead, the associative strength between individuals and racial category information could differ as a function of expression. This possibility is supported by Macrae, Mitchell, and Pendry (2002), who found that more familiar names more strongly activated gender associations (see also Richeson, Trawalter, & Shelton, 2005). Expression may similarly affect associations with racial categories; smiling Black individuals may be perceived as less normative of the category and, therefore, more weakly activate racial category information (Hugenberg & Bodenhausen, 2004). It is interesting to note that smiling itself may increase perceived familiarity (Baudouin, Gilibert, Sansone, & Tiberghien, 2000). Although a smiling Black individual might be perceived as personally more familiar than a nonsmiling one, it is still possible that the former is considered less racially prototypical (e.g., Blair, Judd, Sadler, & Jenkins, 2002; Livingston & Brewer, 2002; Maddox & Gray, 2002).

While Gestalt perception, subtyping, and exemplar prototypicality are all mechanisms that may account for our results, we found no evidence of an affective divergence effect in which ingroup members elicit expression-congruent reactions, whereas outgroup member elicit opposing reactions. This pattern has been observed in other studies (Epstude & Mussweiler, 2009; van der Schalk et al., 2011; Weisbuch & Ambady, 2008) and is thought to occur due to differences in the signal value of emotional expressions displayed by ingroup and outgroup members. Whereas happy and fearful ingroup members imply good and bad outcomes for the self respectively, a happy outgroup member could signal the outgroup's relative dominance, which could elicit negative affect in the ingroup. Likewise, an outgroup fear expression could convey the ingroup's relative strength, thereby eliciting positive affect in the ingroup. Under this analysis, our happy Black primes might have elicited more negative reactions in our non-White participants, but we consistently found no significant racial bias when primes were happy.

The lack of evidence for affective convergence in our data could be due to the type of reaction measured. Affective convergence has been observed in affective reactions or implicit evaluative associations activated in a perceiver. By contrast, the present studies investigated implicit activation of semantic content. Our results expand on this complexity, demonstrating that, while affective divergence may be likely for evaluative judgments, other mechanisms may govern the activation of other associations. The differences in these results suggest that a single stimulus (an outgroup member with a happy expression) may elicit negative evaluations but not necessarily activate semantic associations of crime and danger. To the degree that both outcomes are possible, one particularly interesting question is how the relevant processes operate. Are mechanisms producing a divergent affective reaction but activating a convergent semantic association activated simultaneously, or do the outcomes depend on task? Disentangling the mechanism(s) responsible for these differing outcomes is an important future direction.

It is of note that there may be a threshold at which threat intensity either in expression or context could dominate and diminish focus on race, thereby producing decreases in implicit bias (Correll, Wittenbrink, Park, Judd, & Goyle, 2011). We cannot presently determine the relative contribution of these different mechanisms to the results at hand, and it is important to note that they may not be mutually exclusive.

Neutral Expressions Are Sensitive to Expression Context

While the effects of happy and angry expressions were the same in the two studies, neutral expressions differed. Consistent with past research using this task (Payne, 2001), neutral primes elicited implicit stereotyping in Study 2, but no bias was evident in Study 1, despite using the same primes in both studies. What differed was that prime expression was blocked in Study 2 but intermixed in Study 1, indicating that seeing expressions directly in contrast with other expressions selectively affected associations elicited by the neutral primes.

This is actually not surprising. Neutral expressions are perceived as less distinctive than other expressions, and their categorization and intensity can change when viewed alongside other expressions as a result of contrast effects (Carrera-Levillain & Fernandez-Dols, 1994; Russell & Fehr, 1987; Tanaka-Matsumi, Attivissimo, Nelson, & D'Urso, 1995). Because expressions were presented randomly in Study 1, the neutral faces may have elicited variable reactions depending on the expression of preceding faces. This may have on balance failed to result in a consistent pattern of bias. Although these results were unexpected, they do highlight the importance of attending to the context in which facial expression and/or racial bias effects are evaluated. While neutral expressions viewed in isolation may be perceived as slightly negative, accounting for their ability to consistently elicit bias when viewed in isolation (e.g., Russell & Fehr, 1987), Study 1 highlights that very different reactions can be elicited by the same stimuli if the surrounding context changes.

Conclusion

These results are not alone in demonstrating the impact of facial expressions on perceptions. However, they are unique for showing that subtle changes in expression can alter the implicit semantic associations activated by the same exemplar. Whereas implicit stereotyping is quite robust, as is the tendency to rely more on automatic processes following presentation of a Black than White exemplar, a smile can diminish both. We are certainly not implying that members of stigmatized groups are not entitled to express negative emotions. Instead, we think evidence that happy expressions are quite typical in daily interactions (Beaupré & Hess, 2003) offers hope that even if danger and crime stereotypes can be easily activated, as suggested by the myriad of studies showing implicit racial bias, many everyday encounters possess characteristics that are actually incongruent with bias.

References

Ackerman, J. M., Shapiro, J. R., Neuberg, S. L., Kenrick, D. T., Becker, D. V., Griskevicius, V., . . . Schaller, M. (2006). They all look the same to me (unless they're angry): From out-group homogeneity to out-group heterogeneity. *Psychological Science, 17,* 836–840. http://dx.doi.org/10.1111/j.1467-9280.2006.01790.x

Allport, G. (1954). *The nature of prejudice*. Reading, MA: Addison Wesley.

Amodio, D. M., Harmon-Jones, E., Devine, P. G., Curtin, J. J., Hartley, S. L., & Covert, A. E. (2004). Neural signals for the detection of unintentional race bias. *Psychological Science, 15,* 88–93. http://dx.doi.org/10.1111/j.0963-7214.2004.01502003.x

Barden, J., Maddux, W. W., Petty, R. E., & Brewer, M. B. (2004). Contextual moderation of racial bias: The impact of social roles on controlled and automatically activated attitudes. *Journal of Personality and Social Psychology, 87,* 5–22. http://dx.doi.org/10.1037/0022-3514.87.1.5

Bargh, J. A. (1999). The cognitive monster: The case against the controllability of automatic stereotype effects. In S. Chaiken & Y. Trope (Eds.), *Dual process theories in social psychology* (pp. 361–382). New York, NY: Guilford Press.

Baudouin, J. Y., Gilibert, D., Sansone, S., & Tiberghien, G. (2000). When the smile is a cue to familiarity. *Memory, 8,* 285–292. http://dx.doi.org/10.1080/09658210050117717

Beaupré, M. G., & Hess, U. (2003). In my mind, we all smile: A case of in-group favoritism. *Journal of Experimental Social Psychology, 39,* 371–377. http://dx.doi.org/10.1016/S0022-1031(03)00012-X

Blair, I. V. (2002). The malleability of automatic stereotypes and prejudice. *Personality and Social Psychology Review, 6,* 242–261. http://dx.doi.org/10.1207/S15327957PSPR0603_8

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. http://dx.doi.org/10.1037/0022-3514.83.1.5

Carrera-Levillain, P., & Fernandez-Dols, J.-M. (1994). Neutral faces in context: Their emotional meaning and their function. *Journal of Nonverbal Behavior, 18,* 281–299. http://dx.doi.org/10.1007/BF02172290

Chiu, P., Ambady, N., & Deldin, P. (2004). Contingent negative variation in response to emotional in- and out-group stimuli differentiates high- and low-prejudiced individuals. *Journal of Cognitive Neuroscience, 16,* 1830–1839. http://dx.doi.org/10.1162/0898929042947946

Correll, J., Wittenbrink, B., Park, B., Judd, C. M., & Goyle, A. (2011). Dangerous enough: Moderating racial bias with contextual threat cues. *Journal of Experimental Social Psychology, 47,* 184–189. http://dx.doi.org/10.1016/j.jesp.2010.08.017

Dasgupta, N. (2009). Mechanisms underlying the malleability of implicit prejudice and stereotypes: The role of automaticity and cognitive control. In T. D. Nelson (Ed.), *Handbook of stereotyping, prejudice, and discrimination* (pp. 267–284). New York, NY: Psychology Press.

Dasgupta, N., Desteno, D., Williams, L. A., & Hunsinger, M. (2009). Fanning the flames of prejudice: The influence of specific incidental emotions on implicit prejudice. *Emotion, 9,* 585–591. http://dx.doi.org/10.1037/a0015961

Dasgupta, N., & Greenwald, A. G. (2001). On the malleability of automatic attitudes: Combating automatic prejudice with images of admired and disliked individuals. *Journal of Personality and Social Psychology, 81,* 800–814. http://dx.doi.org/10.1037/0022-3514.81.5.800

Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56,* 5–18. http://dx.doi.org/10.1037/0022-3514.56.1.5

Devine, P. G., & Monteith, M. J. (1999). Automaticity and control in stereotyping. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 339–360). New York, NY: Guilford Press.

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. http://dx.doi.org/10.1037/0022-3514.87.6.876

Ekman, P. (2003). *Emotions revealed: Recognizing faces and feelings to improve communication and emotional life*. New York, New York: Henry Holt and Company.

Ekman, P., & Friesen, W. V. (1975). *Unmasking the face: A guide to recognizing emotions from facial cues*. Englewood Cliffs, NJ: Prentice Hall.

Epstude, K., & Mussweiler, T. (2009). What you feel is how you compare: How comparisons influence the social induction of affect. *Emotion, 9,* 1–14. http://dx.doi.org/10.1037/a0014148

Fiske, S. (1989). Examining the role of intent: Toward understanding its role in stereotyping and prejudice. In J. Uleman & J. Bargh (Eds.), *Unintended thought: The limits of awareness, intention, and control* (pp. 253–283). New York, NY: Guilford Press.

Frijda, N. H., Kuipers, P., & ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *Journal of Personality and Social Psychology, 57,* 212–228. http://dx.doi.org/10.1037/0022-3514.57.2.212

Galinsky, A. D., & Moskowitz, G. B. (2000). Perspective-taking: Decreasing stereotype expression, stereotype accessibility, and in-group favoritism. *Journal of Personality and Social Psychology, 78,* 708–724. http://dx.doi.org/10.1037/0022-3514.78.4.708

Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review, 102,* 4–27. http://dx.doi.org/10.1037/0033-295X.102.1.4

Greer, T. M., Vendemia, J. M. C., & Stancil, M. (2012). Neural correlates of race-related social evaluations for African Americans and White Americans. *Neuropsychology, 26,* 704–712. http://dx.doi.org/10.1037/a0030035

Hess, U., Blairy, S., & Kleck, R. E. (2000). The Influence of facial emotion displays, gender, and ethnicity on judgments of dominance and affiliation. *Journal of Nonverbal Behavior, 24,* 265–283. http://dx.doi.org/10.1023/A:1006623213355

Hugenberg, K., & Bodenhausen, G. V. (2003). Facing prejudice: Implicit prejudice and the perception of facial threat. *Psychological Science, 14,* 640–643. http://dx.doi.org/10.1046/j.0956-7976.2003.psci_1478.x

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. http://dx.doi.org/10.1111/j.0956-7976.2004.00680.x

Ito, T. A., & Bartholow, B. D. (2009). The neural correlates of race. *Trends in Cognitive Sciences, 13,* 524–531. http://dx.doi.org/10.1016/j.tics.2009.10.002

Ito, T. A., & Urland, G. R. (2003). Race and gender on the brain: Electrocortical measures of attention to the race and gender of multiply categorizable individuals. *Journal of Personality and Social Psychology, 85,* 616–626. http://dx.doi.org/10.1037/0022-3514.85.4.616

Jacoby, L. L. (1991). A process dissociation framework: Separating automatic from intentional uses of memory. *Journal of Memory and Language, 30,* 513–541. http://dx.doi.org/10.1016/0749-596X(91)90025-F

Johnson, K. J., & Fredrickson, B. L. (2005). "We all look the same to me": Positive emotions eliminate the own-race in face recognition. *Psychological Science, 16,* 875–881. http://dx.doi.org/10.1111/j.1467-9280.2005.01631.x

Knutson, B. (1996). Facial expressions of emotion influence interpersonal trait inferences. *Journal of Nonverbal Behavior, 20,* 165–182. http://dx.doi.org/10.1007/BF02281954

Kubota, J. T., Banaji, M. R., & Phelps, E. A. (2012). The neuroscience of race. *Nature Neuroscience, 15,* 940–948. http://dx.doi.org/10.1038/nn.3136

Kubota, J. T., & Ito, T. A. (2007). Multiple cues in social perception: The time course of processing race and facial expression. *Journal of Experimental Social Psychology, 43,* 738–752. http://dx.doi.org/10.1016/j.jesp.2006.10.023

Lang, P. J., Bradley, M. M., & Cuthbert, B. N. (1997). Motivated attention: Affect, activation, and action. In P. J. Lang, R. F. Simons, & M. Balaban (Eds.), *Attention and orienting: Sensory and motivational processes* (pp. 97–135). Hillsdale, NJ: Erlbaum.

Lang, P. J., Davis, M., & Ohman, A. (2000). Fear and anxiety: Animal models and human cognitive psychophysiology. *Journal of Affective Disorders, 61,* 137–159. http://dx.doi.org/10.1016/S0165-0327(00)00343-8

Lindström, B., Selbing, I., Molapour, T., & Olsson, A. (2014). Racial bias shapes social reinforcement learning. *Psychological Science, 25,* 711–719. http://dx.doi.org/10.1177/0956797613514093

Livingston, R. W., & Brewer, M. B. (2002). What are we really priming? Cue-based versus category-based processing of facial stimuli. *Journal of Personality and Social Psychology, 82,* 5–18. http://dx.doi.org/10.1037/0022-3514.82.1.5

Livingston, R. W., & Pearce, N. A. (2009). The teddy-bear effect: Does having a baby face benefit black chief executive officers? *Psychological Science, 20,* 1229–1236. http://dx.doi.org/10.1111/j.1467-9280.2009.02431.x

Macrae, C. N., Mitchell, J. P., & Pendry, L. F. (2002). What's in a forename? Cue familiarity and stereotypical thinking. *Journal of Experimental Social Psychology, 38,* 186–193. http://dx.doi.org/10.1006/jesp.2001.1496

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. http://dx.doi.org/10.1177/0146167202282010

Maddux, W. W., Barden, J., Brewer, M. B., & Petty, R. E. (2005). Saying no to negativity: The effects of context and motivation to control prejudice on automatic evaluative responses. *Journal of Experimental Social Psychology, 41,* 19–35. http://dx.doi.org/10.1016/j.jesp.2004.05.002

Miles, L. K. (2009). Who is approachable? *Journal of Experimental Social Psychology, 45,* 262–266. http://dx.doi.org/10.1016/j.jesp.2008.08.010

Miller, S. L., Maner, J. K., & Becker, D. V. (2010). Self-protective biases in group categorization: Threat cues shape the psychological boundary between "us" and "them." *Journal of Personality and Social Psychology, 99,* 62–77. http://dx.doi.org/10.1037/a0018086

Ofan, R. H., Rubin, N., & Amodio, D. M. (2011). Seeing race: N170 responses to race and their relation to automatic racial attitudes and controlled processing. *Journal of Cognitive Neuroscience, 23,* 3153–3161. http://dx.doi.org/10.1162/jocn_a_00014

Ohman, A. (1997). As fast as the blink of an eye: Evolutionary preparedness for preattentive processing of threat. In P. J. Lang, R. F. Simons, & M. T. Balaban (Eds.), *Attention and orienting: Sensory and motivational processes* (pp. 165–184). Hillsdale, NJ: Erlbaum.

Ohman, A., Dimberg, U., & Ost, L.-G. (1985). Animal and social phobias: Biological constraints on learned fear responses. In S. Reiss & R. R. Bootzin (Eds.), *Theoretical issues in behavior therapy* (pp. 123–175). New York, NY: Academic Press.

Payne, B. K. (2001). Prejudice and perception: The role of automatic and controlled processes in misperceiving a weapon. *Journal of Personality and Social Psychology, 81,* 181–192. http://dx.doi.org/10.1037/0022-3514.81.2.181

Payne, B. K. (2005). Conceptualizing control in social cognition: How executive functioning modulates the expression of automatic stereotyping. *Journal of Personality and Social Psychology, 89,* 488–503. http://dx.doi.org/10.1037/0022-3514.89.4.488

Richeson, J. A., & Trawalter, S. (2008). The threat of appearing prejudiced and race-based attentional biases. *Psychological Science, 19,* 98–102. http://dx.doi.org/10.1111/j.1467-9280.2008.02052.x

Richeson, J. A., Trawalter, S., & Shelton, J. N. (2005). African Americans' implicit racial attitudes and the depletion of executive function after interracial interactions. *Social Cognition, 23,* 336–352. http://dx.doi.org/10.1521/soco.2005.23.4.336

Rouder, J. N., & Morey, R. D. (2012). Default Bayes factors for model selection in regression. *Multivariate Behavioral Research, 47,* 877–903. http://dx.doi.org/10.1080/00273171.2012.734737

Rouder, J. N., Speckman, P. L., Sun, D., Morey, R. D., & Iverson, G. (2009). Bayesian *t* tests for accepting and rejecting the null hypothesis. *Psychonomic Bulletin & Review, 16,* 225–237. http://dx.doi.org/10.3758/PBR.16.2.225

Rudman, L. A., Ashmore, R. D., & Gary, M. L. (2001). "Unlearning" automatic biases: The malleability of implicit prejudice and stereotypes. *Journal of Personality and Social Psychology, 81,* 856–868. http://dx.doi.org/10.1037/0022-3514.81.5.856

Russell, J. A., & Fehr, B. (1987). Relativity in the perception of emotion in facial expressions. *Journal of Experimental Psychology: General, 116,* 223–237. http://dx.doi.org/10.1037/0096-3445.116.3.223

Tanaka-Matsumi, J., Attivissimo, D., Nelson, S., & D'Urso, T. (1995). Context effects on the judgment of basic emotions in the face. *Motivation and Emotion, 19,* 139–155. http://dx.doi.org/10.1007/BF02250567

Todorov, A., Baron, S. G., & Oosterhof, N. N. (2008). Evaluating face trustworthiness: A model based approach. *Social Cognitive and Affective Neuroscience, 3,* 119–127. http://dx.doi.org/10.1093/scan/nsn009

Vanderploeg, R. D., Brown, W. S., & Marsh, J. T. (1987). Judgments of emotion in words and faces: ERP correlates. *International Journal of Psychophysiology, 5,* 193–205. http://dx.doi.org/10.1016/0167-8760(87)90006-7

van der Schalk, J., Fischer, A., Doosje, B., Wigboldus, D., Hawk, S., Rotteveel, M., & Hess, U. (2011). Convergent and divergent responses to emotional displays of ingroup and outgroup. *Emotion, 11,* 286–298. http://dx.doi.org/10.1037/a0022582

Weisbuch, M., & Ambady, N. (2008). Affective divergence: Automatic responses to others' emotions depend on group membership. *Journal of Personality and Social Psychology, 95,* 1063–1079. http://dx.doi.org/10.1037/a0011993

Willis, M. L., Palermo, R., & Burke, D. (2011). Judging approachability on the face of it: The influence of face and body expressions on the perception of approachability. *Emotion, 11,* 514–523. http://dx.doi.org/10.1037/a0022571

Wittenbrink, B., Judd, C. M., & Park, B. (2001). Spontaneous prejudice in context: Variability in automatically activated attitudes. *Journal of Personality and Social Psychology, 81,* 815–827. http://dx.doi.org/10.1037/0022-3514.81.5.815

Young, S. G., & Hugenberg, K. (2012). Individuation motivation and face experience can operate jointly to produce the own-race bias. *Social Psychological and Personality Science, 3,* 80–87. http://dx.doi.org/10.1177/1948550611409759

Zebrowitz, L. A., Kikuchi, M., & Fellous, J. M. (2010). Facial resemblance to emotions: Group differences, impression effects, and race stereotypes. *Journal of Personality and Social Psychology, 98,* 175–189. http://dx.doi.org/10.1037/a0017990

Received October 10, 2013
Revision received August 1, 2014
Accepted September 10, 2014 ■