Seeing Black: Race, Crime, and Visual Processing

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Using police officers and undergraduates as participants, the authors investigated the influence of stereotypic associations on visual processing in 5 studies. Study 1 demonstrates that Black faces influence participants' ability to spontaneously detect degraded images of crime-relevant objects. Conversely, Studies 2–4 demonstrate that activating abstract concepts (i.e., crime and basketball) induces attentional biases toward Black male faces. Moreover, these processing biases may be related to the degree to which a social group member is physically representative of the social group (Studies 4–5). These studies, taken together, suggest that some associations between social groups and concepts are bidirectional and operate as visual tuning devices—producing shifts in perception and attention of a sort likely to influence decision making and behavior.

The stereotype of Black Americans as violent and criminal has been documented by social psychologists for almost 60 years (Allport & Postman, 1947; Correll, Park, Judd, & Wittenbrink, 2002; Devine, 1989; Duncan, 1976; Greenwald, Oakes, & Hoff-

critical. Furthermore, we argue that these associations are important not only because they can lead perceivers to make mistakes occasionally but also because they can guide, generally, how perceivers come to organize and structure the visual stimuli to which they are exposed.

Documenting the effects of stereotypic associations on specific visual processing mechanisms could be of great practical significance. For instance, to what extent does seeing Black faces facilitate police officers' detection of guns or knives when they do not have clear images of these objects (e.g., owing to inadequate lighting)? The answer to such a question could significantly improve our understanding of the use-of-force decisions made by police officers. A focus on the bidirectional nature of the Black–

was degraded but became less so in small increments. The participants' task was to indicate the moment at which they could recognize the brand name. The category label primes facilitated recognition of the brand names. Moreover, association strength predicted the size of the facilitation effect. The greatest facilitation effects emerged for the category label–brand name associations that were most strongly related. Similarly, Macrae and colleagues (1994) demonstrated that social category labels can facilitate the recognition of degraded stereotype-relevant trait words. However, Fazio and colleagues (2000) and Macrae and colleagues (1994) did not use a degraded stimulus procedure to examine how race or

sured from the onset of the postmask to the time participants pressed one of two response keys to indicate that the flash had occurred on either the right or the left side of the screen. Extensive pilot testing revealed that no one was aware of the primes. We exposed participants to the primes subliminally both to reduce suspicion and to reduce the possibility that participants would engage in deliberate strategies to eliminate the effect of the primes on object-detection performance during the second portion of the study. Our priming technique followed closely the paradigm outlined by Bargh and Chartrand (2000).

Participants completed 10 practice trials followed by four blocks of 25 trials, after which the experimenter set up the computer to run the object-detection program. Approximately one third of the participants were subliminally primed with the Black faces during 100% of the "vigilance" task trials, another third were primed with the White faces, and the remaining third were primed with the uninterpretable line drawing.

Participants were told that the second portion of the experimental session would involve an unrelated study on the speed at which people can recognize objects. Participants were told that they would see a series of short "movielike segments" of objects that would start off "fuzzy" and become increasingly easier to identify. Participants were instructed to press the space bar as soon as they knew what the object was. They then had 10 s to write down what the object was. The computer reminded participants when there were 3 s remaining, and participants were thus alerted to the beginning of a new set of presentations. Each participant was exposed to a total of 14 objects (4 crime relevant and 10 crime irrelevant) in this manner. After completing the degraded objects task, participants completed the Modern Racism Scale (MRS; McConahay, 1986) and the Motivation to Control Prejudice Scale (MCP; Dunton & Fazio, 1997), after which they were probed for suspicion, fully debriefed, and thanked for their participation.

Results

Data Reduction

Debriefing responses confirmed that no participants were aware of the primes. Trials in which participants misidentified the object in question were removed. This was a relatively small number of the trials (fewer than 10%). Additionally, there was no effect of race prime on the number or type of errors made ($F < 1$).

Effects of Priming on Object Detection

Of primary interest was the number of picture frames needed to accurately detect the objects as a function of race prime and object type. We expected that participants primed with Black faces would detect crime-relevant images with fewer frames than participants primed with either White faces or no faces. After confirming that the distribution of frames needed to identify an object was not skewed, we submitted the frame data to a 3 (race prime: Black face, White face, or no-prime control) × 2 (object type: crime relevant or crime irrelevant) mixed-model analysis of variance (ANOVA), with object type serving as the within-subject factor. This analysis revealed a significant main effect for race prime, $F(2, 36) = 5.98$, $p < .01$, but no main effect for object type ($F < 1$). As shown in Figure 2, objects presented in the Black face condition ($M = 19.26$) were detected at earlier frames than objects presented in either the no-prime condition ($M = 23.58$) or the White face condition ($M = 24.97$). This main effect, however, was qualified by the predicted Race Prime × Object Type interaction, $F(2, 36) = 7.04$, $p < .01$.

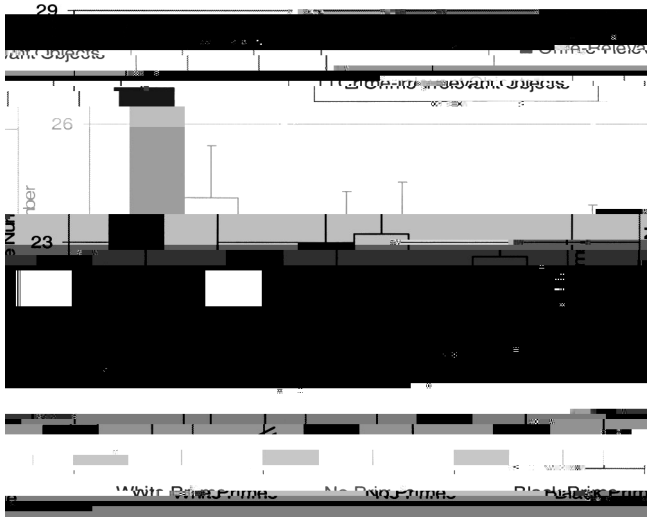

Figure 2. Mean frame number at which the object could be detected as a function of race prime and object type (Study 1). Error bars represent the average standard error for each condition.

As expected, simple effects revealed that in comparison with White face primes, Black face primes dramatically reduced the number of frames needed to accurately detect crime-relevant objects, $t(25) = 4.54$, $p < .01$. Exposure to Black primes also facilitated the detection of crime-relevant objects compared with the no-prime condition, $t(24) = 2.34$, $p < .05$. In contrast, exposure to White primes inhibited the detection of crime-relevant objects compared with the no-prime condition, $t(24) = 2.06$, $p = .05$. As predicted, there was no significant effect of race prime on crime-irrelevant objects ($t < 1$, *ns*).

Participants in the no-prime control condition required the same number of frames to detect crime-relevant and irrelevant objects ($t < 1$, *ns*). After subliminal exposure to Black face primes, however, fewer frames were required to detect crime-relevant objects in comparison with crime-irrelevant objects, $t(13) = 2.96$, $p = .01$. In contrast, after subliminal exposure to White face primes, more frames were required to detect crime-relevant objects in comparison with crime-irrelevant objects $t(12) = 2.35$, $p < .05$.

The Role of Explicit Prejudice

We have argued that stereotypic associations can tune visual perception, regardless of individual differences in explicit prejudice. To measure the potential role of explicit prejudice in producing perceptual threshold shifts, we had participants complete the MRS and MCP after the degraded objects task. Before analyzing participant scores for their potential impact on the frames data, we submitted both MRS scores and MCP scores to a one-way ANOVA to determine whether our priming manipulation had an effect on participants' explicit racial attitudes. This analysis indicated that there was no effect of prime on either MRS or MCP scores (all Fs < 1). We then conducted within-cell correlations between the MRS, the MCP, and our frames. Although some of these correlations were moderate, we found no reliable relationship between participants' explicit racial attitudes and the frame at which they recognized objects (all rs $< .50$, *ns*).

Discussion

dot probe in the White face location than in the Black face location when there was no crime prime, $F(1, 46) = 12.02$, $p < .01$, this attentional difference disappeared when participants were primed with crime, $F(1, 46) = 2.07$, $p = .15$. In fact, the pattern reversed.

Participant Awareness of Attentional Biases

Debriefing responses confirmed that no participants were aware of having seen the crime-relevant images. We were most interested, however, in participants' awareness of where they were looking during the dot-probe task. Tn3u265.8(46))]TJl0.611l6)

Because of computer malfunctioning, data for 4 participants were incomplete. Additionally, 2 participants evidenced some knowledge of the study's hypothesis. These participants were excluded from all further analyses, leaving a total of 69 participants.

Materials

For the current study, we primed participants with the concept of basketball (or not). The results of a pilot study confirmed that, as with crime, everyone (30 of 30 participants in our pilot sample) has knowledge of an association of Blacks and athletics. Unlike crime, however, the athletic stereotype is positively valenced. In fact, in our pilot study we found the athlete stereotype to be more positive than any other stereotype of Blacks.

In an effort to broaden stimulus sampling, in Study 3 we chose to prime participants with words rather than images. Pilot data clearly demonstrated that of all sports, Blacks are most highly associated with basketball. Specific words relevant to basketball were chosen on the basis of pretesting conducted in an introductory psychology class. For the current study, we selected the 24 most frequently listed words elicited by the question "What words come to mind first when you think of the idea *basketball*?" The words were *assist*, *backboard*, *bankshot*, *basket*, *dribble*, *dunk*, *fastbreak*,

participants' explicit racial attitudes and their reaction times (all rs $< .40$, *ns*).

Discussion

enforcing the law against violent criminals. After polling police officers, we chose the following 10 words to serve as primes (because they were the words most commonly listed): *violent*, *crime*, *stop*, *investigate*, *arrest*, *report*, *shoot*, *capture*, *chase*, and *apprehend*.

Face stimuli. In an additional effort to broaden stimulus sampling, target faces were chosen from a database of prisoners who were convicted of first-degree murder in the state of Florida. These prisoners' faces were pretested on attractiveness and stereotypicality. Pilot participants were not told that these faces were the faces of convicted criminals. Pilot participants who were instructed to rate the stereotypicality of the faces were told that they could use any number of physical features (e.g., the lips, the nose, the hair texture, the skin tone) to make such a judgment. They were asked to look at a series of 60 Black male faces and to use the physical features that most people commonly associate with Blacks to provide us with a stereotypicality rating of each face. A second group of pilot participants were shown a series of 60 White male faces and were asked to use the physical features people commonly associate with Whites to provide us with a stereotypicality rating.

After receiving these ratings, we chose five faces within each race, one from each quintile of the stereotypicality distribution provided by the pilot participants. Each face was also matched for attractiveness across race. A Black face lineup and a White face lineup were then created that included a target face along with four additional faces. Within each face lineup, two faces were less stereotypical than the target (i.e., from the first and second quintiles) and two faces were more stereotypical than the target (i.e., from the fourth and fifth quintiles). The Black and White target faces were selected from the middle quintile of the stereotypicality distribution. These Black and White lineups were later used during the surprise face-recognition task.

Procedure and Design

The study took the form of a 2 (prime: crime prime or no prime) $\times$ 2 (dot position: Black face location or White face location) between-subjects factorial design. Police officers were tested on site at the police department in small groups ranging from 2 to 5 participants. Study 4 followed the exact protocol of Study 2 with the exception of the changes to the crime primes, the face stimuli, the presentation duration of the face stimuli in the dot-probe task (this varied from 450 ms to 650 ms to 850 ms across participants), and the inclusion of a surprise face-recognition memory task.

Participants were given the surprise face-recognition memory task after they completed the dot-probe task. Participants were exposed to a Black face lineup and a White face lineup. For each lineup, participants were asked to identify the face that had been displayed during the dot-probe task. For each lineup, all five faces of one race—the target and four distracters—were presented on the computer screen simultaneously. The order in which participants saw the Black and White lineups was randomly determined, as was the location of each face on the screen. Participants were asked to indicate their choice in the first lineup, then the second lineup, and were then debriefed.

We were interested in the degree to which the crime prime would influence officers' memories for the original target faces displayed during

crime-relevant words reversed this relationship, such that participants found the dot faster when it was in the Black face location than when it was in the White face location, $F(1, 53) = 5.87$, $p < .05$.

Error Rates During the Memory Task

There was no overall difference in error rates on the face-recognition memory task as a function of the prime ($F < 1$). The average accuracy rate was 34%, which was significantly above chance (1 in 5), $t(56) = 10.49$, $p < .01$.

Stereotypicality Ratings of Faces Identified in the Memory Task

Each face in the Black and White lineups was coded in terms of the stereotypicality quintile from which it was taken. The faces taken from the lowest quintile were coded as –2, the next least stereotypical faces were coded as –1, the targets were coded as 0, the faces in the next quintile were coded as 1, and the most stereotypical faces were coded as 2. The data were then subjected to a 2 (race of face: Black or White) × 2 (prime: crime prime or no prime) mixed-model ANOVA with race of face as the within-subject variable. We were primarily interested in the extent to which the crime prime would produce false identifications in the Black lineup such that faces more stereotypically Black than the target would be mistaken for the target.

Our analysis revealed a reliable main effect of race of face, such that participants identified more stereotypically Black faces ($M = .46$) than stereotypically White faces ($M = -.30$), $F(1, 55) = 16.82$, $p < .01$. One-sample t tests further revealed that participants reliably identified faces that were more stereotypically Black than the Black target, $t(56) = 3.03$, $p < .01$. There was a marginally significant trend in the opposite direction for White faces, $t(56) = 1.76$, $p = .08$. This main effect, however, was qualified by a two-way interaction, $F(1, 55) = 7.30$, $p < .01$. Simple effects tests revealed that participants indeed chose more stereotypically Black faces as targets when primed with crime ($M = .81$) than when not primed ($M = .13$), $t(55) = 2.35$, $p < .05$. There was not, however, a significant effect of stereotypicality for White faces as a function of the prime ($t = 1$, *ns*). These means are shown in Figure 6.

Discussion

As predicted, police officers exhibited the same pattern of attentional bias as the undergraduate participants in Studies 2 and 3. These results with police officers were obtained despite changes in the crime primes, the face stimuli, and the face presentation duration. For example, not only did the crime primes influence where officers looked at the initial point of measurement (i.e., at 450 ms), these primes also influenced where officers continued to look. Moreover, when officers were tested on their memory for the target faces, they were more likely to falsely identify a face that was more stereotypically Black than the target when they were primed with crime than when they were not primed. It appears as though stereotypic associations led perceivers to look in a partic-

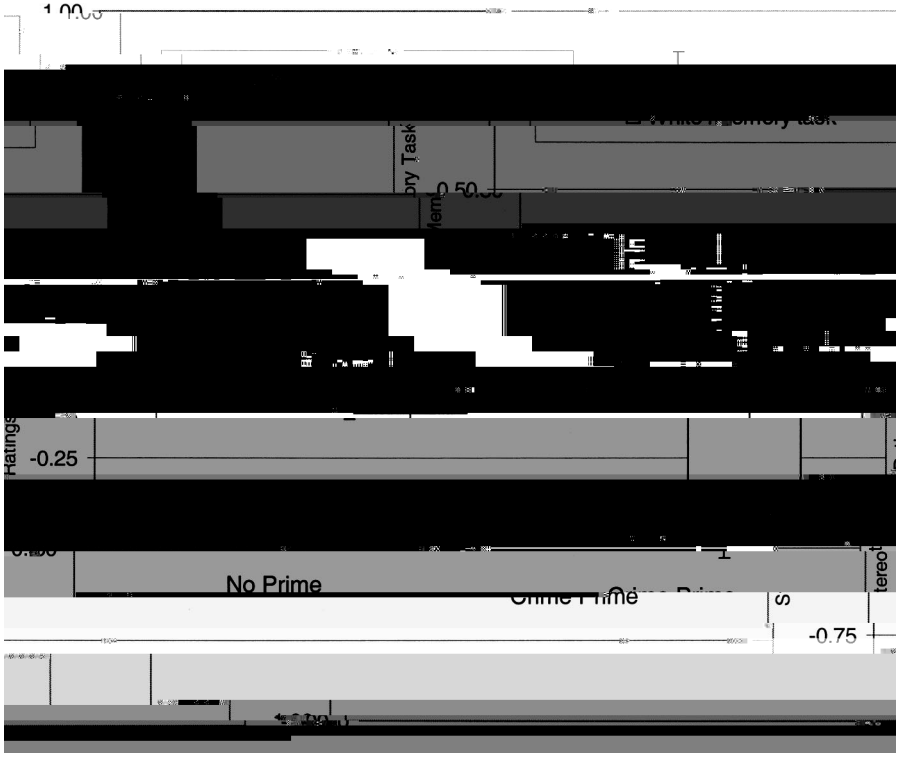

Figure 6. Mean stereotypicality of faces identified in memory task as a function of prime and race (Study 4). Error bars represent the average standard error for each cell.

ular location, yet what perceivers were able to remember was, in part, a function of these stereotypic associations. That is, priming police officers with crime caused them to remember Black faces in a manner that more strongly supports the association between Blacks and criminality. When these officers were asked, "Which face did you see?," priming them with crime led them to envision a Black face that was even more strongly representative of the Black racial category than the Black face to which they were actually exposed. Thus, thoughts of violent crime led to a systematic distortion of the Black image—a phenomenon that Ralph Ellison so masterfully highlighted over 50 years ago.

Generally, these results are significant because they suggest that the process of visually attending to a stimulus will not always aid perceptual memory. These results also are significant, however, because they demonstrate the influence of strong, stereotypic associations on face processing mechanisms in particular (see also Eberhardt, Dasgupta, & Banaszynski, 2003). Practically, this could have implications for eyewitness testimony. For example, Blacks who appear most stereotypically Black may be most vulnerable to false identifications in real criminal lineups. This type of false identification may be likely even when the actual perpetrator is present in the lineup and even when the eyewitness was visually drawn to the perpetrator's face at the time of the crime.

These results also may provide a unique demonstration of association strength. We have argued that association strength increases not only the likelihood that social categories will trigger concepts but also the likelihood that a concept will trigger a social category. We now have some initial evidence that exposure to a concept can lead to the triggering of a social category image that is strongly representative of the social category. Indeed, thinking about the concept of crime not only brought Black faces to mind but brought stereotypically Black faces to mind.

Study 5

Study 5 examines directly an assumption on which our discussion of the memory results from Study 4 was premised: Police officers view more stereotypically Black faces as more criminal. To examine this, in Study 5 we presented police officers with Black and White male faces and asked the question, "Who looks criminal?" We predicted that police officers would choose more Black faces than White faces as criminal and that Black faces rated high in stereotypicality would be even more likely to be perceived as criminal than Black faces rated low in stereotypicality. In other words, we predicted that police officers would use the physical features linked to race to inform them about who looks criminal. Recently, researchers have documented that people are attentive to physical trait variation among Black Americans (Blair, Judd, Sadler, & Jenkins, 2002; Livingston, 2001; Maddox & Gray, 2001; Williams & Eberhardt, 2004). Here we argue that police officers imbue this physical variation with criminal meaning—that is, the "more Black" an individual appears, the more criminal that individual is seen to be.

Method

Participants

One hundred eighty-two police officers (159 male, 23 female) voluntarily participated in this study. The officers were drawn from the same police department used in Study 4. The racial composition of our sample was as follows: 115 White Americans, 8 Black Americans, 6 Asian Americans, and 1 Native American (52 officers did not disclose their race). Sixteen officers were excluded from the final analysis because they did not follow instructions, leaving a total sample size of 166 officers.

Stimulus Materials

Participants were exposed to color photographs of 40 Black or 40 White male faces (with neutral facial expressions) ranging in age from 18 to 40 years. In this study, the photographs were of male students and employees of Stanford University. The backgrounds on the photographs were stan-

of analysis. Specifically, we averaged officers' ratings of individual faces such that each face had a stereotypicality and criminality rating. Two faces (representing 2.5% of the data) were designated as outliers on stereotypicality (over 2 standard deviations above the mean) and removed from further analysis. Next, we conducted a median split on the stereotypicality data across Black and White faces, yielding two groups: high and low stereotypicality.[4] We then submitted the criminality data to a 2 (race: Black or White) × 2 (stereotypicality: high or low) between-faces ANOVA. This analysis revealed no main effect for stereotypicality on judgments of criminality ($F < 1$). However, as shown in Figure 7, a significant main effect for race emerged, $F(1, 76) = 6.35$, $p = .01$. As predicted, more Black faces ($M = 11.95$) were thought to look criminal than White faces ($M = 9.65$). This race main effect was qualified by a significant Race × Stereotypicality interaction, $F(1, 74) = 4.60$, $p < .05$. As predicted, analysis of simple effects revealed that more Black faces rated high in stereotypicality were judged as criminal ($M = 12.95$) than Black faces rated low in stereotypicality ($M = 10.83$), $F(1, 36) = 4.78$, $p < .05$. This pattern did not emerge for White faces rated high in stereotypicality ($M = 8.80$) in comparison with White faces rated low in stereotypicality ($M = 10.5$), $F(1, 38) = 1.34$, *ns*. Additionally, significantly more Black faces rated high in stereotypicality were judged as criminal ($M = 12.95$) than White faces rated high in stereotypicality ($M = 8.80$), $F(1, 38) = 9.74$, $p < .01$. Finally, a planned contrast analysis revealed that highly stereotypical Black faces were more likely to be judged criminal than any other group in the study, $F(1, 74) = 8.12$, $p < .01$.

Discussion

When officers were given no information other than a face and when they were explicitly directed to make judgments of criminality, race played a significant role in how those judgments were made. Black faces looked more criminal to police officers; the more Black, the more criminal. These results provide additional evidence that police officers associate Blacks with the specific concept of crime. Moreover, these results shed light on the face-recognition memory errors made by police officers in Study 4. In that study, police officers were more likely to falsely identify a Black face that was more stereotypically Black than the target when primed with crime than when not primed with crime. Thinking of crime may have led officers to falsely identify the more stereotypically Black face because more stereotypically Black faces are more strongly associated with the concept of crime than less stereotypically Black faces.

Figure 7. Mean criminality score of faces as a function of race and stereotypicality (Study 5). Error bars represent the average standard error for each condition.

General Discussion

Across five studies, we have shown that bidirectional associations between social groups and concepts can guide how people process stimuli in their visual environment. We found remarkably consistent support for both visual tuning and bidirectionality using three different paradigms that incorporated three different types of participant judgments as well as both image and word stimuli, both student and police officer participant populations, both positive and negative concepts, and both explicit and implicit measures. Specifically, we found that activating stereotypic associations caused participants to detect relevant stimuli at a lower perceptual threshold than irrelevant stimuli (Study 1) and to direct visual attention toward relevant stimuli and away from irrelevant stimuli (Studies 2–4). Furthermore, not only did we demonstrate that social group members bring to mind the concepts with which those social groups are associated (Study 1), we demonstrated that concepts bring to mind the social groups with which those concepts are associated (Studies 2–4). Such effects appear to be related to how strongly a stimulus is thought to represent the social group or concept brought to mind (Study 5).

Our results are consistent with the most recent research findings on stereotypic associations between Black Americans and crime. For instance, Payne and colleagues (Payne, 2001; Payne et al., 2002) found that exposure to Black faces facilitated the categorization of crime-relevant objects. Similarly, Correll and colleagues (2002) found, using a videogame simulation, that participants shot armed Black targets more quickly than armed White targets, irrespective of individual differences in racial attitudes (Correll et al., 2002). Such findings further underscore the strong associational links between Black Americans and crime.

Our research expands previous stereotyping research by more explicitly considering bidirectionality and thus raises new questions about the operation and consequences of stereotypic associations. For example, what determines whether an association will be bidirectional? As discussed earlier, we suspect that concept specificity is one important moderating condition for bidirectionality. Certain concepts may be so tightly coupled with a specific social group that these concepts have become, in a sense, hijacked by that group. Indeed, the social group functions as the prototypical embodiment of these concepts. Concepts for which Black Americans serve as the prototype—such as crime, jazz, basketball, and ghetto—are likely to operate bidirectionally, whereas concepts

[4] A median split was used for ease of presentation. We obtained the same pattern of results when we conducted a regression analysis.

for which there is no specific group prototype—such as aggressive, musical, athletic, and poor—are less likely to operate bidirectionally.

Although not a focus of the current research, situational specificity might also determine the likelihood that a concept will bring to mind a particular social group. For example, when perceivers are required to perform a task that increases the saliency of a particular social group, even concepts that are not attached to any one, prototypical social group may automatically activate the so-

people may be motivated to actively resist thoughts of criminality in the presence of a Black American trigger (e.g., see Dunton & Fazio, 1997; Plant & Devine, 1998). Activations of this type may even be considered a personal failing (to the extent that perceivers are aware of them and wish to be egalitarian). In contrast, people may be less motivated to resist thoughts of Black Americans in the presence of a crime trigger. Far from a personal failing, the activation of such thoughts may be experienced as a natural response, given the high proportion of Blacks convicted of violent crimes in the United States (Banks, 2001; Blumstein, 1993; Cole, 1999; Kennedy, 1997). In fact, we have preliminary evidence with police officer participants suggesting that the motivation to resist stereotypic associations may depend on the triggering stimulus (Eberhardt & Goff, 2004). We found that police officers are less troubled by the possibility of crime triggering thoughts of Black Americans than by the possibility of Black Americans triggering thoughts of crime. We suspect that this asymmetry is present in American society more generally. Egalitarian opposition to racial stereotyping strongly condemns linking Black people to crime, but not linking crime to Black people. Thus, opposition to stereotyping tends to condemn one aspect of the association, even as it exempts the other.

Finally, visual practices may not simply reflect race-based associations; visual practices may work to sustain these associations as well. Visual processing patterns may provide ample opportunities for perceivers to access race–crime associations, as well as to rehearse, strengthen, and supplement those associations. In this way, seeing could be understood as an action or a practice that reinscribes racial meaning onto visual stimuli. The face-recognition memory results of Study 4 are consistent with such an interpretation. Activation of the crime concept not only led police officers to attend to a Black face but also led them to misremember the Black face as more stereotypical (i.e., representative) of the Black racial category than it actually was. Thus, the association between blackness and criminality was not only triggered, it was magnified.

It is important to note that although visual processes may reinforce stereotypic associations, the associations themselves are the consequences of widely shared cultural understandings and social patterns. As William James stated, attention “creates no idea.” Because visual processes are grounded in cultural understandings, as these understandings change, the consequences of visual processes will as well. New associations may render different aspects of the visual environment releva7(aspects)-m2aspects

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