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Research Report

The Threat of Appearing Prejudiced and Race-Based Attentional Biases

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ABSTRACT—*The current work tested whether external motivation to respond without prejudice toward Blacks is associated with biased patterns of selective attention that reflect a threat response to Black individuals. In a dot-probe attentional bias paradigm, White participants with low and high external motivation to respond without prejudice toward Blacks (i.e., low-EM and high-EM individuals, respectively) were presented with pairs of White and Black male faces that bore either neutral or happy facial expressions; on each trial, the faces were displayed for either 30 ms or 450 ms. The findings were consistent with those of previous research on threat and attention: High-EM participants revealed an attentional bias toward neutral Black faces presented for 30 ms, but an attentional bias away from neutral Black faces presented for 450 ms. These attentional biases were eliminated, however, when the faces displayed happy expressions. These findings suggest that high levels of external motivation to avoid prejudice result in anxious arousal in response to Black individuals, and that this response affects even basic attentional processes.*

Many people feel anxious and uncomfortable during interracial interactions. Recent work suggests, however, that some individuals are particularly prone to have stressful interracial encounters. For instance, White individuals who are highly motivated to respond in nonprejudiced ways toward Black people for external, rather than internal, reasons (e.g., because of norms regarding political correctness) have been found to avoid interracial interactions when possible, and experience heightened anxiety in anticipation of, as well as during, those interracial interactions that they are unable to avoid (Plant, 2004; Plant & Devine, 1998). Research by Amodio has found, furthermore, that such *high-EM* individuals automatically evaluate Black targets more negatively than White targets, as revealed by potentiated startle eye-blink amplitudes (Amodio, Harmon-Jones, & Devine, 2003), unlike people who are internally motivated to respond in nonprejudiced ways toward Blacks. Taken together, this work suggests that exposure to Blacks automatically triggers negative affective reactions, including heightened anxiety, in high-EM individuals.

Although Amodio's work has begun to explore some of the component processes that underlie differences between high- and low-EM individuals' affective and stereotypical evaluations of Blacks (see also Amodio, Devine, & Harmon-Jones, in press), what has not been examined is the extent to which individuals' affective reactions shape basic cognitive processes beyond stereotyping. To that end, the present study considered potential implications of external motivation to respond without prejudice for visual attention. Specifically, we examined whether high-EM individuals' anxious arousal in response to Blacks results in biased patterns of selective attention similar to those found among individuals with anxiety disorders (e.g., MacLeod, Mathews, & Tata, 1986).

ANXIETY AND ATTENTION

A plethora of research attests to the role that emotional stimuli play in shaping attention (e.g., Bradley et al., 1997; Öhman, Flykt, & Esteves, 2001). Transient motivational and mood states (Tamir & Robinson, 2007), as well as more chronic concerns and dispositions (Williams, Mathews, & MacLeod, 1996), shape the events and objects to which people allocate attention. Of particular relevance to the present work is research suggesting that individual differences in anxiety result in biased patterns of

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attention regarding threatening stimuli (e.g., angry facial expressions; Bar-Haim, Lamy, Pergamin, Bakermans-Kranenburg, & van Ijzendoorn, 2007; Fox, Russo, & Dutton, 2002).

Drawing on this research, the present work employed a common test of attentional bias known as the dot-probe detection paradigm (MacLeod et al., 1986) to examine attentional biases to Black, relative to White, faces (see also Eberhardt, Goff, Purdie, & Davies, 2004). In this paradigm, the participant's task is to detect the location of a probe, such as a small dot, that is initially hidden from view behind one of two stimuli simultaneously presented on a computer screen, but subsequently revealed when the two stimuli disappear. A short response latency to detect the probe suggests that participants' attention had been oriented, albeit sometimes unconsciously, to the stimulus that previously obscured it. By contrast, a long response latency suggests that participants' attention had been oriented to the stimulus that had not obscured the probe.

Boyer et al. (2006) recently used a dot-probe task to study the attentional biases of children with chronic pain. The critical trials involved the presentation of pain-relevant, and thus threatening, words (e.g., *injure*) paired with neutral words (e.g., *washer*). Furthermore, for half the trials, the words were presented subliminally (20 ms), whereas for the other half, they were presented for 1,250 ms—ample time for attention to be controlled. Results revealed that the children showed attentional engagement of pain-related words that were presented subliminally; they detected the dot faster when a pain-related word, rather than a neutral word, had obscured it. By contrast, they revealed attentional avoidance of pain-related words that were presented supraliminally.

THE PRESENT STUDY

This study by Boyer et al. (2006) suggests that although threatening cues seem to capture attention, individuals selectively avoid them when possible (see also Cooper & Langton, 2006; MacLeod & Rutherford, 1992). Modeled after this work, the present study examined whether high-EM individuals reveal biased patterns of attention regarding a relevant threat cue—facial photographs of Black males. Given the findings of Boyer et al., we expected that Black faces would capture high-EM individuals' attention at early processing stages, but would be selectively avoided at later processing stages.

To bolster our investigation of the role of perceived threat in the hypothesized attentional biases, we considered the extent to which reducing the threat signal communicated by the faces would attenuate the biases. Specifically, Black faces that communicate positive affect (i.e., smiling faces) should undermine high-EM individuals' anxious reactions and, thus, their attentional biases as well. Indeed, research suggests that several brain regions, most notably the amygdala, quickly process affective stimuli, including facial expressions of emotion, even when presented subliminally (Whalen et al., 1998; see also Cunningham et al., 2004). Hence, smiling Black faces should readily be appraised as less threatening than neutral Black faces, and, therefore, high-EM individuals should be less likely to reveal biased patterns of selective attention to the former.

Thus, we employed the dot-probe paradigm to examine the attentional biases of high-EM White individuals in response to facial photographs of Black and White males. The faces bore either a neutral or a happy facial expression and were presented for either a relatively brief (30 ms) or a long (450 ms) duration before the dot was revealed behind one of them. We predicted that high-EM individuals would reveal attentional engagement of neutral Black faces presented briefly, but attentional avoidance of neutral Black faces presented for the longer duration. Low-EM individuals were not expected to reveal attentional biases for neutral faces, and neither high-EM nor low-EM individuals were expected to display biased attention to happy faces, irrespective of race or presentation duration.

METHOD

Participants

Thirty White college students (20 male, 10 female) participated in the study in exchange for course credit. During a pretesting session, students ($N \cong 250$) completed the Motivation to Respond Without Prejudice scale (Plant & Devine, 1998). The External Motivation subscale of this instrument consists of five items (e.g., "Because of today's politically correct standards, I try to appear non-prejudiced toward Black people."). Participants indicate their agreement on 9-point scales. Participants for this study were selected from among those students with External Motivation scores in the top (> 4.7) or bottom (< 3.8) third of the full pretesting sample ($Mdn = 4.4$). Although high-EM and low-EM participants obviously differed in external motivation (Ms = 5.74 and 3.04), they did not differ in internal motivation[1] (Ms = 5.32 and 4.97), $t(27) = 0.34$, $p_{rep} < .7$.

Facial Stimuli

Forty-eight faces were obtained from Park's Productive Aging Face Database (Minear & Park, 2004); they were selected to match in age (18–29), but differ in race (White, Black) and affect (happy, neutral). Ten White undergraduates used 7-point Likert scales to rate these faces for happiness, emotional neutrality, and attractiveness. As expected, faces with neutral expressions were rated as more emotionless than smiling faces (Ms = 5.4 and 2.1, respectively), $F(1, 44) > 400$, $p_{rep} > .999$, but as less happy than smiling faces (Ms = 1.8 and 5.2, respectively), $F(1, 44) >$

[1]Continuous External Motivation and Internal Motivation scores were largely independent, $r(27) = .19$. Given participants' moderate levels of internal motivation, this modest correlation implies that high-EM and low-EM participants did not differ in implicit racial bias (Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002). Furthermore, most participants completed a measure of explicit racial attitudes during pretesting; explicit attitudes and External Motivation scores were also independent, $r(22) = -.17$. Hence, racial bias is unlikely to account for the between-group differences that emerged.

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TABLE 1
Mean Dot-Detection Response Latencies for High-EM and Low-EM Participants

Group and stimulus duration	Neutral facial expressions: Dot in location of Black face	Neutral facial expressions: Dot in location of White face	Happy facial expressions: Dot in location of Black face	Happy facial expressions: Dot in location of White face
Low-EM				
Short duration (30 ms)	387 (52)	382 (43)	375 (55)	381 (49)
Long duration (450 ms)	394 (49)	401 (59)	406 (64)	407 (60)
High-EM				
Short duration (30 ms)	424 (59)	437 (65)	420 (41)	414 (47)
Long duration (450 ms)	466 (62)	453 (71)	449 (71)	448 (61)

Note. Latencies are in milliseconds. Standard deviations are given in parentheses. EM = external motivation to respond without prejudice toward Blacks.

250, $p_{rep} > .999$. These effects were not moderated by the race of the faces. Specifically, happiness ratings of smiling Black and White faces did not differ, nor did emotionless ratings of neutral Black and White faces (Fs < 0.5). Similarly, perceived attractiveness did not vary as a function of race, facial affect, or their interaction (Fs < 0.5).

Dot-Probe Task

Each dot-probe trial began with a fixation point that was displayed for 1 to 3 s. Next, two faces were displayed at 6° on either side of fixation. When the two faces disappeared from the screen, a small gray dot appeared in the center of the screen location where one of them had previously appeared. The dot remained on the screen until the participant indicated its location by pressing either the "left" or the "right" key on a computer keyboard. For half of the trials, the face pairs appeared for 450 ms (long duration). For the other half, the face pairs appeared for 30 ms (short duration) and were replaced by a mask for 420 ms.

Participants were told that this task assesses visual attention and were asked to respond as quickly and accurately as possible once the dot appeared. They completed 2 practice trials in which the word "FACE" appeared on either side of fixation, followed by 128 experimental trials. The experimental trials consisted of 64 critical trials, in which one Black and one White face were presented, embedded in an equivalent number of filler trials, in which either two White or two Black faces were presented. During each trial, both faces displayed either a happy facial expression or a neutral facial expression. Racial location of the dot (whether the dot was located where the White or Black face had previously appeared), facial expression of the stimuli (happy or neutral), presentation duration of the stimuli (30 ms or 450 ms), and dot position (right or left of fixation) were randomized across trials within four 32-trial blocks. All responses and latencies were recorded by the computer.

Procedure

Participants were met and greeted in the laboratory by a White, female experimenter. After providing informed consent, they completed the dot-probe task on a Dell computer and were then debriefed, thanked, and credited for participating.

RESULTS

Response latencies above 1,500 ms were deleted from the data set, as were all incorrect responses, resulting in the removal of 1% of the data. Next, response latencies more than 3 standard deviations above the mean (> 750 ms) were replaced with 750 ms, and latencies below 100 ms were replaced with 100 ms (1.3% of the data). After inspection of the resulting data set, 1 high-EM and 1 low-EM participant were removed because of their extremely slow dot-detection latencies (more than 50% of their data had already been removed or transformed). Hence, the final sample consisted of 14 high-EM and 14 low-EM individuals. Preliminary analyses revealed no reliable main effects or interactions due to sex of participant or dot position (right or left of fixation); hence, the data were collapsed across these factors.

Table 1 presents low-EM and high-EM participants' mean dot-detection latencies for each experimental condition. To examine our predictions directly, however, we calculated attentional bias scores. Specifically, we subtracted participants' mean log-transformed dot-detection latency for the Black-face-location trials from their mean log-transformed dot-detection latency for the White-face-location trials (separately for happy and neutral expressions and for each presentation duration). Greater bias scores indicate greater attention to Black faces, relative to White faces (i.e., pro-Black attentional bias). These bias scores were subjected to a 2 (group: high-EM, low-EM) × 2 (presentation duration: short, long) × 2 (facial expression: neutral, happy) mixed-model analysis of variance. Results were consistent with predictions. The three-way interaction of group, presentation duration, and facial expression was reliable, $F(1, 26) = 4.17$, $p_{rep} = .92$, $d = 0.80$.[2] Furthermore, there were no differences between conditions for the low-EM participants (all Fs < 0.4), but the Presentation Duration × Facial Expression

[2]Analyses of dot-detection latencies revealed the expected four-way interaction, $F(1, 26) = 6.02$, $p_{rep} = .95$.

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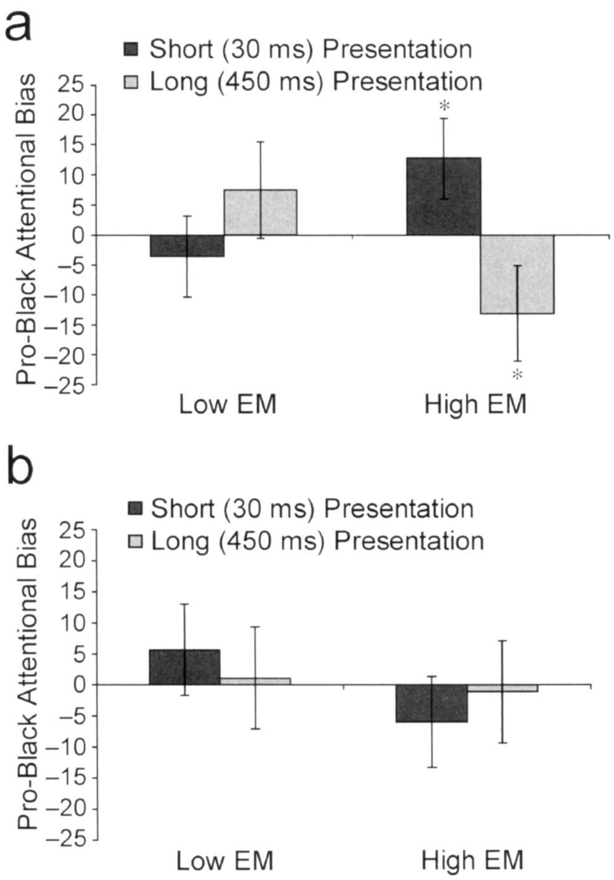

Fig. 1. Pro-Black attentional bias toward faces with neutral (a) and happy (b) expressions. Results are shown separately for participants with high and low external motivation to respond without prejudice toward Blacks (high EM and low EM, respectively) and for the two stimulus durations. Error bars display standard errors of the means. Asterisks indicate bias scores significantly different from zero, $p < .05$ (one-tailed), $p_{rep} > .90$.

interaction was reliable for the high-EM participants, $F(1, 13) = 8.16$, $p_{rep} = .97$, $d = 1.58$.

Examination of the neutral-expression trials revealed that high-EM participants' pro-Black attentional bias differed significantly as a function of presentation duration, $F(1, 13) = 7.64$, $p_{rep} = .95$, $d = 1.53$. We predicted that neutral Black faces would capture the attention of the high-EM participants when the faces were presented for the short duration, but that these faces would result in attentional avoidance when presented for the longer duration. As predicted, high-EM participants tended to orient to Black neutral faces that were presented for the short duration ($p_{rep} = .89$), but to White neutral faces that were presented for the longer duration ($p_{rep} = .94$; see Fig. 1a). Our results are thus similar to those of Boyer et al. (2006); high-EM participants revealed a pattern of attentional bias that is consistent with a tendency to orient toward a relevant threat initially (i.e., attentional engagement), but to orient away from the threat when possible (i.e., attentional avoidance). As predicted, this pattern was not revealed for the happy faces. Figure 1b shows that happy Black faces were not attended to significantly more than happy White faces (or vice versa) by either low-EM or high-EM participants, irrespective of presentation duration (all Fs < 1.5).

DISCUSSION

Our findings suggest that high-EM individuals' threat reactions to Black individuals bias early stages of attention. Specifically, Black faces initially captured the attention of high-EM participants, but were avoided by these participants when possible (i.e., when the presentation duration was longer). These patterns of attentional bias were eliminated when the faces were smiling. Presumably, the happy expressions reduced the Black male targets' threat signal, thereby attenuating the need for high-EM individuals to attend to them initially or to avoid them subsequently.

This study contributes to a growing body of work examining basic processes underlying individual differences in the regulation and control of racial bias. As alluded to previously, Amodio and his colleagues (Amodio et al., 2003, in press) have found compelling differences between White individuals with high external motivation to avoid appearing prejudiced toward Blacks and White individuals with high internal motivation to avoid appearing prejudiced toward Blacks. Specifically, externally motivated and internally motivated individuals have been found to differ in both their automatic negative affective reactions to Blacks and their patterns of neural activity associated with the inhibition of racial stereotypes. Building on this work, the present study moved beyond the realm of mechanisms that give rise to stereotyping and prejudice, considering instead the implications of external motivation to respond without prejudice for race-related differences in another basic cognitive process, namely, selective attention. In so doing, this work revealed the moderating role of positive facial affect in race-based selective attention, suggesting an important, yet heretofore largely unexplored, avenue for future research on racial bias (but see Chiu, Ambady, & Deldin, 2004; Hugenberg, 2005; Hugenberg & Bodenhausen, 2003).

The present findings are also consistent with recent work by Ito and Urland (2005). They found that compared with White targets, Black targets evoked a larger positive-going event-related potential (ERP) component approximately 200 ms poststimulus (P200) in White perceivers; this component is thought to reflect early attention. About 250 ms poststimulus, however, these White perceivers exhibited a larger negative-going ERP component (N200) in response to White, compared with Black, targets. Hence, White perceivers seemed to orient toward Black faces initially, but to switch their attention toward White faces subsequently.[3] Considered in tandem with the present work, these findings suggest that although Blacks may

[3]Ito and Urland did not measure external-prejudice concerns, but it is likely that engaging in a race-related task while neural activity was recorded heightened them.

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capture the attention of Whites, especially among high-EM, White individuals, they are likely to be either avoided or simply disregarded later (Eberhardt et al., 2004; Rodin, 1987).

CONCLUSIONS

Establishing and enforcing standards and norms regarding the expression of bias are of paramount importance to the creation of a more harmonious, yet diverse, society. The present results suggest, however, that such standards may unwittingly encourage anxious reactions and threat responses toward members of relevant out-groups—reactions that are revealed even in basic components of visual attention. Consequently, this work may enhance efforts to foster cohesive culturally diverse communities.

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