DOES EMOTIONAL EXPRESSION MODERATE IMPLICIT RACIAL BIAS? EXAMINING BIAS FOLLOWING SMILING AND ANGRY PRIMES

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Given the pervasiveness of prejudice, researchers have become increasingly interested in examining racial bias at the intersection of race and other social and perceptual categories that have the potential to disrupt these negative attitudes. Across three studies, we examined whether the emotional expression of racial exemplars would moderate implicit racial bias. We found that racial bias on the Affect Misattribution Procedure only emerged in response to angry but not smiling Black male faces in comparison to White (Study 1) or White and Asian (Study 3) male faces with similar emotional expressions. Racial bias was also found toward Asian targets (Studies 2 and 3), but not only following angry primes. These findings suggest that negative stereotypes about Black men can create a contrast effect, making racial bias toward smiling faces less likely to be expressed in the presence of angry Black male faces.

Keywords: emotion, emotional expression, implicit social cognition, implicit racial bias, prejudice, Affect Misattribution Procedure

To see George Floyd die the way he died with such a callous attitude toward his life . . . It angers me, angers me. . . . But as a Black man if I show too much anger, then you're scared of me.

Michael Strahan (2020)
Former NFL player and popular television personality

Racial prejudice continues to be a pervasive and consequential social problem that has proven to be challenging to eradicate (Eberhardt et al., 2004; Hetey & Eberhardt, 2018; Paluck et al., 2021). In the case of prejudice directed toward Black Americans, and Black men in particular, the consequences of prejudice can too often be deadly. Throughout the COVID-19 pandemic, Black Americans have continued to be over-represented among those contracting and dying from this virus, with structural racism being identified as a key factor in this disparity (Erdman, 2020; Godoy & Wood, 2020). Black men are also more likely to have police force used against them, too often with deadly consequences (Obasagie, 2020; Oppel & Gamio, 2020). George Floyd's needless and devastating death on May 25, 2020, at the hands of a White police officer who kneeled on his neck for 8 minutes and 46 seconds, reignited Black Lives Matter protests not just in the United States, but around the world. Had George Floyd's death been an isolated incident the response might have been solemn sadness directed at this one victim of a senseless crime. Instead, his death has become a new and vivid reminder of the persistent and systemic racial biases faced by people who are Black in North America and around the world.

Although racial biases are sometimes expressed forcefully, directly, and unequivocally, advances in the study of racial prejudice suggest that some of these biases can be particularly pernicious, as people are not always willing or able to admit to the prejudices that they hold (Dovidio, Gaertner et al., 2002; Gawronski & Payne, 2010; Greenwald et al., 2015; Greenwald et al., 1998; Lai et al., 2014; Payne et al., 2005; cf. Hahn & Gawronski, 2019). For example, research provides evidence that non-Black children and adults show more positive associations with White over Black targets on implicit measures (Baron & Banaji, 2006; Dunham et al., 2008; Gonzalez et al., 2016; Steele, George, Williams, & Tay, 2018), even when racial prejudice is not explicitly endorsed (Dasgupta et al., 2000; Dovidio, Gaertner, et al., 2002; Greenwald et al., 2015; Lai et al., 2014). Research further suggests that negative stereotypes depicting Black men as hostile and aggressive can lead people, including police officers, to be more likely to misidentify neutral objects as weapons on a weapon identification task (Correll et al., 2002; Payne, 2001).

Increasingly, researchers are attempting to better understand whether these implicit racial biases will be applied to all members of a given racial group equally and the conditions under which other aspects of people's multiple identities might disrupt bias. For example, researchers have examined stereotyping and prejudice toward Black boys (Todd, Simpson, et al., 2016; Todd, Thiem, & Neel, 2016), Black women and girls (Thiem et al., 2019), and liked Black athletes (Mitchell et al., 2003) and celebrities (Govan & Williams, 2004), who each simultaneously belong to other social categories (e.g., child, female) that have the potential to elicit a positive affective response (e.g., nurturance, warmth). In addition, some research has attempted to determine whether specific emotions, such as anger, are more readily associated with outgroups in general due to affect-laden prejudices (Dunham, 2011) or whether this association is particularly likely to arise in response to specific racial groups who are traditionally stereotyped as angry and hostile (Bijlstra et al., 2010; Bijlstra et al., 2014). In the current research, we build on these previous findings to examine the effect that dynamic perceptual category information—in this case

emotional expression—can have on people's implicit attitudes. Specifically, across three studies, we examined whether racial bias would be moderated by emotional expression when people were presented with smiling and angry racial primes.

INTERSECTIONALITY AND RACIAL BIAS

Given the pervasiveness of racial bias that has been found in the literature, researchers have begun to examine racial bias at the intersection of race and other social categories that have the potential to counteract negative attitudes (Petsko & Bodenhausen, 2019). This research has yielded mixed results, with intersecting social categories influencing bias in some cases and not in others. For example, Todd, Thiem, and Neel (2016) made use of a priming task to examine racial bias in weapon identification following Black and White racial primes that included images of children and adults. The researchers replicated a weapon identification bias (Correll et al., 2002; Payne, 2001), with participants identifying threatening stimuli more easily following the presentation of Black, as opposed to White, racial primes (see also Rattan et al., 2012). These findings were not moderated by the age of the primes, suggesting that this type of racial bias can be elicited by pictures of Black boys as young as five years of age. When primed with images of young Black boys in this task, the age of the targets had little effect, despite people's tendency to stereotype children as harmless and innocent (Todd, Simpson, et al., 2016; Todd, Thiem, & Neel, 2016). Related research examining racial biases toward Black women and girls has yielded mixed results, with racial stereotyping and bias emerging, but at times not to the same degree as toward their Black male counterparts (Perszyk et al., 2019; Plant et al., 2011; Thiem et al., 2019).

Some research also suggests that less stable social categories, such as occupation, can impact racial attitudes. For example, Mitchell et al. (2003) found that implicit attitudes toward liked Black athletes and disliked White politicians depended on whether these targets were categorized by race or by occupation. When categorized by occupation, participants showed a greater positivity toward liked Black athletes versus disliked White politicians relative to when these targets were categorized by race. Even when targets were being categorized by race, liked Black athletes and disliked White politicians elicited less anti-Black bias than disliked Black athletes and liked White politicians, suggesting that the existing associations that participants had with these racial exemplars had the potential to influence their attitudes toward the racial categories.

Research similarly suggests that context can moderate implicit racial bias. Using a sequential priming task, Wittenbrink et al. (2001) found that participants were faster to respond to negative words when those words were preceded by images of Black men in a negative racially stereotypical context (e.g., a dilapidated street corner), compared to when they were preceded by images of Black men in a positive racially stereotypical context (e.g., a church). Even the phenotypic features of Black targets have been found to influence bias on a priming task, with bias being most likely to emerge in response to high- versus low-prototypic Black male targets (Livingston & Brewer, 2002).

EMOTIONAL EXPRESSION AND RACIAL BIAS

Although extensive research has been devoted to understanding the impact of race on attitudes and behavior (e.g., Dovidio, Kawakami, et al., 2002; Greenwald et al., 2009), and a growing literature is examining bias at the intersection of race and other social categories, much less is known about how racial cues might interact with emotional expression in informing attitudes. In the current research, we focused on the impact of emotional expressions on racial bias for several reasons. First, emotional expressions can provide a window into the thoughts, feelings, and intentions of others, which can facilitate social inferences and interactions (Keltner & Haidt, 1999). Second, there is some research to suggest that emotional expressions can be used to categorize others in ways that are similar to other stable social categories (Cañadas et al., 2016; Freeman & Ambady, 2011). As such, we had reason to believe that emotional expression would provide important perceptual cues that participants would readily attend to and process.

In addition, there is some evidence that race and emotional expression can interact to inform our perceptions and biases. For example, Hugenberg and Bodenhausen (2003) examined whether implicit racial bias predicted people's perceptions of anger on racially prototypical Black and White faces. In a first study (Study 1), they presented short videos of Black and White male faces changing from having an unambiguously angry expression to an unambiguously happy expression. White participants were asked to indicate when a hostile expression was no longer perceived on each target face. In an additional study (Study 2), White participants watched videos of Black and White male faces morphing from having a neutral expression to an angry expression, and participants were instead asked to indicate when they believed the expression had become angry. Consistent with the researchers' hypotheses, White participants who were higher in implicit prejudice perceived anger to remain longer (Study 1) and appear more quickly (Study 2) on Black male faces as compared to White male faces (Hugenberg & Bodenhausen, 2003). Additional research provided evidence for the bi-directionality of these effects (Hugenberg & Bodenhausen, 2004). In two studies, White participants were asked to quickly categorize images of racially ambiguous smiling and angry male faces as being either Caucasian or African American. Participants' implicit prejudice again predicted responses, with participants higher in prejudice being more likely to categorize angry, but not smiling, racially ambiguous faces as African American (Hugenberg & Bodenhausen, 2004; see also Dunham et al., 2013, for similar studies with children).

In a different but related set of studies, Hugenberg (2005; see also Young & Hugenberg, 2010) examined the speed with which White participants categorized smiling and angry faces by their emotional expression, and whether this would be moderated by the race of the target. He found that when the target faces were White, participants were faster to categorize smiling over angry faces; by contrast, when the target faces were Black, he found a reverse pattern, with angry faces being identified more quickly. These results supported an *evaluative context hypothesis*, whereby the stereotypes and biases held toward Black male targets created a

context that facilitated the processing of negative affect and inhibited the processing of positive affect. Taken together, the findings of these studies suggest that both race and emotional expression can inform people's categorization processes and ultimately their social perceptions.

Perhaps of greatest relevance to the current research, Steele, George, Cease et al. (2018, Study 1) examined the influence of smiling and neutral emotional expressions on racial attitudes using an Affect Misattribution Procedure (AMP; Payne, et al., 2005). They found evidence that both emotional expression and race influenced non-Black participants' attitudes. In their study, neutral stimuli (inkblots) were more likely than chance to be rated as being pleasant after a smiling prime, regardless of the race of the smiling target (White or Black). However, racial bias still emerged and was not moderated by emotional expression. That is, participants were also more likely to rate inkblots as being pleasant if they followed a White, as opposed to a Black, prime, regardless of the target's emotional expression. The goal of the present research was to extend this finding by examining the impact of emotional expression on racial biases using targets that similarly differed by race and emotional expression. However, in the current research, we examined whether emotional expression moderated racial bias when participants were presented with smiling and angry male faces.

We made use of angry faces in the current research because Black men have been found to be stereotypically associated with hostility and aggression (Correll et al., 2002; Cottrell & Neuberg, 2005; Devine, 1989; Todd, Thiem, & Neel, 2016), suggesting that, unlike the neutral expression used in previous research (Steele, George, Cease et al., 2018) anger might be particularly likely to create a contrast effect when paired with smiling faces. In addition, we examined attitudes toward not only Black (versus White) male targets but also Asian (versus White) male targets in order to determine whether any effects would be specific to Black male target faces.

THE PRESENT RESEARCH

In the present research, we conducted three studies to examine people's racial attitudes toward targets who differed not only by race but also by emotional expression. In each study, we made use of the AMP (Payne et al., 2005) to examine whether racial bias would emerge and whether it would be moderated by emotional expression when participants were presented with smiling and angry faces that were prototypically White and Black (Studies 1 and 3) or White and Asian (Studies 2 and 3). We used the AMP as our measure of implicit attitudes because previous research suggests that priming measures are sensitive to perceptual features of the targets (Livingston & Brewer, 2002; Steele, George, Cease, et al., 2018). In addition, unlike the widely used Implicit Association Test (IAT; Greenwald et al., 2003), the AMP does not require that participants categorize targets by a specified category, such as race, and responses are not made in a comparative manner, allowing us to determine whether racial exemplars will activate racial attitudes spontaneously (Williams & Steele, 2019). Across each study, we recruited

participants who did not belong to the minority group being examined (i.e., non-Black participants in Study 1, non-Asian participants in Study 2, and non-Black and non-Asian participants in Study 3), as we were interested in the racial biases of perceivers who did not belong to these groups.

In Studies 1 and 3, we tested two competing hypotheses. One possibility was that, consistent with the previous findings of Steele, George, Cease, et al. (2018, Study 1), racial bias would not be moderated by emotional expression. That is, both emotional expression and race would have independent effects on participants' affective responses. Such a finding would be consistent with an *evaluative context hypothesis* (Hugenberg, 2005; see also Young & Hugenberg, 2010), whereby Black male faces create a context that facilitates the processing of anger and inhibits the processing of happiness in Black target faces, leading to effects of both race and emotional expression.

Another possibility, however, was that in the presence of angry faces, emotional expression would moderate racial biases by creating a *contrast effect* (Shapiro et al., 2009), with greater racial bias emerging in response to the hostile and threatening emotional expressions of anger as compared to smiling expressions. This hypothesis builds on research by Shapiro et al. (2009), where White participants rated Black (but not White) neutral faces as less friendly following exposure to same-race smiling faces as opposed to same-race neutral face. By contrast, participants rated White (but not Black) neutral faces as less threatening when these faces followed same-race angry faces, but not same-race neutral faces. The authors interpreted these findings as evidence of contrast effects. From a threat perspective, smiling Black and angry White male targets were perceived as atypical for White perceivers. As such, subsequent same-race neutral faces received ratings that were more extreme, specifically less friendly and less threatening, respectively. In Studies 1 and 3, we tested the related possibility that in the context of smiling and angry faces, racial biases might be most pronounced and most likely to emerge following angry, but not smiling, primes.

In Studies 2 and 3, we examined whether any effects found in Study 1 were limited to Black male targets, who historically have been stereotyped as being hostile and aggressive (Correll et al., 2002; Cottrell & Neuberg, 2005; Devine, 1989; Todd, Thiem, & Neel, 2016), or whether they would extend to Asian male targets, who encounter prejudice but typically face different negative stereotypes that do not involve hostility or aggression (Ho & Jackson, 2001; Kawai, 2005; Lin et al., 2005; Maddux et al., 2008). There is some research to suggest that anger is more readily attributed to outgroup members in general. For example, Dunham (2011; Study 2) randomly assigned people to minimal groups and then asked them to remember faces of people with neutral expressions who purportedly belonged to their minimal ingroup or outgroup. When these participants were subsequently presented with these same faces, now displaying positive and negative emotions, more of the angry faces were believed to be outgroup members than the smiling faces. By contrast, other research suggests that these effects might be particularly likely to emerge for groups that are also negatively stereotyped as being hostile or aggressive (Bijlstra et al., 2010; Biljlstra et al., 2014). Finding a comparable pattern

of racial bias following Asian and Black male smiling and angry primes would suggest that our findings emerged largely due to prejudice toward these groups. By contrast, finding moderation by emotional expression following only Black, but not Asian, male primes would suggest that these effects emerged due to specific negative stereotypes that exist about Black men. We aimed to test these possibilities across our three studies.

STUDY 1

In Study 1, we examined non-Black participants' attitudes toward targets that differed not only by race (White versus Black) but also by emotional expression (smiling versus angry) using the AMP (Payne et al., 2005) as our implicit measure.

METHOD

Participants

One hundred and seventy-two non-Black undergraduate students who ranged in age from 17 to 34 years (M_{age} = 19 years; 118 women) participated in the current study and received course credit. The racial/ethnic composition of the sample was 34% White (*n* = 58), 25% South Asian (*n* = 44), 21% Middle Eastern (*n* = 37), 14% East and/or Southeast Asian (*n* = 24), 5% non-Black multiracial (*n* = 8), and 1% Hispanic (*n* = 1). As we aimed to run high-powered studies, across each study we decided a priori to recruit at least 160 participants and stopped recruiting once we believed that number had been met. A sensitivity power analysis using G*Power (version 3.1.9.7) indicates that our study sample is sufficient to detect within-subjects main effects and interactions as small as η^2 = .04 (Cohen's *f* = .21) at .80 power.

Measures

Implicit Measure. The AMP was used as our implicit measure of attitudes and consisted of four blocks. Blocks 1 and 2 each included forty trials. In each trial, a prime was presented on the computer screen for 75 milliseconds, followed by a blank screen for 125 milliseconds, an inkblot for 100 milliseconds, and finally, a mask that remained on screen until a response (pleasant or unpleasant) was made. The primes included photographs of eight racially prototypical Black (*n* = 4) and White (*n* = 4) young adult men with smiling expressions as well as the same eight racially prototypical Black (*n* = 4) and White (*n* = 4) men with angry expressions (Beaupré & Hess, 2005). The photographs were created using a directed facial action task and the expressions were deemed to be equivalent across targets using the Facial Action Coding System (FACS; Ekman & Friesen, 1978; see Beaupré & Hess, 2005). Each photograph was presented twice per block, with each of these first two blocks consisting of a total of 32 face trials. In addition to male faces, eight neutral grey squares (Payne et al., 2005) were presented as additional neutral primes within each block. Forty novel inkblots were used as neutral targets against

which judgments were made. Chinese characters were used as neutral targets in the original AMP (Payne et al., 2005); however, given the racial diversity of our participants, we made use of inkblots in our studies to ensure that participants were not familiar with the characters. Each inkblot was randomly selected without replacement from a pool of 40 that had been pretested to be neutral in valence (Steele, George, Cease, et al., 2018). Together, these 40 images were presented in a random order within each of the first two blocks, resulting in a total of 80 critical trials.

In blocks 3 and 4, participants saw four pleasant images (e.g., a flower, a cat), four unpleasant images (e.g., a shark, a scene of a car accident; Lang, Bradley, & Cuthbert, 2008) and four neutral grey squares as primes, which were presented in a random order within each block. Each picture was shown twice, for a total of 24 images per block and a total of 48 trials. These blocks were included in Studies 1 and 2 to provide additional confidence that participants were showing expected AMP effects.

Procedure

Participants were invited to the laboratory and completed this study in an individual testing room. Consistent with the previous administrations of the AMP (Payne et al., 2005), participants were told that their task was to quickly judge whether each inkblot was more or less pleasant than average and to ignore the real-life images that were purportedly designed to be a warning signal that an inkblot would soon appear. Moreover, it was emphasized that there were no right or wrong answers and that they should respond based on their own "gut" feeling. The proportion of pleasant responses that followed each prime type was then calculated. After completing this task, participants completed scales that had been included for exploratory purposes as well as some questions about what they believed to be the purpose of the experiment and demographic information. Participants were then debriefed and thanked for their participation.

RESULTS AND DISCUSSION

To ensure that typical AMP effects were emerging, we first conducted a within-subjects Analysis of Variance (ANOVA) using the responses following pleasant, unpleasant, and neutral primes from blocks 3 and 4 as our dependent variables. As anticipated, a main effect of valence of prime was found, $F(2,342) = 232.69$, $p < .001$, $\eta_p^2 = .58$, such that participants were more likely to judge inkblots following pleasant primes as being pleasant ($M = .77$, $SD = .25$), and less likely to do so following unpleasant primes $(M = .18$, $SD = .20)$ relative to neutral primes $(M = .43$, $SD = .26)$, $|t|s > 11.07$, $ps < .001$.

To investigate the main research question, we conducted a 2 (Race of Prime: White or Black) × 2 (Emotion of Prime: Smiling or Angry) within-subjects ANOVA using the responses from blocks 1 and 2 as our dependent variables. A main effect of Race of Prime emerged, $F(1,171) = 14.40$, $p < .001$, $\eta_p^2 = 0.08$, as did a
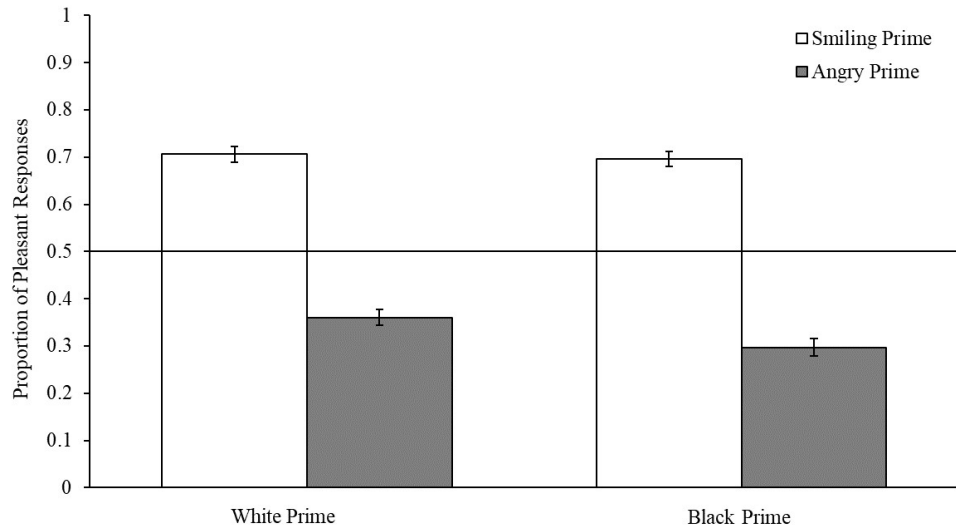
significant main effect of Emotion of Prime, $F(1, 171) = 173.34$, $p < .001$, $\eta_p^2 = 0.50$. These effects were qualified by a Race of Prime by Emotion of Prime interaction, $F(1,171) = 11.45$, $p = .001$, $\eta_p^2 = 0.06$, see Figure 1. Paired-samples t-tests confirmed that responses following angry Black primes ($M = .30$, $SD = .24$) were more negative than responses following angry White primes ($M = .36$, $SD = .21$), $t(171) = 4.75$, $p < .001$, $d = .71$. Additional analyses confirmed that angry Black and angry White primes both elicited more negative responses than chance (.5) and than the neutral primes, $|t|$s > 6.42, ps $< .001$. By contrast, responses following smiling Black ($M = .70$, $SD = .21$) and smiling White ($M = .71$, $SD = .22$) primes did not differ, $t(171) = .82$, $p = .41$. Additional analyses confirmed that smiling Black and smiling White primes both elicited more positive responses than chance (.5) and than the neutral primes, $|t|$s > 9.11, ps $< .001$.[1]

Taken together, this study provided evidence that both the race and emotional expression of targets informed the attitudes of non-Black perceivers. Consistent with previous experiments (Payne et al., 2005; Steele, George, Cease, et al., 2018), non-Black participants demonstrated a preference for neutral stimuli that followed White, over Black, primes. However, this pro-White bias was also influenced by the emotional expression of the primes, with implicit racial biases only emerging when the faces had angry expressions. By contrast, no racial biases emerged when Black and White primes were smiling.

STUDY 2

In Study 1, we found evidence that emotional expression moderated implicit racial bias toward Black (versus White) faces when participants were presented with smiling and angry faces. One possible explanation for these findings is that, given negative stereotypes of Black men as aggressive and hostile (Correll et al., 2002; Devine, 1989; Payne, 2001; Todd, Simpson, et al., 2016; Todd, Thiem, & Neel, 2016), smiling Black faces were seen as atypical and therefore, in the context of angry faces, elicited sufficient positivity to eliminate racial biases that typically emerge on implicit measures. Another possibility is that this contrast effect would have emerged for any minority outgroup, even one that is not stereotyped as aggressive. We tested these possibilities in Study 2. Specifically, we recruited non-Asian participants and asked them to complete an AMP that was comparable to the measure used in Study 1, with the exception that smiling and angry Black faces were replaced with smiling and angry Asian faces. If this contrast effect only applied to Black men due to stereotypes, we might expect that both emotional expression and race would have independent effects

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1. We noticed that some participants responded to all, or almost all, of the smiling primes with a pleasant response and all, or almost all, of the angry primes with an unpleasant response. Although this could reflect the effect of the primes, we were concerned that this might also reflect patterned and/or controlled responding. For this reason, we re-ran all of the analyses, excluding participants who had responded with pleasant following more than 90% of the smiling primes and less than 10% of the angry primes ($n = 14$ for Study 1; $n = 11$ for Study 2; $n = 4$ for Study 3). This did not significantly alter any of the findings.

Note. Error bars represent the standard error for each column.

FIGURE 1 Proportion of AMP trials in which participants indicated that inkblots following smiling and neutral White and Black face primes were more pleasant than average (Study 1)

on participants' biases when Asian men were instead used as primes, with both a race and emotion bias emerging. If, on the other hand, the presence of angry faces eliminated racial bias toward smiling faces due to a more general prejudice contrast effect (Dunham, 2011), we would expect racial bias to again be moderated by race, with racial bias emerging only in response to angry, as opposed to smiling, Asian male faces.

METHOD

Participants

One-hundred and eighty-one non-Asian undergraduate students who ranged in age from 18 to 51 years (M_{age} = 22 years; 129 women) participated in the current study and received course credit. For the current study, we defined Asian as being of East Asian or Southeast Asian descent. The racial/ethnic composition of the sample was 36% South Asian (n = 65), 19% White (n = 35), 19% Middle Eastern (n = 35), 15% Black (n = 26), 8% non-Asian multiracial (n = 15), and 3% Hispanic (n = 5). A sensitivity power analysis indicates that this sample is sufficient to detect within-subjects main effects and interactions as small as η^2 = .04 (Cohen's f = .21) at .80 power.

Measures

Implicit Measure. The implicit measure was identical to the one used in Study 1 with the exception that smiling and angry Black male primes were replaced with racially prototypical smiling and angry Asian male primes (Beaupré & Hess, 2005).
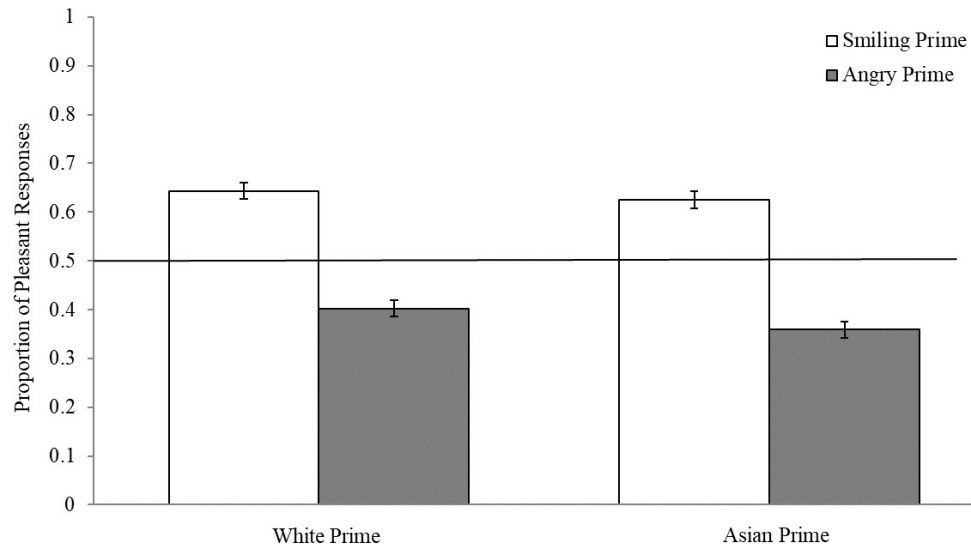
Procedure

The procedure was identical to Study 1.

RESULTS AND DISCUSSION

To ensure that typical AMP effects emerged, we again conducted a within-subjects ANOVA using the responses to pleasant, unpleasant, and neutral primes from blocks 3 and 4 as our dependent variables. As anticipated, a main effect of valence of prime emerged, $F(2,360) = 256.30$, $p < .001$, $\eta_p^2 = .59$, such that participants were most likely to judge the inkblots following pleasant primes as being pleasant ($M = .76$, $SD = .21$), and least likely to do so following unpleasant primes *(M = .21, SD = .20)* relative to the neutral primes ($M = .42$, $SD = .25$), $|t|$s > 10.91, ps < .001.

To investigate the main research question, we conducted a 2 (Race of Prime: White or Asian) × 2 (Emotion of Prime: Smiling or Angry) within-subjects ANOVA using the responses from blocks 1 and 2 as our dependent variables. A main effect of Race of Prime emerged, $F(1, 180) = 10.99$, $p = .001$, $\eta_p^2 = .06$, as did a significant main effect of Emotion of Prime, $F(1, 180) = 89.75$, $p < .001$, $\eta_p^2 = .33$. Unlike in Study 1, these effects were not qualified by a Race of Prime by Emotion of Prime interaction, $F(1,180) = 2.23$, $p = .14$, $\eta_p^2 = .01$, see Figure 2. Despite this lack of significant interaction, we conducted paired-samples *t*-tests to examine whether differences comparable to those found in Study 1 would emerge. Consistent with results of Study 1, responses that followed angry Asian primes ($M = .36$, $SD = .22$) were more negative than responses following angry White primes ($M = .40$, $SD = .23$), $t(180) = 3.68$, $p < .001$. Additional analyses confirmed that angry Asian and angry White primes both elicited more negative responses than chance (.5) and than the neutral primes, $|t|$s > 3.09, ps < .003. Also consistent with the results of Study 1, responses following smiling Asian ($M = .62$, $SD = .23$) and smiling White ($M = .64$, $SD = .23$) primes did not differ, $t(180) = 1.32$, $p = .19$. Additional analyses confirmed that smiling Asian and smiling White primes both elicited more positive responses than chance (.5) and than the neutral primes, $|t|$s > 6.89, ps < .001.

The current study replicated several key findings from Study 1 with a new target racial group. Participants in this study were more likely to rate neutral stimuli (inkblots) positively when the primes were smiling as opposed to when they were angry, suggesting an affect bias favoring smiling faces. They were also more likely to rate these stimuli favorably when White, as opposed to Asian, faces served as primes. These findings suggest that racial biases can emerge even when primes vary by both race and emotional expression. Unlike the findings of Study 1, emotional expression did not moderate this bias, as no interaction effect emerged. This

Note. Error bars represent the standard error for each column.

FIGURE 2 Proportion of AMP trials in which participants indicated that inkblots following smiling and neutral White and Asian face primes were more pleasant than average (Study 2)

finding provides some initial evidence that the contrast effect found in Study 1 would only emerge for targets who not only encounter prejudice, but who also encounter stereotypes associated with anger. However, when smiling and angry faces were directly compared across race of the prime, there was some, albeit tentative, evidence of a contrast effect, making it challenging to draw stronger conclusions.

STUDY 3

The results of Study 2 provided mixed evidence that emotional expression moderates implicit racial bias toward Asian (versus White) faces when participants are presented with smiling and angry faces, making it less clear whether stereotypes about Black men led to a contrast effect in Study 1, or whether this contrast also emerges in response to other minority outgroups, even those not stereotypically associated with aggression. In Study 3 we aimed to further address this question by including White, Black, and Asian smiling and angry primes in the same design. In the presence of all three racial groups, we anticipated that we would replicate the contrast effect found in Study 1, with racial bias emerging in response to angry, but not smiling Black faces. If this contrast effect was due to prejudice, we would expect to find a similar contrast effect following Asian male primes, with

only angry (but not smiling) Asian male primes eliciting bias. However, if this contrast effect was due to negative stereotypes of Black men as aggressive and hostile (Correll et al., 2002; Devine, 1989; Payne, 2001; Todd, Simpson, et al., 2016; Todd, Thiem, & Neel, 2016), we would expect a different pattern of bias in response to smiling and angry Asian male primes.

METHOD

Participants

One-hundred and fifty-seven non-Black and non-Asian undergraduate students who ranged in age from 17 to 61 years (M_{age} = 20 years; 87 women) participated in the current study and received course credit. The racial/ethnic composition of the sample was 47% South Asian (n = 74), 23% White (n = 36), 22% Middle Eastern (n = 34), 5% Hispanic (n = 8) and 3% non-Asian and non-Black multiracial (n = 5). One participant was removed prior to any analyses due to a lack of variability in responding throughout the task. A sensitivity power analysis indicates that this sample is sufficient to detect within-subjects main effects and interactions as small as η^2 = .05 (Cohen's f = .23) with .80 power.
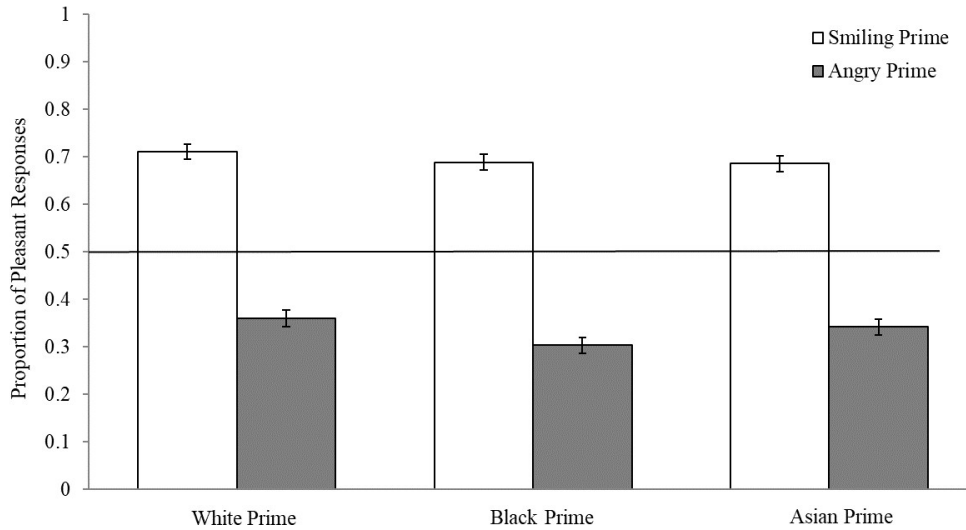
Measures

Implicit Measure. The implicit measure was similar to the ones used in Studies 1 and 2, however in this study the smiling and angry White, Black, and Asian male primes from the first two studies were each presented (Beaupré & Hess, 2005). Blocks 1 and 2 each included 60 trials. Each face prime (n = 4 of each emotional expression) was presented twice for a total of 48 face primes per block and these appeared in random order along with 12 trials containing a neutral gray square. Blocks 3 and 4 were not included in this study.

Procedure

The procedure was identical to Studies 1 and 2, with the exception that no additional scales were completed.

RESULTS AND DISCUSSION

To investigate the main research question, we conducted a 3 (Race of Prime: White or Black or Asian) × 2 (Emotion of Prime: Smiling or Angry) within-subjects ANOVA. A main effect of Race of Prime emerged, $F(2, 310)$ = 8.92, $p < .001$, η_p^2 = .05, as did a significant main effect of Emotion of Prime, $F(1, 155)$ = 173.57, $p < .001$, η_p^2 = .53. These effects were qualified by a Race of Prime by Emotion of Prime interaction, $F(2,310)$ = 3.47, p =.03, η_p^2 = .02, see Figure 3. Paired-samples t-tests confirmed that, as in Study 1, responses following angry Black primes (M = .30, SD = .21) were more negative than responses following angry White primes

Note. Error bars represent the standard error for each column.

FIGURE 3 Proportion of AMP trials in which participants indicated that inkblots following smiling and neutral White, Black, and Asian face primes were more pleasant than average (Study 3)

(M = .36, SD = .21), t(155) = 4.16 , p < .001. Responses following angry Black primes were also more negative than responses following angry Asian primes (M = .34, SD = .22), t(155) = 3.06, p = .003. Unlike Study 2, responses that followed angry Asian and angry White primes did not differ, t(155) = 1.55, p = .12. Additional analyses confirmed that angry Black, Asian, and White primes each elicited more negative responses than chance (.5) and than the neutral primes, |t|s >7.05, ps < .001.

Also consistent with the results of Study 1, responses following smiling Black (M = .69, SD = .22) and smiling White (M =.71, SD = .20) primes did not differ, t(155) = 1.68, p = .09. There was also no difference in response between smiling Black and smiling Asian (M =.69, SD = .21) primes, t(155) = .20, p = .84. However, smiling White primes elicited greater positivity than did smiling Asian primes, t(155) = 2.33, p = .02. Additional analyses confirmed that smiling Black, Asian, and White primes each elicited more positive responses than chance (.5) and than the neutral primes, |t|s > 7.27, ps < .001.

Consistent with the findings of Study 1, when presented with smiling and angry Black male faces, racial bias emerged following angry faces, with participants being more likely to rate neutral stimuli as unpleasant when presented with angry Black male primes, relative to either angry White or angry Asian male primes. However, in the presence of these angry faces, we found no bias following smiling Black male faces relative to either smiling White or smiling Asian male faces. By contrast, bias following Asian primes showed a different pattern, with neutral stimuli following smiling Asian male primes being less likely to elicit a pleasant

response relative to smiling White primes, but no difference emerging following angry Asian and angry White primes. Each of these effects provides some evidence of racial biases toward Black and Asian targets, however the less consistent pattern of results following Asian primes suggests that a contrast effect emerged following smiling and angry Black primes due to specific negative stereotypes faced by Black men.

GENERAL DISCUSSION

Given the persistence of racial bias, there are both practical and theoretical reasons to increase our understanding of the conditions under which racial biases will be elicited. Consistent with past research, across three studies, we found evidence of racial bias favoring White over Black and Asian targets on a priming measure designed to assess implicit biases. However, we also found evidence that this bias can depend on the emotional expression of the faces. Specifically, in Studies 1 and 3, we found that racial bias emerged in response to angry Black male faces. In addition, in the presence of these angry faces, smiling Black faces did not elicit racial bias in comparison to either White (Studies 1 and 3) or Asian (Study 3) smiling faces. These findings are consistent with a *contrast effect* (Shapiro et al., 2009), such that racial bias was more likely to emerge in response to the hostile and threatening emotional expressions of anger but not in response to smiling expressions. It seems possible that in the presence of threatening affect (i.e., anger), race might have provided less valuable information when combined with a positive emotional expression. It is similarly possible that in the context of angry faces, smiling Black male faces appeared less racially prototypical (Livingston & Brewer, 2002), resulting in a lack of racial bias in response to these faces.

We also aimed to determine whether this contrast effect was due to a general prejudice effect or whether this emerged due to negative stereotypes that have historically been perpetuated depicting Black men as being aggressive (Correll et al., 2002; Devine, 1989; Payne, 2001; Todd, Simpson, et al., 2016; Todd, Thiem, & Neel, 2016). We addressed this question by examining whether a similar pattern of bias would emerge following smiling and angry Asian male primes. Across two studies, racial bias emerged in response to Asian faces; however, moderation by emotional expression was not as consistent as with Black male primes. In Study 2, when participants were presented with smiling and angry White and Asian primes, a pro-White bias emerged that was not moderated by emotional expression; however, follow-up analyses provided some tentative evidence that bias was driven by angry as opposed to smiling Asian primes. By contrast, when participants in Study 3 were presented with smiling and angry White, Asian, and Black primes, bias emerged in response to smiling, but not angry, Asian male faces. It seems possible that in the presence of angry Black faces, angry Asian faces elicited a more muted negative response. This mixed pattern of responding across studies following Asian primes provides additional evidence that this contrast effect is most likely to be evoked in response to outgroup members, such as Black men, who face race-specific stereotypes regarding anger and hostility (Bijlstra et al., 2010; Bijlstra et al., 2014).

In addition, emotional expression had a stronger effect on people's responses in all three studies, with smiling primes eliciting more positive responses than angry primes, neutral (gray square; Studies 1 and 2) primes, and chance responding. This finding is consistent with a growing number of studies with children (Lipman et al., 2021; Rhodes & Baron, 2019; Williams & Steele, 2019) and adults (Blair, 2002; Kawakami et al., 2020; Lai et al., 2014; Steele, George, Cease, et al., 2018) that aim to increase our understanding of the contextual nature of prejudice and the role that categorization processes can play in constraining or intensifying prejudice. However, as noted earlier, this attention to emotion did not eliminate racial biases. This is consistent with current theorizing about person construal, which suggests that impressions of others are formed by an interplay of facial cues, social categories, and contextual information that drive social categorization processes and ensuing impressions in dynamic and interactive ways (Freeman & Ambady, 2011; Kawakami et al., 2017). In the context of angry Black faces that could be perceived as depicting threat, smiling Black faces might have been less likely to be construed primarily through the lens of race. However, in response to angry Black male primes, both the affective state and the race of the target impacted people's responses. This finding could have significant implications for situations in which negative emotions, including anger, might be likely to be felt and expressed by minority group members.

Although our findings might seem to suggest that racial bias will not emerge in response to smiling Black male faces, it is important to note that previous findings suggest that this might be the case only under specific circumstances, such as when a competing subgroup, including angry exemplars, are present (Steele, George, Cease, et al., 2018). For example, in previous studies, non-Black children (Lipman et al., 2021) and adults (Steele, George, Cease, et al., 2018) showed an implicit preference favoring White targets with a neutral emotional expression, over smiling Black targets, when they were asked to categorize these faces by race on an IAT (Greenwald et al., 2003). It seems likely that there are both individual differences and contextual factors that can affect whether a smiling Black target face is likely to elicit an affiliative affective response.

It would be useful through future research to further illuminate the conditions under which biases favoring smiling Black targets, as well as racial outgroups who differ along a host of other social and perceptual categories, are likely to emerge. For example, Asian American women are often associated with stereotypes of *Asian* and *female* and can be perceived differently depending on which social category is activated (Macrae, Bodenhausen, & Milne, 1995). By priming participants with images of Asian men and women with different emotional expressions (smiling versus neutral or angry) portrayed in different settings (e.g., holding a baby versus in a police uniform), one could assess whether the female and Asian stereotypes could be attenuated by smiling. There is also the possibility that our findings were affected by the specific stimulus set used (Beaupré & Hess, 2005) as well as the limited number of unique images. With the growing number of face databases available, it would be useful to replicate these effects with different images and with a larger number of unique primes.

In addition, this research was conducted in a multicultural urban setting with racially diverse participants. It would be interesting to examine whether moderation by emotional expression would emerge in a more racially homogeneous environment, with more racially homogenous participants, and/or in environments with a more salient history of racial discrimination. This would allow us to better understand the robustness of these effects and to determine whether these contexts would eliminate or further enhance the impact of emotional expression.

Finally, although this research contributes to a growing literature examining the contextual nature of racial biases, our studies do not provide a direct route to eliminating racial prejudice. This research also does not provide insight into the dynamic nature of prejudice, in which a person might be categorized primarily by emotional expression at one moment but categorized by race in the next. Given the fact that intersecting social categories, such as presenting Black child faces (Todd, Thiem, & Neel, 2016), do not seem to attenuate bias, it is clear that much more research is needed to fully understand the conditions under which competing social and perceptual category information might decrease bias, as well as ways that these racial biases can be eradicated. It is hoped that by continuing to examine the conditions under which both subtle and overt forms of racial prejudice emerge we will be in a better position to find lasting solutions to combat this pressing social issue.

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