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INCIDENTAL CUES TO THREAT AND RACIAL CATEGORIZATION

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Prior work suggests that when social targets with ambiguous group membership present an overt threat, people are more likely to categorize the target as belonging to the outgroup. Yet, the impact of threat cues incidental to the target on social categorization remains unexplored. Prior work has found overt threat cues integral to the stimulus bias outgroup social categorization irrespective of the group in question. In contrast, we predicted that incidental threat cues would only bias judgments when the potential outgroup was one linked with threat. Drawing upon research finding the color red serves as an incidental threat cue, six experiments find that a red background behind a face (vs. a control color) increases outgroup categorizations, but only when the outgroup is linked with threat. Incidental threat cues bias outgroup categorization in a different manner than do overt threats integral to the stimulus, suggesting refinements to current thinking on the role of motivated processes in social categorization.

Keywords: threat cues, incidental, outgroup categorization

Categorizing social targets into groups is a rapid and adaptive social cognitive process. Throughout human history, outgroup members have posed a considerable risk to physical safety (Brewer, 1999; Campbell, 1967; Navarrete et al., 2009). Thus, knowing who belongs to one's ingroup is essential for avoiding potential

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harm and conflict. However, despite the rapidity with which social targets can be placed into categories, this process is not immune to situational and contextual factors, especially when group categorization is uncertain or ambiguous (Freeman & Ambady, 2011). In such cases, perceivers tend to exclude individuals with ambiguous group membership (Castano, Yzerbyt, Bourguignon, & Seron, 2002; Leyens & Yzerbyt, 1992; Yzerbyt, Leyens, & Bellour, 1995). One instance of this over-exclusivity can be seen in hypodescent—or the tendency to categorize multiracial individuals according to their minority (i.e., outgroup)—group status (Chen, Moons, Gaither, Hamilton, & Sherman, 2014; Halberstadt, Sherman, & Sherman, 2011). Such a tendency has been theorized to stem from perceived risks associated with erroneously conferring ingroup membership to an outgroup target (Galperin & Haselton, 2013).

Not all outgroup members are equal in their potential to inflict harm on an individual. Some may be perceived as more dangerous due to physical features that convey strength and dominance, such as masculinity (Navarrete et al., 2009). Others may be perceived as dangerous due to cultural stereotypes, such as Black men, who are often viewed in a negative light, including being aggressive and hostile (Brigham, 1971; Devine, 1989; Devine & Elliot, 1995). Individuals who are Black and male are perceived as especially threatening (e.g., Navarrete, McDonald, Molina, & Sidanius, 2010). Thus, perceiving racially ambiguous men as Black would serve to minimize any potential cost of categorizing incorrectly, particularly if one endorses the stereotype of Black men as dangerous.

Empirical evidence suggests that categorizing racially ambiguous individuals as Black is especially likely to occur in the presence of overt threat cues. For example, individuals tend to categorize faces as Black if the target displays an angry face (Dunham 2011; Hugenberg & Bodenhausen, 2004; Miller, Maner, & Becker, 2010). Additionally, both the manipulated masculinity of a target and the movement of a target toward the perceiver increase outgroup categorizations (Miller et al., 2010). Thus, when threat is integral to the stimulus (e.g., the person clearly signals anger or the capacity to do harm), people err on the side of making "safe" categorizations regarding others' group membership, categorizing them as outgroup.

INCIDENTAL CUES TO THREAT

While the research reviewed above makes clear that faces conveying threat (e.g., expressing anger) are likely to be categorized as outgroup members (Dunham, 2011; Hugenberg & Bodenhausen, 2004; Miller et al., 2010), much less is known about what happens when the cue to threat is incidental and unrelated entirely to the face. This is nevertheless an important question, as environmental cues to safety or danger may be capable of influencing group categorizations for targets that are not explicitly threatening.

Unlike situations where the target presents an explicit threat and outgroup categorization is thereby seen as the safe option, we expected that incidental threat cues would operate in a more nuanced manner that interact with target char-

acteristics. For example, with incidental threat, we suggest there must be some other potential harm for it to evoke outgroup categorization of a novel target. Accordingly, we predict an incidental threat cue to prompt categorization of racially ambiguous Black/White faces as Black, given the stereotypical link between this group and threat. In such a context, the combined influence of environmental (i.e., incidental) threat and preexisting beliefs about danger may conspire to bias categorizations toward the racial outgroup. Yet, in a different context, we would not expect such a relationship. That is, if the potential outgroup is not threatening, an incidental threat cue may not bias outgroup categorizations. We thus predicted that racially ambiguous Asian/White faces would be unlikely to show similar effects, as Asian groups are not stereotypically associated with threat. Additionally, we propose that the effect will occur for Black male categorizations, but not Black female categorizations, as it is the former group most seen as threatening to White targets (e.g., Navarrete et al., 2010).

COLOR AS AN INCIDENTAL THREAT CUE

In the current research, we utilize color backgrounds to manipulate incidental threat, drawing upon work which links psychological inferences to color (Elliot & Maier, 2012). The color red, in particular, signals threat in a variety of contexts. Red is associated with anger and danger (Changizi, Zhang, & Shimojo, 2006; Elliot, Payen, Brisswalter, Cury, & Thayer, 2011; Fetterman, Robinson, Gordon, & Elliot, 2011; Hill & Barton, 2005; Khan, Levine, Dobson, & Kralik, 2011; Setchell & Wickings, 2005). In contexts in which evaluation is salient, exposure to the color red evokes threat appraisals (Feltman & Elliot, 2011; Ten Velden, Baas, Shalvi, Preenen, & De Dreu, 2012) as well as associated avoidance-based motivation and behavior (Elliot, Maier, Binser, Friedman, & Pekrun, 2009; Mehta & Zhu, 2009; Rutchick, Slepian, & Ferris, 2010).

That red is linked with threat presents an ideal methodology for the current work. Unlike integral threat manipulations that change the actual content of the stimulus (i.e., an angry expression, motion toward the perceiver), we can manipulate the background color of an image as something entirely incidental to the focal target.

We hypothesize that when assigning group membership, the threat incidentally evoked by red will increase outgroup categorization, but only when the outgroup is one associated with threat (i.e., Black males, rather than females, and not other racial groups not linked to threat, e.g., Asian). Finally, consistent with the idea that incidental threat will only prompt outgroup categorization when the outgroup is seen as threatening, we predict this incidental threat cue to exert a stronger effect on outgroup categorization to the extent that people specifically associate threat with the outgroup in question.

In sum, the current work examines the effect of an incidental cue to threat (the color red, relative to a control color, or no color) on outgroup categorizations and examines moderators of this effect. Our research offers novel nuance and refine-

ment to the literature on categorization of group membership, especially with respect to the role of threat.

RESEARCH OVERVIEW

Six experiments tested whether exposure to an incidental threat cue (the color red) would influence the categorization of racially ambiguous faces. We report how we determined sample size, all data exclusions (if any), all manipulations, and all measures. Sample size was determined before any data analysis, seeking in the case of lab studies as many participants as could be obtained within a semester, or subsequently on Mechanical Turk with 100 participants per study cell, which can detect an effect size of $r = .276$ (80% power). However, Experiments 1a and 2 were conducted prior to this *a priori* power consideration, and therefore contained smaller sample sizes.

Experiments 1a, 1b, and 1c tested whether exposure to a red (vs. blue) background would increase categorization of racially ambiguous male faces as Black. In Experiments 2 and 3, we examined the extent to which this effect was contingent on the targets potentially belonging to threatening outgroups (i.e., Black males are perceived as more threatening than Black females). Experiment 4 further tested whether the effect is contingent on the potential outgroup being associated with threat by including additional outgroup categorizations (i.e., Asian). Lastly, we measured the implicit associations participants held between Black males and threat to determine if stronger negative implicit associations would lead to more Black categorizations in the context of incidental threat. In sum, we demonstrate the role of incidental threat cues through a variety of means, exploring different racial outgroups and different levels of threat associated with the targets.

PILOT EXPERIMENT

First, we sought to obtain empirical evidence that people indeed associate the color red as a threat cue. This has been documented in previous research examining implicit associations (Fetterman et al., 2011), yet we believe it is also important to document this at the explicit level, given that our outcome measures were explicit group category decisions and all stimuli were presented for supraliminal durations.

We recruited 200 participants from Mechanical Turk to complete a study on color-meaning associations. Participants completed three trials in which a color square (red, blue, gray) was presented on the screen along with 4 face-valid items (this color represents danger; this color represents aggression; I associate this color with threat; I associate this color with safety [reverse scored]).

Participants indicated their agreement with each item on a scale from 1 (disagree strongly) to 5 (agree strongly). Ratings were averaged within each color category and submitted to a repeated-measures ANOVA, which revealed a significant omnibus effect, $F(2, 398) = 487.32$, $p < .001$. Pairwise comparisons indicated that red

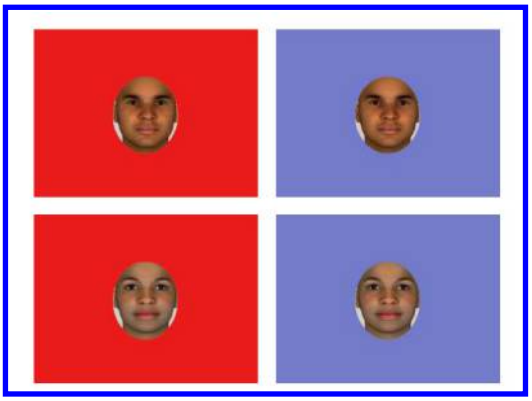

FIGURE 1. Example stimuli from Experiments 1 (males targets only) and 2 (male and female targets). Example male stimuli in first row, and example female stimuli in second row.

was much more strongly associated with threat (M = 3.79, SE = .064) than blue (M = 1.61, SE = .035), t = 28.02, $p < .001$, d = 1.98, and gray (M = 2.36, SE = .049), t = 18.56, $p < .001$, d = 1.31.

EXPERIMENTS 1A, 1B, 1C

Ten Black/White racially ambiguous male faces were created by morphing computer-generated images of Black and White individuals. These faces have been extensively tested in prior work, equating them for levels of distinctiveness and attractiveness compared to prototypical White and Black targets, and ensuring they are perceived as racially ambiguous (Pauker et al., 2009). Each face was displayed in an oval window, placed on separate red, and blue, backgrounds (Figure 1). The red and blue colors were equated on lightness and chroma using a Gretag-MacBeth Eye-One Pro spectrophotometer (redLCh = 60.7/84.3/32.3; blueLCh = 60.6/85.0/284.3).

EXPERIMENT 1A

Twenty-eight White undergraduates (61% female) participated in a *within-subjects* design. The experiment ostensibly focused on visual perception. Participants saw half of the racially ambiguous faces on the red background and half on the blue background, and face-color pairings were counterbalanced across participants, order randomized. Participants were given the options "Black" and "White" to categorize each face.

The percentage of faces categorized as Black was compared across the two color backgrounds. When faces were presented with a red background, participants categorized them as Black (M =.76, SD = .28) more often than when the same faces

were presented with a blue background (M = .62, SD = .31), $t(27) = 2.11$, $p = .044$, $d = 0.81$.

EXPERIMENT 1B

Experiment 1a had a small sample size. We thus conducted a high-powered replication, utilizing an online sample from Amazon Mechanical Turk. We recruited 100 U.S. participants (47% female; 83% White). Participants viewed all target identities twice, once with the red background and once with the blue background. Participants viewed each of the faces in two separate randomly ordered blocks (red, blue), with target identity presentation randomly varying within blocks. Seven participants indicated a color-vision deficiency, assessed via self-report at the end of the study, and thus were excluded from analyses.

When faces were presented with a red background, participants categorized them as Black (M = .64, SD = .26) more often than when the same faces were presented with a blue background (M = .58, SD = .29), $t(92) = 2.75$, $p = .007$, $d = 0.29$.

EXPERIMENT 1C

We conducted a direct replication of Experiment 1b in a controlled laboratory by recruiting 100 undergraduate student participants (63% female; 76% White or Asian). Nine participants were excluded from analyses due to a color-vision deficiency.

When faces were presented with a red background, participants categorized them as Black (M = .77, SD = .23) more often than when the same faces were presented with a blue background (M = .73, SD = .23), $t(90) = 1.77$, $p = .081$, $d = 0.19$, although this difference did not reach the threshold of statistical significance (we later report a meta-analysis of all studies).

Across Studies 1a–1c, red backgrounds shown incidentally behind racially ambiguous faces led participants to categorize those faces as Black more often. We should note that the effect sizes varied across these experiments, as did the absolute percentages of Black categorizations, which might reflect using different participant populations. We later provide a meta-analysis of effect sizes across each experiment to provide an estimate of the overall pooled effect.

EXPERIMENT 2

To the extent that red serves as an incidental threat cue, which prompts outgroup categorizations of targets that could bring harm to the perceiver, this effect should be restricted to targets most capable of physical harm (Dunham, 2011; Miller et al., 2010). Specifically, we predicted that red's influence on Black categorizations would apply to male targets (as used in Experiments 1a–1c), but not female targets.

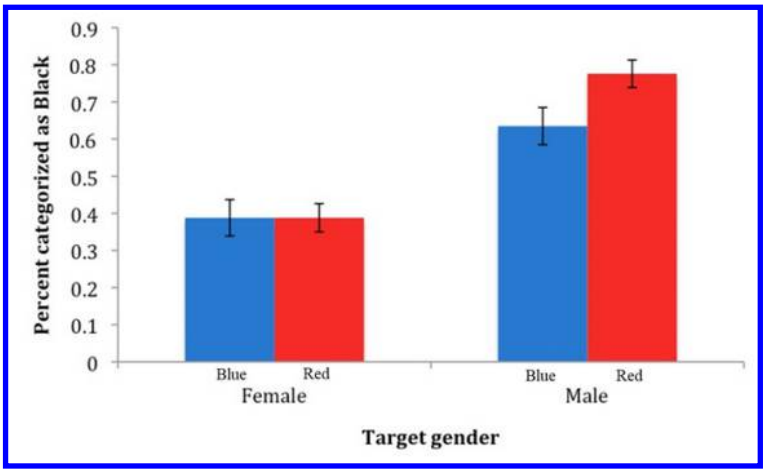

FIGURE 2. Percent of faces categorized as Black as a function of background color in Experiment 2.

METHOD

The procedure was identical to Experiment 1a, except that 10 Black/White racially ambiguous female faces were added to the design (from Pauker et al., 2009), for a total of 20 faces. Thirty-four White undergraduates (50% female) participated in a *within-subjects* design.

RESULTS AND DISCUSSION

A 2 (background color: red, blue) × 2 (target gender: male, female) ANOVA revealed a main effect of target gender, $F(1, 33) = 64.27$, $p < .001$, whereby male targets were categorized as Black ($M = .71$, $SD = .22$) more than female targets ($M = .39$, $SD = .23$). There was also a main effect of background color, $F(1, 33) = 6.90$, $p = .013$, $d = 0.91$, whereby faces with the red background were more often categorized as Black ($M = .58$, $SD = .19$) than faces with the blue background ($M = .51$, $SD = .23$).

Additionally, there was a significant interaction, $F(1, 33) = 4.95$, $p = .033$. For male targets, the red background led to more Black categorizations ($M = .78$, $SD = .21$) than the blue background ($M = .64$, $SD = .29$), $t(33) = 3.08$, $p = .004$, $d = 0.61$, whereas there was no difference for female targets ($M_{red} = .39$, $SD = .22$; $M_{blue} = .39$, $SD = .29$), $t(33) < 0.01$, $p > .99$ (Figure 2).

EXPERIMENT 3

An incidental cue linked with threat (i.e., the color red) led individuals to categorize group-ambiguous others as belonging to a threatening group (Black), but only

for targets most capable of causing direct physical harm (male; e.g., Navarrete et al., 2009).

In the prior studies, red and the control color blue were presented as background colors behind faces. It is not entirely clear from those studies whether red increases Black categorization or if blue decreases it. We thus conducted a high-powered replication of Experiment 2 while utilizing a different control color, gray, to determine whether a similar pattern would emerge. The red and gray colors were equated on lightness (gray is achromatic, meaning by definition the chroma value is functionally zero, and the hue value is meaningless) using a GretagMacBeth Eye-One Pro spectrophotometer (red LCh = 60.7/84.3/32.3; gray LCh = 60/-/-).

METHOD

We recruited 200 participants from Mechanical Turk (50% female, 70% White, M_{age} = 36.08, SD_{age} = 11.86). The procedure was similar to Experiment 2, but we replaced the blue background with a gray background to utilize an achromatic contrast color as a comparison. In addition, participants viewed all target identities twice, once with the red background and once with the gray background. Participants viewed each of the faces in four separate randomly ordered blocks (red-female, gray-female, red-male, gray-male). Seven participants indicated a color-vision deficiency, assessed via self-report at the end of the study, and thus were excluded from analyses.

RESULTS AND DISCUSSION

A 2 (background color: red, gray) × 2 (target gender: male, female) ANOVA revealed a main effect of target gender, $F(1, 192) = 90.95$, $p < .001$, whereby male targets were more often categorized as Black ($M = .62$, $SD = .24$) than female targets ($M = .45$, $SD = .26$). There was also a main effect of background color, $F(1, 192) = 4.30$, $p = .04$, $d = 0.15$, whereby faces with the red background were categorized as Black ($M = .55$, $SD = .24$) more than faces with the gray background ($M = .52$, $SD = .24$). Contrary to predictions, the interaction did not reach significance, $F(1, 192) = .69$, $p = .41$. The significant main effect of background color, along with the non-significant color x target gender interaction, indicates that increased Black categorizations as a function of the red background were not significantly different between male and female targets.

Nevertheless, given our *a priori* predictions, and to compare the results with Experiment 2, we conducted planned contrasts assessing the influence of red on racial categorizations separately for male and female targets (Rosenthal & Rosnow, 1991). For male targets, the red background led to more Black categorizations ($M = .63$, $SD = .25$) than the gray background ($M = .60$, $SD = .26$), $t(192) = 2.15$, $p = .033$, $d = 0.15$, whereas there was no difference for female targets ($M_{red} = .46$, $SD = .30$;

M_{gray} = .45, SD = .28), $t(192)$ = .91, p = .36, d = 0.07. Hence, while the distributions of outgroup categorizations for male and female targets were overlapping (i.e., in the same descriptive direction), our planned contrasts indicated a significant effect of red on Black categorizations for male targets, but the effect was not significant for female targets. It is worth reiterating that these planned contrasts should be interpreted with caution given the non-significant color x target gender interaction.

Experiment 3 provided partial support for the hypothesis that an incidental threat cue would lead to Black categorizations when the target was one of potential threat (i.e., male, rather than female). Further, the main effect of color on race categorization is present when using gray (an achromatic color) as a comparison, although smaller in magnitude than when compared to blue.

EXPERIMENT 4

In a final study we sought to examine the role of perceived threat in this process. That is, we hypothesized that the effect of red backgrounds on Black racial categorizations occurs as a function of an association between Black male faces and threat. The more that individuals perceive Black males to be threatening, the more we predict the color red to prompt categorization of racially ambiguous Black/White faces as Black.

We tested our hypothesis that these effects were based in White individuals perceiving Black males as threatening through two means. First, participants completed an Affective Misattribution Procedure (AMP) that measured the extent to which they associated threat with Black males. Second, participants categorized racially ambiguous Black/White faces as well as racially ambiguous Asian/White faces, of which the latter are not stereotypically linked with threat. Additionally, we examined whether incidental threat would exert an influence on clear judgments of threat value (i.e., anger judgments), or if instead we would only see effects on a more subtle indicator of threat (i.e., outgroup judgments).

METHOD

Participants were 40 White undergraduates for a *within-subjects* design (63% female, M_{age} = 23.80). Due to an Empirisoft software error that occasionally corrupted participants' data files, four participants' data were not properly saved. Participants first completed an AMP using the parameters from Payne, Govorun, and Arbuckle (2008). On each trial, a photograph of a Black or White male was randomly presented (75ms), followed by a black screen (125ms), then a Chinese ideograph (100ms), followed by a black/white Gaussian-noise mask that stayed on screen until a response was made. Participants were told the first photograph signaled the second one was coming, and their only task was to guess the meaning of the ideograph, whether it meant something "threatening" or "not threatening." The ideographs and noise stimuli were from the AMP in the Payne and colleagues'

(2008) paradigm (one of 200 ideographs was randomly chosen per each trial). Per each participant, we calculated the proportion of ideographs judged as threatening, when preceded by a Black face and when preceded by a White face. The difference between these yields an index of the relative association between Black males and threat.

After completing the AMP, participants were exposed to the Black/White racially ambiguous male faces from the prior studies, randomly presenting the faces with either red or gray backgrounds. Participants first judged how angry the faces appeared from 1 = *definitely no anger* to 7 = *definitely some anger*. Subsequently, they viewed the faces again and categorized them by race (Black vs. White). Participants completed this task with Black/White racially ambiguous faces first, such that the first part of the study was similar to the other studies. Subsequently, they were exposed to Asian/White racially ambiguous faces, providing their first impressions of anger, and then racial categorizations.

RESULTS AND DISCUSSION

Initial paired *t*-tests demonstrated that Black/White racially ambiguous faces were more often categorized as Black with red backgrounds ($M = 0.53$, $SD = 0.28$, 95% CI = [0.43, 0.62]) than with gray backgrounds ($M = 0.43$, $SD = 0.30$, 95% CI = [0.33, 0.53]), $t(37) = 2.07$, $p = .05$, $d = 0.34$. Faces with red backgrounds ($M = 3.40$, $SD = 1.01$, 95% CI = [3.07, 3.73]) were not rated as angrier than those with gray backgrounds ($M = 3.24$, $SD = 1.02$, 95% CI = [2.90, 3.57]), $t(37) = 1.16$, $p = .25$, $d = 0.19$.

Red had no effect on Asian categorizations ($M = 0.39$, $SD = 0.30$, 95% CI = [0.29, 0.49]), relative to gray ($M = 0.34$, $SD = 0.26$, 95% CI = [0.25, 0.42]), $t(37) = 0.81$, $p = .42$, $d = 0.13$. Likewise, for racially ambiguous Asian/White faces, red has no effect on apparent anger ($M = 2.87$, $SD = 1.18$, 95% CI = [2.49, 3.26]), relative to gray ($M = 2.74$, $SD = 1.02$, 95% CI = [2.40, 3.07]),$t(37) = 1.05$, $p = .30$, $d = 0.17$.

The findings thus far suggest that the red effect on race categorization is specific to Black categorization, at least relative to ambiguously White/Asian faces. Within the context of potentially threatening outgroups, it also appears that the incidental threat cue does not make one feel explicitly threatened (i.e., an anger judgment), but rather we only see effects on a more subtle indicator of threat (i.e., outgroup categorizations).

Recall that we predicted these effects would be moderated by participants' personal Black-threat association. We tested this hypothesis next. Given the multiple observations (anger, race) per participant per stimulus, we analyzed the data via multilevel modeling. R-packages lme4 and lmerTest ran multilevel models through Satterthwaite approximation tests to calculate *p*-values (scaling model estimates to approximate the *F*-distribution to estimate degrees of freedom, which are thus non-whole numbers and differ by predictor; Kuznetsova, Brockhoff, & Christensen, 2013).

This enabled us to examine each face participants were exposed to and whether a participant's individual Black-threat association (as determined by the AMP) interacted with red/gray and racial group (Black/Asian) to predict race categorizations and anger judgments. Multilevel models on race categorizations implemented binomial models for the binary outcome (yielding log-likelihood regression coefficients), whereas we implemented Gaussian multilevel models for analyses on anger judgments (yielding unstandardized regression coefficients).

Indeed, we found both interactions. Participants' personal Black-threat association interacted with the racial group being judged, for the effect of red (vs. gray) on race categorizations, $B = 2.88$, $SE = 1.41$, $z = 2.05$, $p = .04$, as well as on anger judgments, $b = 1.57$, 95% CI = [0.001, 3.15], $SE = 0.80$, $t(679.98) = 1.96$, $p = .05$.

We thus examined simple slopes, assessed at high (+1SD) and low (-1SD) values of our moderator of implicit Black-threat associations. At *high* levels of participants' personal association between Black men and threat, red (vs. gray) increased Black categorizations, $B = 0.69$, $SE = 0.34$, $OR = 1.99$, $z = 2.07$, $p = .04$, whereas at *low* levels of an association between Black men and threat, red did not increase Black categorizations, $B = 0.27$, $SE = 0.33$, $OR = 1.31$, $z = 0.81$, $p = .42$. Thus, only to the extent participants implicitly associated Black men with threat did the incidental cue of threat (from red) increase Black categorizations.

Intriguingly, this effect flipped for Asian categorizations. At *high* levels of participants' personal association between Black men and threat, red (vs. gray) did not influence Asian categorizations, $B = -0.15$, $SE = 0.35$, $OR = 0.86$, $z = -0.44$, $p = .66$. Yet at *low* levels of Black men and threat associations, red increased Asian categorizations, $B = 0.85$, $SE = 0.35$, $OR = 2.34$, $z = 2.40$, $p = .02$. While this latter finding is unexpected and unclear in its meaning, the larger point is that AMP scores moderated the influence of red on Black categorizations in the expected manner (increasing threat leading red to increase Black categorizations), and this was not the case for Asian categorizations.

We next decomposed the corresponding interaction on anger judgments. At *high* levels of participants' personal association between Black men and threat, red (vs. gray) increased anger judgments for Black/White racially ambiguous faces, $b = 0.44$, 95% CI = [0.05, 0.83], $SE = 0.20$, $t(679.30) = 2.24$, $p = .03$, whereas at *low* levels of an association between Black men and threat, there was no such effect, $b = -0.12$, 95% CI = [-0.51, 0.26], $SE = 0.20$, $t(678.60) = 0.64$, $p = .53$. Thus, only to the extent participants associated Black men with threat, did an incidental cue of threat (from red) lead to explicit threat judgments, that is judging the Black/White racially ambiguous faces to look angry. In other words, irrespective of associations between Black men and threat, an incidental threat cue only leads to subtle indicators of threat (i.e., outgroup judgments), not judgments of explicit threat (i.e., anger judgments). Yet at high associations between Black men and threat, we see both outgroup judgments and anger judgments.

In contrast, at high Black-men threat AMP scores, red did not increase anger judgments of Asian/White racially ambiguous faces, $b = 0.05$, 95% CI = [-0.34, 0.43], $SE = 0.20$, $t(679.33) = 0.24$, $p = .81$, nor did red increase anger judgments of

Asian/White racially ambiguous faces at low Black-men threat AMP scores, b = 0.26, 95% CI = [-0.13, 0.64], SE = 0.20, $t(679.06) = 1.30$, $p = .20$.

In sum, these results provide insight into the mechanism of the earlier studies. First, the prior effects do not seem to be mere outgroup categorization effects that occur across any group distinction (cf. Dunham, 2011). Rather, for the incidental cue of threat (red) to exert an influence, the participant must view the target as potentially being from a group they associate with threat. Moreover, we found this effect, in particular, for a subtle indicator of feeling threatened (i.e., outgroup categorizations). Only when participants highly associated Black men with threat did this extend to more explicit judgments of threat (i.e., judging a neutral expression as angry).

Moreover, the effect on Black categorizations was heightened to the extent one links Black males with threat. When participants had high levels of an association between Black men and threat, an incidental threat cue (from red) led to an increased tendency to categorize faces as an outgroup, but specifically as Black for Black/White racially ambiguous faces (and not Asian for Asian/White racially ambiguous faces). In sum, these effects suggest that for incidental threat cues, effects only operate at the intersection of judgments of potential outgroup members who might pose a threat and participants personally associating the outgroup as indeed threatening.

META-ANALYTIC SUMMARY

Our hypothesis that incidental threat cues would influence race categorizations was generally supported across experiments, although the effect sizes varied (ranging from .15 to .81, $I2 = 61.1$, $Q = 12.85$, $p = .025$), with significance levels sometimes marginal. We meta-analyzed the data to provide a better estimate of the overall size of the effect. We computed Cohen's d for each experiment for Black male targets, comparing the incidental presentation of red to control colors. We then used Cumming and Finch's (2011) meta-analytic software to calculate an overall pooled effect size with 95% confidence intervals using a random effects model. Results yielded a positive effect size (different from zero) of $d = .33$, 95% CI = [.17, .50].

GENERAL DISCUSSION

Perceivers err on the side of excluding group-ambiguous targets from the ingroup, as this prevents erroneously including an outgroup member into the ingroup. This is especially likely to happen in overtly threatening contexts (Castano, 2004; Miller et al., 2010). For instance, when a face is masculine and dominant-looking or is moving closer to the perceiver, it is more likely to be judged as an outgroup member (Dunham, 2011; Miller et al., 2010). Overt cues to threat prompt outgroup categorizations even for minimal groups (Dunham, 2011), and hence these findings converge on the notion that independent of who the outgroup is, an overt threat

leads people to draw sharper lines between "us" and "them." Yet, what about when the threat cue is incidental to the target? The current work finds that an incidental threat cue does not universally increase outgroup categorizations. Rather, when the threat itself is incidental (e.g., an environmental factor), we proposed it would only prompt outgroup categorizations when the target might be a member of a group typically seen as threatening.

Drawing from prior work that finds exposure to the color red evokes threat (Elliot et al., 2009; Mehta & Zhu, 2009), we hypothesized that red, when presented as a background color incidental to the target, would influence such group categorization. Indeed, only when the target potentially belonged to a group seen as threatening did this incidental cue of threat prompt outgroup categorizations (e.g., only influencing categorization of racially ambiguous Black/White targets as Black, not racially ambiguous Asian/White targets as Asian; Experiment 4). Moreover, these effects were only found for targets specifically associated with threat (i.e., males, rather than females; Experiments 2 and 3). We found our effects regardless of whether our control condition was chromatic (blue) or achromatic (gray). The role of threat was confirmed by demonstrating this effect was further moderated by the extent to which participants implicitly associated Black males with threat, as measured by the AMP (Payne et al., 2008).

The current work offers several theoretical insights to the literature on assigning group membership. Prior work finds that in the presence of overt threat, people are more likely to judge targets with ambiguous group membership as belonging to the outgroup. This kind of effect has been argued to be functional. Even when threat perception is erroneous or stereotypically informed, it is a less costly error for the perceiver to exclude harmless individuals than to include hostile agents in the ingroup (Kurzban & Leary, 2001; Schaller & Neuberg, 2008). This prior work has found that as overt threat increases, so do such defensive responses. Masculinity is associated with threat, and thus perceivers are more likely to exclude male targets from the ingroup, even for outgroups *not* associated with threat (i.e., minimal groups in addition to racial groups; Navarrete et al., 2009; Miller et al., 2010). In each of these prior studies, the threat cues were not incidental to the target, but rather integral to the target.

Our results present an important contrast to work on overt threat. We find that incidental cues to threat do not prompt outgroup categorizations for groups that are not seen as threatening (e.g., Asian targets). Whereas prior work finds that overt threat can enhance the tendency to categorize people as outgroup, even for non-threatening outgroups, we find that incidental cues only enhance outgroup categorizations for groups associated with threat. Along these lines, future work could also explore other social groups that individuals associate with threat.

The current work suggests that overt and incidental cues to threat operate differently on categorizing group membership from faces. Accordingly, our studies suggest that the way in which threat is processed and integrated into a social categorical decision depends on the source of that threat. When the threat is seen as

emanating from the target, targets are more likely to be excluded from the ingroup, no matter the potential outgroup in question. This suggests that overt threat takes priority in processing and has a main effect on who is allowed into the ingroup. In contrast, when threat is incidental and not stemming from the target, people seem to attend closer to the target's potential group to make a categorization decision, and that potential group thus interacts with the incidental threat. In the presence of an incidental threat, then, it seems the potential group itself takes priority in processing, explaining why incidental threat only increases outgroup categorizations when the group in question is linked to threat.

These results lead to novel predictions. For instance, overt threat within a face might prompt attention to specific configural properties of the face (e.g., "Who is this person"; Ackerman et al., 2006), whereas incidental threat not specifically tied to the face might prompt attention to more superficial category-specifying features (e.g., "What group does this person belong to?"). Thus, identity might be more attended to in the former case, but group membership in the latter case. This would suggest overt threat could improve memory for potential outgroup members, whereas incidental threat would undermine such memory (cf. Ackerman et al., 2006).

In sum, we find that when the social category that someone may belong to is linked to threat, incidental threat cues lead the perceiver to categorize the person as an outgroup member. Even in contexts where a target is not explicitly suggesting any harm to the perceiver, unrelated cues to threat may bias a perceiver to judge someone as belonging to the outgroup, which, in turn, will have a range of consequential outcomes, including for stereotyping, prejudice, and discrimination.

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