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## FlashReport

## An angry = Outgroup effect

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## ABSTRACT

When are intergroup biases learned responses to specific social groups, and when are they the result of more general cognitive tendencies? This study investigates this question in the context of the tendency for White Americans to be influenced by angry facial affect when making racial categorizations (Hugenberg & Bodenhausen, 2004), asking whether this same tendency occurs when the groups in question are not racial groups but rather arbitrarily assigned minimal social groups. Results show that while participants are more likely to categorize angry faces as belonging to a racial outgroup, they are equally likely to categorize angry faces as belonging to a minimal outgroup. Thus, the link between anger and group membership cannot be characterized as a learned link between race and affect, but rather must be attributed to a more general intergroup processes. By contrast, implicit attitudes are considerably stronger for racial than minimal outgroups, suggesting a more central role for social learning in their emergence.

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An enduring goal in the psychological sciences is determining when a specific phenomenon can (and cannot) be reduced to a more general phenomenon. The present inquiry focuses on intergroup bias, asking how a specific form (associations between African–Americans and anger) relates to a more general form (associations between *outgroups* and anger). African–Americans are negatively evaluated (e.g. Nosek, Banaji, & Greenwald, 2002), associated with anger (Hugenberg & Bodenhausen, 2003, 2004), and invoke physiological threat responses in White Americans (Mendes, Blascovich, Lickel, & Hunter, 2002). Such findings must be understood in the context of North American cultural history and the legacies of segregation and slavery. But intergroup bias is not confined to racial categories, appearing with respect to a dizzying range of social groups, including gender, religion, nationality, and beyond (e.g. Sidanius & Pratto, 1999). In the face of this generality, when can we assume that bias is directed towards a specific outgroup?

One clue to potential generality is firmly entrenched in the canon: the minimal group effect (Tajfel, 1971/2001), in which individuals show preferences for even novel, experimentally assigned ingroups. The minimal group effect shows *readiness* to form social preferences, and demonstrates the primary role group affiliations play in constructing distinctive identities (Brewer, 1991). But it also offers an interpretive challenge to much existing work: since participants manifest preference for both *real* and *minimal* ingroups, how can we be sure that the preference for real ingroups is distinct from the *general* preference for minimal ingroups?

The research presented here operates under the guiding hypothesis that *at least some* forms of bias previously attributed to specific targets in

fact reflect the operation of this more basic tendency to prefer and positively evaluate social ingroups as compared to social outgroups (Dunham, Baron, & Banaji, 2008). We seek a proof of this concept by showing that a finding previously attributed to race-based stereotyping appears in identical form with respect to arbitrarily assigned minimal social groups.

Hugenberg and Bodenhausen demonstrate an association between angry facial displays and perceptions of racial category membership in White American participants high in prejudice. First, they demonstrate that anger is perceived to appear earlier and linger longer on African–American as opposed to European–American faces (a relationship between racial category membership and perceptions of affect; Hugenberg & Bodenhausen, 2003). Second, they demonstrate the reverse relationship between affect and perceptions of racial category membership by showing that racially-ambiguous angry faces are more likely to be categorized as African–American than European–American (Hugenberg & Bodenhausen, 2004). These findings are readily interpretable as evidence of a learned stereotypical association between African–Americans and anger. But in some cases, a first impression of specificity can be reduced by demonstrating generality. For example, enhanced memory for own-race faces and emotional displays are reducible to a general advantage for ingroup faces (Bernstein, Young, & Hugenberg, 2007; Young & Hugenberg, 2010), and the physiological threat response in response to African–Americans may be a more general response to expectancy-violations (Mendes, Blascovich, Hunger, Lickel, & Jost, 2007). Here, we ask whether the link between anger and category membership is specific to African–Americans, or if it can be reduced to a link between anger and outgroups in general. Thus, in Study 1 we attempted to replicate the initial angry = African–American effect, and in Study 2 we conceptually replicate that effect in the context of a minimal groups

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paradigm, in which familiarity and prior knowledge are equated across groups.

### Study 1: Replicating the angry = African–American effect

Here we attempt a faithful replication of Hugenberg and Bodenhausen's (2004) original demonstration of a link between facial affect and racial categorization, using their original stimuli.

#### Methods

##### Participants

56 adults participated in partial fulfillment of a requirement in a lower division psychology course. Participants were between 18 and 20 years of age, and were approximately equally split between males and females.

##### Procedure

After providing informed consent, participants completed the two tasks described below while seated at a computer alone in a small testing room.

##### Measures

Participants completed the race categorization task followed by a racial attitude Implicit Association Test (IAT). The IAT was administered last to prevent its explicitly evaluative component from affecting responses on the face categorization task (which was our primary interest).

**Race face categorization task.** Participants were told that the study focused on racial categorization, and that their task was to categorize faces as either Black/African–American or White/European–American, using one of two response keys. The stimuli consisted of 15 computer generated faces designed to be racially ambiguous, which were presented in a random order, twice each, once displaying positive (happy) affect and once displaying negative (angry) affect. Participants categorized the faces by pressing one of two keys, one for each racial group. After 30 trials (15 faces  $\times$  2 expression), the task concluded and the participants advanced to the next measure.

**Implicit Association Test (IAT).** The IAT (Greenwald, McGhee, & Schwartz, 1998) is a dichotomous categorization task in which associations between two categories are inferred from speed of responding to two different categorization configurations. The current IAT was a race attitude IAT. In a 'compatible' block of trials, ingroup faces and positive words are categorized using one response key while outgroup faces and negative words are categorized using a second response key. Performance is compared to an 'incompatible' block in which ingroup faces are paired with negative words and outgroup faces with positive words. The logic of the IAT is that to the extent the ingroup is positively evaluated, participants will be faster and more accurate when ingroup members are paired with positive words. In this version of the task, target stimuli were African– and European–American faces. The revised scoring algorithm provided by Greenwald and colleagues (Greenwald, Nosek, & Banaji, 2003) was employed, with block order counterbalanced across participants.

#### Results and discussion

The central question was whether the rate of categorizing faces as African–American differed depending on facial expression. It did; more angry faces (64%) than happy faces (57%) were categorized as African–American, paired  $t(55) = 3.30, p = .002$ ; see Fig. 1, left panel. To further examine this effect while respecting the categorical nature of the outcome variable (dichotomous group categorization judgments), we entered the data into a multilevel logistic regression (with trials nested

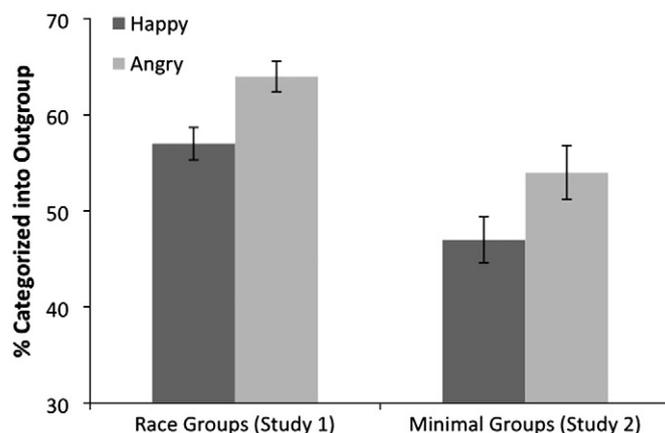


Fig. 1. Mean rates of categorizing faces into the outgroup for race (Study 1, left panel) and minimal groups (Study 2, right panel). Error bars are standard errors of the mean.

within participants), predicting the probability of categorizing faces into the outgroup as a function of facial expression. This analysis confirmed a main effect of facial expression,  $F(1, 1623) = 10.38, p = .001$ , with angry faces 1.40 times more likely to be categorized as African–American than were happy faces. Thus, we replicated past work suggesting a tendency to overcategorize angry faces as African–American.

More generally, the rate of categorizing faces into the African–American outgroup exceeded chance performance for both angry and happy faces, both  $t(55) > 2.8, p < .01$ . While Hugenberg and Bodenhausen (2004) do not report comparable figures, visual examination of their figures suggests that an average of 9 out of 15 faces were categorized into the outgroup, a similar proportion to that reported here. This could reflect either a general tendency to exclude ambiguous faces from the ingroup ("ingroup over-exclusion": Leyens & Yzerbyt, 1992), or could imply that the faces used were not strictly ambiguous, i.e. that they tended to be categorized as African–American at greater than chance levels. We return to this question in Study 2, below.

Turning to the IAT, standard exclusion criteria for participants with excessive long or short latencies on the IAT (Greenwald et al., 2003) led to the exclusion of data for 8 participants, who were dropped from this portion of the experiment. Participants showed the expected implicit preference for European–American over African–American,  $IAT D = .47 (.41), t(47) = 8.02, p < .001$ . Of interest was the connection between this preference and the tendency to categorize angry faces into the outgroup. We computed the correlation between the individual's race IAT and the difference score representing the increased proportion of angry faces categorized as African–American; this correlation was significant,  $r = .30, p = .038$ , indicating that the tendency to categorize angry faces as African–American was stronger in those with stronger implicit attitudes; see Fig. 2 (again replicating Hugenberg & Bodenhausen, 2004).

### Study 2: Investigating an angry = outgroup effect

We now sought to conceptually replicate the angry = African–American effect using novel, minimally meaningful, social groups. Unlike in the race task, no putative physiological cues support categorization into minimal groups, necessitating a change in procedure. We adapted the task to resemble a memory test in which participants had to categorize previously presented faces as belonging to either the ingroup or the outgroup. Would angry faces be over-categorized into the (minimal) outgroup?

#### Methods

##### Participants

126 adults, drawn from the same population described in Study 1, participated.

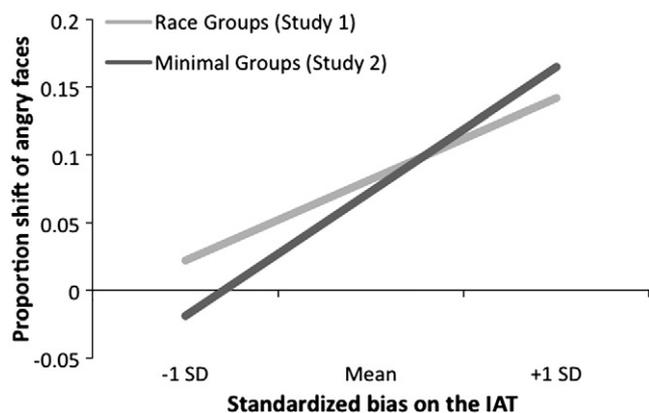


Fig. 2. Predicted proportional shift of angry faces towards the outgroup as a function of standardized implicit attitude strength in the race (Study 1) and minimal groups (Study 2) versions. Neither mean nor slopes differ, both  $p > .48$ , indicating that the relationship between implicit attitude and facial categorization did not differ by experimental condition.

### Procedure

After providing informed consent, participants were randomly assigned to a novel, color-labeled group (e.g., 'Red Group' or 'Blue Group'), and were given a sticker to wear indicating their group membership. They then proceeded to the two tasks as described in Study 1, above.

### Measures

**Minimal groups face categorization task.** Participants read instructions on-screen indicating that they would be introduced to the members of two groups, their own and one other group, and that it was important that they try to remember who was in which group. They then proceeded to the 'learning phase' in which they viewed 20 individuals one at a time, presented in frontal headshots with neutral facial expression, and labeled with their group membership, 10 each randomly assigned to their ingroup and an outgroup. Faces were presented for only 1.5 s each, making accurate encoding very difficult. After the learning phase, participants were told they would now be tested on the two groups. The same faces presented in the learning phase were presented again, this time with angry or happy expression. Each face appeared twice, in a random order, once in each emotional configuration, and participants categorized the faces as belonging to the ingroup or outgroup by pressing one key designated as the ingroup key or another key designated as the outgroup key. After 40 trials (20 faces  $\times$  2 facial expression each), the task concluded and the participants advanced to the next measure.

**Implicit Association Test (IAT).** This IAT was identical to the IAT described in Study 1 except European- and African-American faces were replaced with faces of minimal ingroup and outgroup members. Faces were presented on a colored background so that performance would not depend on accurate face recognition (since recognition was designed to be quite difficult).

### Results and discussion

The effect of group color was not significant and so data were analyzed in terms of group (ingroup or outgroup). As expected, more angry faces (54%) than happy faces (47%) were categorized into the outgroup, paired  $t(125) = 2.42, p = .017$ , Fig. 1, right panel. A multilevel logistic regression predicting the probability of categorizing into the outgroup as a function of facial expression confirmed the main effect of facial expression,  $F(1, 4913) = 24.84, p < .001$ , with angry faces 1.33 times more likely to be categorized into the outgroup than were happy faces.

More generally, the rate of categorizing happy faces into the ingroup was above chance, while the rate of categorizing angry faces into the outgroup was below chance, both  $t(125) > 2, p < .04$ . Thus, the tendency to categorize more faces in general into the outgroup, observed in Study 1, was not present here, and lends some support to the notion that the ambiguous faces used in Study 1 (as well as in Hugenberg & Bodenhausen, 2004) might be categorized as Black at above chance levels, i.e. that they are somewhat less than optimally ambiguous. It is important to note, however, that this does not represent a threat to the paradigm's validity, because results are always based on a comparison between angry and happy versions of the same faces, and so are not dependent on the overall rate of categorization being at or near chance.

Turning to the IAT, standard exclusion criteria for participants with excessive long or short latencies on the IAT (Greenwald et al., 2003) led to the exclusion of data for 6 participants were dropped from the IAT portion of the experiment. Participants showed a weak tendency to prefer their minimal ingroup, IAT  $D = .06 (.30), t(120) = 2.14, p = .034$  (replicating Ashburn-Nardo, Voils, & Monteith, 2001, who also examined implicit preference following a minimal groups manipulation). Again, of more interest was the relationship between implicit preference and face categorization. As in the case of race, they did correlate,  $r(120) = .28, p = .0023$ , Fig. 2. Thus, those high in implicit preference for the minimal ingroup were also more likely to miscategorize angry faces as belonging to the outgroup.

While employing conceptually similar tasks, Study 1 and 2 differ, most notably in that the minimal groups version is framed as a recall task and so may implicate memory systems not involved in the race version of the task. Thus, comparisons across the two should be interpreted cautiously. Nonetheless, all available evidence suggests that the tasks produce equivalent "angry = outgroup" effects, an identical 7% proportional shift in categorization based on facial expression. Returning to the logistic regression context, the strength of this effect did not differ by study,  $F(1, 6536) = 0.09, p = .77$ . In addition, while the overall strength of ingroup preference as measured by the IAT was higher for race than for minimal groups,  $t(166) = 7.28, p < .001$ , the relationship between variation in this preference and variation in the tendency to categorize faces based on anger did not vary as a function of study,  $F(1, 164) = 2.10, p = .15$ . Thus, both the tendency to categorize angry faces as belonging to the outgroup, and the extent to which this tendency is related to implicit preferences, appeared identical for race and for minimal groups. The strong implication is that the tendency to categorize angry faces as African-American *just is* the more general tendency to categorize angry faces as belonging to an outgroup.

### General discussion

Research on the origins and consequences of intergroup bias is both situated within a rich social ecology and constrained by whatever processing tendencies impact group-based cognition at the general level. Here we asked whether there are conditions under which bias towards *specific* outgroups is simply the manifestation of bias towards outgroups *in general*, perhaps grounded in an evolutionarily old coalitional psychology (e.g. Kurzban, Tooby, & Cosmides, 2001). With respect to the tendency to associate racial outgroups with anger, we provide evidence that this effect is not in fact specific to race. But this investigation also provides evidence that this sort of reduction will not always succeed: implicit preferences for racial ingroups diverged markedly from implicit preferences for minimal ingroups, demonstrating a role for social experience in their development.

The "angry = African-American" effect was a plausible candidate for a specific, learned stereotype, in that it fits with both naïve and expert intuitions regarding the content of North American racial stereotypes. And some conceptually similar effects do adhere to this group in particular, for example "shooter bias", the tendency to "shoot" unarmed

African–American targets more frequently in a video game. Both African–American and White participants are more likely to shoot African–American targets (Corell, Park, Judd, & Wittenbrink, 2002), ruling out an explanation based simply on *outgroup* threat. However, absent this kind of direct evidence, we must be cautious in interpreting effects as specific.

While it goes beyond the available data, we suggest that our evolutionary heritage includes a few intergroup processes characterized at a highly specific level, in the present case a link between facial affect and (generic) group membership. As a relatively inflexible cognitive mechanism, such an effect appears with respect to *outgroups* of many stripes. By contrast, tying *specific* groups to *specific* threat cues (e.g. guns) lies outside what evolution could provide, and thus falls within the purview of environmental learning. Alternatively, angry facial affect could be one among a set of threat-based cues that influence perception of the intergroup boundary, a finding supported by recent research demonstrating that faces displaying any of several possible threat cues tended to be excluded from both minimal and racial ingroups (Miller, Maner, & Becker, 2010).

At the most general level, the current study provides a cautionary note regarding how to interpret other effects in the literature: specificity to a specific target group must be established, it cannot merely be assumed. The more widely we pursue this dictum, the more we can clarify the nature of less flexible cognitive biases, and in turn highlight with greater specificity the areas in which group-specific learning is paramount.

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