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FlashReport

Where the division lies: Common ingroup identity moderates the cross-race facial-recognition effect

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ABSTRACT

This research investigated the hypothesis that better recognition for own-race than other-race faces is a result of social categorization rather than perceptual expertise. More specifically, we explored how the salience of race or university group boundaries would affect recall of faces. Using a modified facial recognition paradigm, on each trial eight Black and White faces were spatially organized either by race or university affiliation to induce categorization primarily based on one of these dimensions. When grouped by race, participants had superior recall for own-race faces and university affiliation had no effect. When grouped by university, participants had superior recall for own-university faces and race had no effect. Using identical stimuli across conditions, recall was superior for ingroup targets on the experimentally induced dimension of categorization, supportive of a social categorization based explanation of the cross-race effect.

A soldier is court-martialed for failing to fire his weapon during a battle. He freely admits that he was ordered to fire when he saw the enemy. "Then why didn't you?" someone asks. "I never saw the enemy." he says, "I just saw people." Shalom Aleichem (1894/1996, p. 70).

Introduction

Superior recognition for own-race as compared to other-race faces is a widely replicated phenomenon known as the cross-race effect (CRE; Meissner & Brigham, 2001). Two models are currently supported: perceptual expertise and social-cognition. Perceptual expertise is based on the idea that the ability to extract information from an environment improves with experience. Individuals are more accurate at recognizing types of faces with which they have had more exposure (Sporer, 2001). For instance, Kelly et al. (2007) found that whereas 3 month-old Caucasian infants demonstrated equal recognition for African, Middle-Eastern, and Chinese faces, by 9 months recognition was restricted to own-race faces.

Social-cognitive models, on the other hand, focus on the different ways people process information as a function of categorizing others as ingroup or outgroup members. For example, Bernstein, Young, and Hugenberg (2007) observed superior facial recognition for White own-university relative to White other-university faces, supporting social-cognitive perspectives. Suitably, Sporer (2001) proposed renaming the CRE as the more accurate "ingroup face recognition advantage."

Recently, Shriver, Young, Hugenberg, Bernstein, and Lanter (2008) presented White participants with Black and White faces alongside secondary information indicating high or low SES (Study 1) and same or different university affiliation (Study 2). Reduced recognition resulted for low SES and other-university White faces, but recognition of Black faces was completely unaffected by the secondary information. Shriver and colleagues concluded that while categorization of White faces depended upon the additional information provided, manipulations of ingroup status were insufficient to influence recognition of other-race targets, as they were consistently considered outgroup members.

As Shriver et al. (2008) suggest, recognition of Black faces was possibly unaffected due to automatic racial categorization (Brewer, 1988). Research demonstrates that race is automatically processed and difficult to ignore (Ito & Urland, 2003). As the paradigm employed by Shriver and colleagues presented single Black and White faces, the strength of racial categorization may have allowed less salient categorizations (e.g. SES or university affiliation) to remain unprocessed for other-race individuals. However, should multiple Black and White faces appear grouped on non-racial dimensions (see Fig. 1a), the salience of non-racial categorization might increase, allowing Black faces to be recategorized as ingroup members. Therefore, the current study created a novel face

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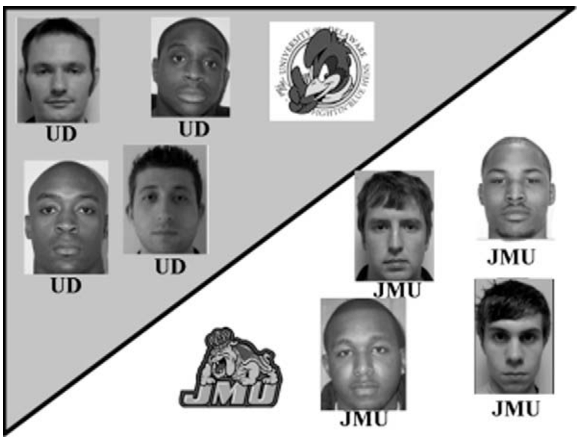

Fig. 1a. University condition stimuli.

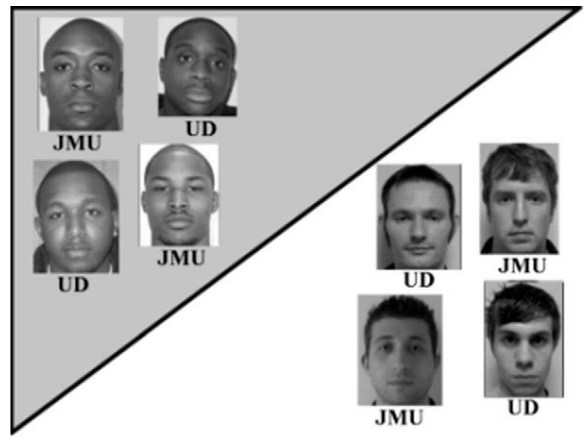

Fig. 1b. Race condition stimuli.

recognition paradigm to strengthen the salience of non-racial categorization. Should this categorization become more salient, social-cognitive models would predict superior recognition for other-race faces that share membership on such a dimension, as compared to other-race *or own-race* faces that do not.

Self-Categorization Theory (SCT; Turner, Hogg, Oakes, Reicher, & Wetherell, 1987) and the Common Ingroup Identity Model (CIIM; Gaertner & Dovidio, 2000) demonstrate how social contexts influence fluid conceptualizations of self. In other words, as individuals hold multiple identities and category memberships, self-categorization is subject to the whims of the situation (Hogg & Turner, 1987). As a perceiver's salient identity shifts, an outgroup member in one situation may be recategorized as ingroup in another. The heart of CIIM is that upon recategorization, former outgroup members are accorded the benefits of ingroup membership (Gaertner & Dovidio, 2000). Though originally intended to improve intergroup attitudes, these benefits have also been demonstrated to include non-attitudinal domains such as emotion (Ray, Mackie, Rydell, & Smith, 2008) and action intentions (Kawakami & Dion, 1993). We propose that these benefits will extend to the domain of facial recall as well.

One method of manipulating categorization involves the physical arrangement of people in space. Utilizing the basic principles of Gestalt psychology, engaging visual processes can induce perceptions of varying group representations. As visual processes effectively and rapidly comprehend group representations (Campbell, 1958), such an approach may be particularly effective when groups differ physically. Indeed, both seating patterns and dress can affect the degree to which individuals perceive themselves as one or two groups (Gaertner & Dovidio, 1986). Similarly, visual patterns may also affect the primary dimension on which two groups are perceived to be differentiated.

The current study sought to induce categorization of Black and White faces as members of the same or different groups, based on visual organization. Targets varied by race such that participants would observe own-race and other-race individuals either attending their own (University of Delaware, UD) or another university (James Madison University, JMU). Thus, when two separate groups consisting of both Black and White individuals attending UD or JMU are spatially organized by race, the salient ingroup would consist of own-race UD and JMU students. When grouped by university, the salient ingroup would be composed of Black and White UD students. Superior recognition for ingroup faces should then be consistent between conditions, though the composition of the ingroup varies. In other words, we expected own-university faces to be remembered better than other-university faces in the university grouping condition, and own-race faces to be remembered better than other-race faces in the racial grouping condition. Ultimately, while any own-race benefit could be attributed to perceptual expertise mechanisms, effects based on university affiliation would support solely social-cognitive and CIIM-based predictions.

Method

Subjects and design

Sixty-one White University of Delaware undergraduates (28 male) were randomly selected to participate for course credit. A 2 (Target university affiliation: UD, JMU) $\times$ 2 (Target race: Black, White) $\times$ 2 (Grouping: University, Race) mixed-model design was employed, with repeated measures on the first two factors.

Stimuli

Eighty gray-scale faces (40 Black, 40 White) of college-age males displaying neutral expressions[1] were presented as stimuli. Photos were resized to approximately 6×5.5 cm using Irfanview. "UD" or "JMU" was placed in black text beneath each face.

For learning phase stimuli, eight faces were randomly chosen to be placed together on a background divided diagonally by a thick line. The eight faces consisted of four Black students: two UD-affiliated, two JMU-affiliated; and four White students: two UD-affiliated, and two JMU-affiliated. In the school condition, UD faces and JMU faces appeared on opposite sides of the division. Additionally, university mascots were placed appropriately in attempts to make university categorization particularly salient (Fig. 1a). In the race condition, White faces and Black faces appeared on opposite sides of the division (Fig. 1b). Face location was counterbalanced within condition such that White, Black, UD, and JMU faces were equally likely to appear in the upper-left, upper-right, bottom-left, or bottom-right of the presentation. Furthermore, each face was counterbalanced between participants such that it was equally likely to appear labeled as UD or JMU.

Procedure

Participants were seated at computer terminals and informed they would be completing a recognition task. In the learning phase, participants were presented with 40 target faces distributed across

[1] Stimuli were obtained from various sources including the MacBrain Face Stimulus Set, overseen by Nim Tottenham and supported by the John D. and Catherine T. MacArthur Foundation Research Network on Early Experience and Brain Development (Tottenham et al., 2009). We would also like to thank Kurt Hugenberg, Kareem J. Johnson, and Carlos David Navarrete for their assistance.

five sequential slides. Presentation order was randomized by participant. Each slide was displayed for 16,000 ms with an interstimulus interval of 500 ms.

Between the learning and recognition phases participants unscrambled anagrams for 6 min as an unrelated distracter task. Beginning the recognition phase, participants were told that faces would appear singly and include faces present in the earlier phase (Old) and novel (New) faces. University affiliation again appeared beneath each face, including novel faces, so that orthogonal indices for sensitivity could be calculated. For each face that appeared, participants were instructed to press a key labeled "Old" or "New," if they recalled the face from the learning phase, or not, respectively. Each face remained on the screen until a decision was rendered, prompting immediate presentation of the next. The 80 faces presented in the recognition phase included the 40 learning phase stimuli, and the addition of 40 new Black and White faces with an identical UD or JMU distribution.

Results

According to signal detection theory (Wickens, 2002), an evaluation of performance on a facial recognition task can be created from the percentage of "Hits," the correct identification of an old face, and "False alarms," the misidentification of a new face as an old face. This performance measure, known as sensitivity (*d*'), was independently calculated for each condition (White UD, Black UD, White JMU, Black JMU).

Three participants scoring more than three standard deviations below the mean were removed. To examine effects across conditions, the remaining sensitivity scores were subjected to a 2 (Target university affiliation: UD, JMU) $\times$ 2 (Target race: Black, White) $\times$ 2 (Grouping: University, Race) mixed-model ANOVA, with repeated measures on the first two factors. The interaction between target race and grouping was marginally reliable, $F(1,56) = 3.62, p = .062, \eta_p^2 = .061$. On the other hand, the expected interaction between target university affiliation and grouping was not present, $F(1,56) = .02, p = .902, \eta_p^2 = .000$, due to an unexpected main effect of university affiliation, $F(1,56) = 10.22, p = .002, \eta_p^2 = .154$. Own-university faces ($M$ = 1.08, SD = .07) were recalled more accurately than other-university faces (M = .82, SD = .07) across both conditions. However, as we were primarily interested in categorization effects within each condition, we continued with planned comparisons.

Within the university grouping condition a 2 (Target university affiliation: UD, JMU) $\times$ 2 (Target race: Black, White) repeated measures ANOVA was utilized. As predicted, a main effect for school was found, $F(1,29) = 7.67, p = .010, \eta_p^2 = .209$. Participants had superior recall for own-university faces (M = 1.06, SD = .56) as compared to other-university faces (M = .79, SD = .56). Importantly, as indicated by Fig. 2a, there was no difference between White own-university (M = 1.04, SD = .74) and Black own-university faces (M = 1.07, SD = .72), F(1, 29) = .02, *ns*. In fact, Black own-university faces were recalled reliably better than White other-university faces (M = .74, SD = .52), $F(1,29) = 6.79, p = .014, \eta_p^2 = .190$, indicating that recategorization had successfully occurred. Indeed, the CRE was completely eliminated, and other-race individuals were accorded ingroup memory benefits. Finally, there were no main effects of race or interactions between race and university affiliation when faces were grouped by university.

When faces were grouped by race, we expected to replicate the own-race recognition advantage. We conducted a 2 (Target university affiliation: UD, JMU) $\times$ 2 (Target race: Black, White) repeated measures ANOVA within the racial grouping condition. As seen in Fig. 2b, the traditional effect for race was found in the expected direction. Participants had better recall for own-race faces (M = 1.11, SD = .41) as compared to other-race faces (M = .85, SD = .58), $F(1,27) = 5.43, p = .027, \eta_p^2 = .167$. As predicted, there was no difference between White own-university (M = 1.19, SD = .58) and White other-university faces (M = 1.03, SD = .53), F(1, 27) = 1.30, *ns*. Unexpectedly, Black own-university students (M = 1.02, SD = .80) were recalled marginally better than Black other-university students (M = .69, SD = .73), $F(1,27) = 3.11, p = .089, \eta_p^2 = .103$, indicating that participants may have been categorizing stimuli upon multiple dimensions. We consider this issue more fully in the discussion section. Also as anticipated, in the racial grouping condition university affiliation had no main effect upon facial recall, and there were no interactions between race and university affiliation.

Discussion

Consistent with CIIM-based predictions, these results demonstrate that recognition differences between own-race and other-race faces can be eliminated when a non-racial dimension is a salient basis for categorization. When Black faces were recategorized as fellow University of Delaware students, differences in recognition accuracy disappeared. An important contribution of the present research is the manner in which the CRE was eliminated. Previous research reduced the CRE by reducing recognition for own-race faces (Shriver et al., 2008), whereas the present study achieved this by *increasing* recognition for other-race faces. While Shriver and colleagues provided another dimension on which to discriminate, our method emphasizes shared commonalities. We believe this difference drives the novel effect obtained in the present research.

Exactly how was recategorization effective at eliminating the CRE? Previous theory (Levin, 2000) and research (Study 1 of Shriver et al., 2008) suggest different encoding processes for in and out-

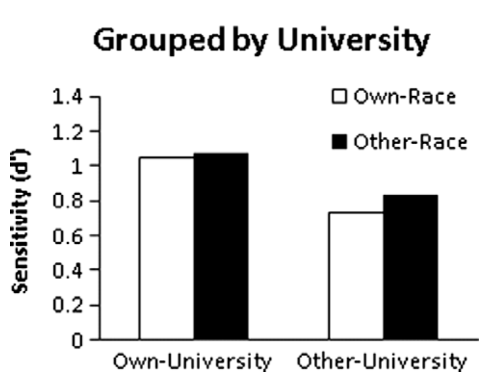

Fig. 2a. Mean sensitivity (*d*') as a function of target race and university affiliation in the university condition.

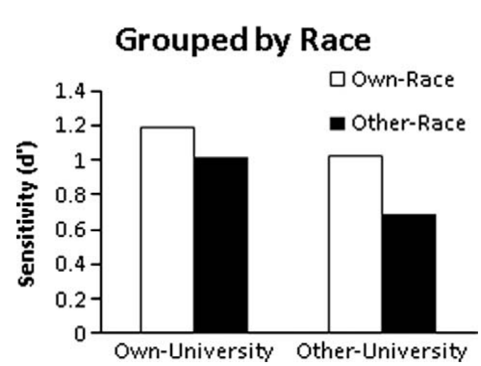

Fig. 2b. Mean sensitivity (*d*') as a function of target race and university affiliation in the race condition.

group faces. However, as the current paradigm provided university labels during both the learning and recognition phases, it is possible these labels served as cues that helped reorient participants' attention to the university dimension. Thus, the current study leaves open the issue of whether recategorization impacted encoding or retrieval processes, or both. Yet, the current study clearly establishes that the CRE is not immutable.

We suspect that other visual arrangements may have similar effects. Indirect evidence supporting this suspicion involves "blocking," or when stimuli in a traditional face recognition paradigm are presented sequentially so that only Black faces, and then only White faces (or vice versa) appear. As noted in Meissner and Brigham's (2001) meta-analysis, blocking very significantly increases the magnitude of the CRE, as compared to random presentation of stimuli. Blocking upon non-racial dimensions may have similar effects.

As the traditional facial recognition paradigm presents faces singly in the learning phase, one could additionally argue that the effects obtained in our experiment stem from attentional biases, rather than memory alone. In other words, participants may have attended to whichever ingroup was salient. We certainly agree. In fact, we anticipated that both mechanisms would be involved and view them as complementary, rather than competing. Indeed, it seems likely that when the CRE occurs outside of the laboratory it is driven by biases in both attention and memory. However, we sought not to isolate the mechanism, but to demonstrate that recategorization could eliminate recognition differences between racial groups.

That said, there is some evidence tentatively supporting memory. When stimuli were organized by race, participants unexpectedly had marginally superior recognition for Black own-university faces, as compared to Black other-university faces. This differentiation between other-race faces indicates that participants were not attending only to the salient ingroup, and were categorizing on multiple dimensions. Cross-categorization, or sharing membership on one dimension while distinct on another, has been demonstrated to affect attitudinal judgments (Hornsey & Hogg, 2000). We did not predict cross-categorization effects to extend to the domain of facial recognition, but this unanticipated possibility is compelling and deserving of future research.

There is nothing in our current experiment to discount perceptual expertise models of the CRE. However, it is difficult to understand how that perspective can account for our results. Alternatively, the results are consistent with predictions drawn from social-cognitive models and the impact of recategorization as proposed by the CIIM model utilizing recategorization. To our knowledge, the current research is the first to empirically demonstrate elimination of the CRE by improving recognition for other-race faces.

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