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SHORT NOTES

Other-Race Face Perception

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The other-race effect (or own-race bias or cross-racial identification effect) refers to the finding that recognition memory tends to be better for faces of members of subjects' own race than for faces of members of other races. The current study was designed to test the hypothesis that perceptual skills specific to identifying faces of particular racial groups contribute to this effect. On each of 50 trials, a photograph of a face was tachistoscopically presented for 120 ms, followed by a pattern mask and then a plain-view test pair composed of the previously presented face and a matched foil. As predicted, an other-race effect was obtained on this perceptual task: White subjects performed significantly more poorly on trials involving African American faces than on trials involving White faces, whereas no such difference was obtained among African American subjects.

The other-race effect (or own-race bias or cross-racial identification effect)[1] refers to the finding that recognition memory tends to be better for faces of subjects' own race than for faces of other races. This effect has been replicated many times, both in the laboratory and in naturalistic settings (see Bothwell, Brigham, & Malpass, 1989, Brigham & Malpass, 1985, and Shepherd, 1981, for reviews). The forensic relevance of this phenomenon is obvious: Face recognition may play an important role in suspect identification, and many criminal investigations involve plaintiffs of one race attempting to identify suspects of another race.

It is generally agreed that the other-race effect is a product of differing amounts or kinds of real-life interaction with members of different races (although there is little direct evidence for this claim—see Brigham & Malpass, 1985). There also appears to be wide-spread agreement that the locus of the effect is at encoding and, more specifically, that the effect reflects race-related differences in perceptual expertise. According to the predominant account, the featural and configural properties of faces that best support face recognition differ from race to race, such that people develop specialized expertise at processing faces of particular races (most often their own). Thus, for example, relative to White subjects, African American subjects may tend to direct more attention to the shape and position of the eyes and less attention to eye color.

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The race-specific perceptual expertise hypothesis is intuitively appealing and has been supported by a number of studies (e.g., Ellis, Deregowski, & Shepherd, 1975; Goldstein & Chance, 1985; Rhodes, Brake, Taylor, & Tan, 1989). Unfortunately, much of this evidence is indirect and allows for alternative explanations (e.g., race-related differences in attention to different races at study), and failures to support the hypothesis have been reported (e.g., Buckhout & Regan, 1987; Valentine & Bruce, 1986). The current study was designed to provide a more direct test of the perceptual expertise hypothesis. To this end, African American and White subjects were tested on a delayed match-to-sample task, in each trial of which a photograph of an African American or White face was briefly presented followed by a plain-view test pair composed of the target face and a matched foil.

Method

Subjects

Subjects were 16 African American and 16 White undergraduate students at Williams College, who participated as volunteers. Half of the subjects of each race were men, and half were women.

Materials and Procedure

A three-field Iconix tachistoscope was used to present the stimuli. The mask was a dense matrix of black lines. Photographs of 50 African American and 50 White individuals were selected from Williams College freshmen "face books" that contained black-and-white photographs of students who matriculated at Williams in the early- to mid-1970s. We chose 26 male and 24 female faces of each race. The 2.5 × 2.5 cm photos were enlarged on a photocopier, and these enlarged (approximately 6 × 6 cm) photocopies were mounted on cards. Two copies of

[1] The term *race* is used to refer to socially defined groupings. The terms *African American* and *White* were used because they appear to be those currently preferred by the respective groups.

each photograph were prepared—one to serve as the sample and one for the test pair. Similar looking same-race faces were paired, creating 25 test pairs of each race (13 male and 12 female). Similar White faces were paired on the basis of the intuitions of one of the White experimenters (Philip C. Jack, Jr.); the African American faces were paired with the assistance of an African American student.

The photographs were presented in a random order, with the constraint that no more than two trials involving a given race occurred in immediate succession. Half of the target faces of each race were on the left in the test pair, half on the right. For each test pair, half of the subjects saw one of the faces as the sample, whereas the remaining subjects saw the other. Both sample and test-pair faces were framed with a 3.5 × 3.5 cm mat that occluded the outline of the head. This frame was developed after ceiling effects were obtained in pilot tests in which no frame was used, evidently because easily perceived differences in outline shape provided a reliable basis for the match-to-sample judgments.

Subjects were tested in a quiet laboratory room with dim indirect lighting. Subjects were told that the study concerned the effects of time constraints on face perception. The mask field was lit continuously. On each trial, the mask was replaced by a sample face for 120 ms, followed by the mask for 3 s and then the test pair, which remained in view for 6 s. Subjects selected the sample from the test pair by saying *left* or *right*. Before being debriefed, subjects indicated how much interaction they had had with members of the other race on a 5-point scale ranging from *virtually no interaction* (1) to *extensive interaction* (5).

Results

The mean proportions of trials on which subjects of each race correctly identified the target face were analyzed in a mixed-models analysis of variance, with race of face as the repeated measure. As predicted, White subjects performed significantly better on White faces ($M = .86$) than on African American faces ($M = .75$), $F(1, 30) = 24.92$, $MS_e = .004$, $p < .01$. African American subjects, in contrast, performed equally well on White ($M = .81$) and African American faces ($M = .79$), $F < 1$. The interaction between race of subject and race of target face was significant, $F(1, 30) = 8.88$, $MS_e = .004$, $p < .01$.

The magnitude of the effect of target race was large and positive among White subjects (Cohen's, 1977, $d = 1.824$, and Mullen and Rosenthal's, 1985, $r = .674$) but not among African American subjects ($d = -0.284$, $r = -.140$). African American and White subjects performed equally well overall (both Ms = .80), $F < 1$, but there was a main effect of target race, with better performance on White faces ($M = .83$) than on African American faces ($M = .77$), $F(1, 30) = 16.64$, $MS_e = .004$, $p < .01$. It is likely that this effect is largely an artifact of an unintended difference in the intrinsic difficulty of the African American and White test pairs. Consistent with this explanation of the main effect of target race, performance on own-race faces was slightly (but not reliably) poorer among African American (.79) than among White (.86) subjects. It is possible, however, that a real difference in the size of the other-race effect in the two groups of subjects also contributed to the main effect of target race. These issues are discussed further in the Discussion section; for present purposes, the important point is that the main effect of target race did not compromise the central finding—the significant interaction between race of subject and race of target face.

Overall, there was a reliable positive correlation between the size of the effect of target race (indexed by the difference in proportion correct on same- and other-race faces) and self-ratings of amount of interaction with members of the other race, $r(30) = .57$, $p < .01$. This correlation is at least partly an artifact of the fact that African American subjects, who performed equally well on faces of both races, almost always responded with the highest possible self-rating of amount of interaction with White people ($M = 4.75$), whereas their White counterparts both demonstrated an other-race effect and reported less other-race interaction ($M = 2.13$); the difference in ratings was reliable, $t(30) = 7.86$, $p < .01$. When only African American subjects were included in the analysis, there was no relationship between these two variables, $r(14) = .15$, *ns*, perhaps because of the restricted range in the other-race interaction ratings. When only White subjects were included, the correlation between the size of the other-race effect and self-rated amount of interaction with African Americans was .37 ($df = 14$), which falls short of significance even by a one-tailed test (the critical value at the .01 level is .57) but is large enough to encourage further exploration.

Discussion

As predicted, an other-race effect was obtained with a delayed match-to-sample task. This suggests that differences in perceptual skills specific to processing faces of particular races contribute to the other-race effect in recognition memory. Given the nature of the task, neither differences in amount of attention allotted to same- versus other-race targets nor reconstructive processes during response selection can plausibly account for the effect obtained in the current experiment. Although such processes may contribute to the other-race effect in recognition memory, the current findings demonstrate that perceptual skills also play a role.

The White subjects in our study did better on own-race than other-race faces, whereas the African American subjects did not. As noted in the Results section, it is likely that this asymmetry is at least partly an artifact of an unintended difference in the intrinsic difficulty of the African American and White test pairs used in our study (as indicated by the reliable effect of race of target face). It is also possible, however, that there are real differences in the size of the other-race effect in different groups. Across studies, the other-race effect appears to be more variable among African American subjects than among White subjects (Bothwell et al., 1989). In a more recent meta-analysis, Mullen (personal communication, October 5, 1990) found evidence that the other-race effect is larger among White subjects than among African American subjects. In his 1981 review, Shepherd noted that Malpass and Kravitz (1969) and Cross (1971) found larger effects of race of face among White than among African American subjects (as was the case here and in a study by Barkowitz & Brigham, 1982), whereas Brigham and Williamson (1979, cited in Shepherd, 1981) obtained the opposite pattern. Shepherd also reviewed studies that found a main effect for race of face like that of the present study, with better performance on White faces (Malpass & Kravitz, 1969; Cross, Cross, & Daly, 1971; Shepherd, Deregowski, & Ellis, 1974; all cited in Shepherd, 1981), other studies in which no difference was found (Chance, Goldstein, & McBride, 1975; Feinman &

Entwistle, 1976; cited in Shepherd, 1981), and yet other studies in which performance was better on African American faces (Brigham & Karkowitz, 1978; Brigham & Williamson, 1979; cited in Shepherd, 1981). As Shepherd pointed out, it is difficult to interpret these main effects in the absence of an objective measure of facial similarity. Asymmetries such as that obtained in the current study may be due to (a) an intrinsic difference in the difficulty of the faces used to represent the two races, (b) a real difference in the size of the other-race effect in the two populations samples, or (c) some combination of these factors.

Because we do not have an objective measure of facial similarity, studies of cross-racial identification cannot be interpreted unless subjects of both races are tested. If only one group is tested, one cannot determine whether an effect of race of face is due to an intrinsic difference in the difficulty of the two groups of faces or to a difference in the way subjects process faces in those two groups. The only previously published study of the other-race effect to use a perceptual task (Goldstein & Chance, 1978, Experiment 4) produced ambiguous results because only White subjects were tested. In that study, White subjects performed a series of sample-present match-to-sample tasks, some involving Japanese faces and others involving White faces. Search times and accuracy did not differ as a function of race of face, a finding that the investigators described as evidence against a perceptual-skills explanation of the other-race effect in recognition memory. It is impossible to interpret these data in the absence of a comparison group of Japanese subjects, but an alternative explanation is that the trials involving Japanese faces were intrinsically easy, such that an other-race effect was masked. That is, Japanese subjects might well have had much shorter latencies on trials involving Japanese faces than on trials involving White faces.

The current findings do not allow specification of the perceptual skills that give rise to the other-race effect. One appealing possibility is that expertise in perceiving faces of particular races is associated with increased ability to extract configural information (i.e., information about the spatial relationships between different features; Diamond & Carey, 1986; Rhodes et al., 1989). Further research using perceptual tasks could shed light on the specific perceptual processes involved in the other-race effect. Because of the 3-s delay between offset of the sample face and onset of the test pair, the other-race effect reported here might be a short-term memory effect rather than a perceptual effect per se; in one line of studies, the relationship between the sample–test pair lag and the other-race effect could be explored. In other studies, target duration could be manipulated: The current results indicate that White subjects were able to acquire and retain more useful information about White faces than about African American faces from a very brief (120 ms) exposure, but perhaps no such difference would be obtained with longer exposure durations (i.e., the effect might be due to differences in the *rate* at which useful information is acquired). Another interesting avenue of research would be to further investigate the role of real-life interaction with members of the other race (or special training—see Goldstein & Chance, 1985). Finally, comparisons of different perceptual tasks (e.g., feature detection, mental rotation, same/different judgments) might also yield insights into the perceptual mechanisms involved in the other-race effect, and to its practical implications.

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