# Orienting Strategies in Differential Face Recognition

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*We examined the hypothesis that differential orienting strategies for own- and other-race faces are responsible for the superiority of own-race over other-race face recognition. White and black subjects viewed both white and black faces following inferential or superficial judgement or intentional learning instructions. Experimentally inducing a superficial orienting strategy depressed both own- and other-race recognition scores well below those obtained through both inferential and intentional instructions. Recognition performance under these latter two conditions were equivalent for both black and white subjects. The orienting task manipulation influenced recognition performance, but there was no evidence that it was responsible for the differential recognition effect.*

A reliable finding in research on face recognition is that subjects have difficulty recognizing faces of another race compared with own-race faces (see Shepherd, 1981, for a review). There are three types of explanation for this differential face recognition effect that have been offered: inherent differential difficulty of faces of different races, differential attitudes, and differential experience (see Malpass, 1981). None of these explanations, however, has received strong empirical support. The differential recognition phenomenon remains puzzling because no convincing explanation of the process mediating the phenomenon has yet been offered (Ellis, 1981).

Recently, Chance & Goldstein (1981) proposed an alternative explanation for the differential recognition effect based on the orienting strategies subjects adopt when viewing own- and other-race faces. Bower and Karlin (1974) have shown that face recognition performance is sensitive to orienting task manipulations. When viewing faces of their own race, subjects instructed to make inferential judgments performed better on a recognition test for those faces than did subjects instructed to make superficial judgments about the faces. Several other

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studies have found similar effects for various orienting tasks (e.g., Patterson & Baddeley, 1977; Courtois & Mueller, 1979; Warrington & Ackroyd, 1975; Blaney & Winograd, 1978; Smith & Winograd, 1978; Winograd, 1981). Chance & Goldstein (1981) suggest that differential orienting strategies toward own- and other-race faces may hold an explanation for differential recognition.

Chance & Goldstein (1979) hypothesized that perceivers spontaneously respond differently to own- and other-race faces. The familiar "they all look alike" response to other-race faces may reflect such different orienting strategies. That is, perceivers may orient to own- and other-race persons with different functional needs and thus seek different information in their faces. For example, it may be only necessary to assign other-race persons to a racial category (using superficial information such as skin color) whereas own-race persons require individuating distinctions that involve such things as personality attributions. They suggest that other-race faces may elicit fewer of these abstract, inferential responses than own-race faces, and that it is the failure to make inferential judgments in response to other-race faces that produces inferior recognition performance for other- as compared to own-race faces.

Chance & Goldstein (1981) asked white subjects to provide verbal descriptions of white, black, and Japanese faces. They found that the descriptors elicited in response to own-race faces more often represented what were considered to be inferential judgments (e.g., attitudes, attributed personality characteristics) than did other-race faces (e.g., ethnicity, physical features). Although the differential use of descriptors is suggestive, the relationship between orienting strategies and differential recognition performance has not been demonstrated: no study has systematically manipulated orienting strategies to both own- and other-race faces and measured subsequent recognition performance.

An assumption implicit in Chance & Goldstein's analysis seems to be that face recognition performance is verbally mediated. This hypothesis is at best uncertain. That differentials occur in both visual and verbal measures is not evidence that one depends on the other. Moreover, there is reason to question whether verbal usage (e.g., verbal description tasks, as described above) either causes or reflects visual processing, especially considering that there is strong evidence to suggest that verbal and visual processes are not well related (Malpass, Lavigueur, & Weldon, 1973; Sergent & Bindra, 1981; Goldstein & Chance, 1971, 1981; Rosenfeld & Van Hoesen, 1979).

The present study was designed to explore the relationship between orienting strategies and differential face recognition performance. Both black and white subjects are asked to make either inferential (personality) or superficial (race) judgments in response to both own- and other-race faces, or are given no special orienting instructions. From the previous discussions, two opposing predictions can be derived concerning how orienting strategy manipulations may influence differential recognition. The traditional differential recognition effect is manifested as a crossover interaction between race of subject and race of stimulus face. The predictions are most easily summarized by considering the predicted effect of orienting strategy manipulations on this interaction.

One possible effect of manipulating orienting strategy extrapolated from Bower & Karlin (1974) is that inferential judgments would produce superior recognition performance compared to superficial judgments regardless of race of stimulus faces: a main effect for orienting strategy, but no effect on the magnitude of the differential recognition interaction. In addition, Bower & Karlin imply that making inferential judgments is more effective than other orienting strategies, and advise those who wish to achieve higher levels of face recognition to "try to make a number of difficult personal judgments about his face when you are first meeting him" (1974: 757-758). This advice appears to have support in a number of studies that have found recognition performance following inferential tasks exceeds that following superficial and intentional strategies; performance is equal in the latter two groups (Warrington & Ackroyd, 1975; Blaney & Winograd; 1978; Smith and Winograd, 1978).

The differential orienting strategy hypothesis leads to a very different prediction. The differential orienting strategy hypothesis is that, first, inferential judgments of faces lead to higher recognition levels than superficial judgements, and second, that observers spontaneously orient to own- but not other-race faces inferentially. The differential recognition phenomenon results from this orienting strategy difference.

If the differential orienting strategy hypothesis is correct, own-race faces to which observers are instructed to orient in a superficial manner should be processed similarly to other-race faces (which presumably are spontaneously processed in a superficial manner). Thus the recognition differential between own- and other-race faces would be reduced. Likewise, other-race faces, which observers are instructed to process in an inferential manner, should be processed similarly to own-race faces (which presumably are spontaneously processed in an inferential manner). Again the recognition differential between own- and other-race faces should be reduced. Both of these results suggest a reduction in the magnitude of the differential recognition effect interaction typically observed in laboratory recognition studies, compared with a group given no special processing instructions.

## METHOD

### Subjects and Design

The experimental design was a 2 (race of subject) $\times$ 3 (orienting task) $\times$ 2 (race of stimulus face) factorial with race-of-stimulus-face as a repeated measure. Subjects were 48 undergraduate males from various curricula at the State University of New York, College at Plattsburgh. Subjects were randomly assigned to the instruction conditions with the following constraint: Eight black and eight white subjects were assigned to the inferential, superficial, and intentional instruction conditions. None of the subjects had previously participated in either a face recognition or a reaction time experiment.

## Materials

The stimuli were 64 35mm color slides of 32 black and 32 white faces (College age males). The stimulus persons wore plain white T-shirts and were photographed full face. The faces are part of a set described by Malpass & Kravitz (1969) and Malpass et al. (1973).

The slides were arranged into two nonoverlapping sets of 32 inspection faces (I, II). The 32 faces of Inspection Set II were used as distractors (faces not previously seen) for Inspection Set I during the recognition test, and Set I faces were used as distractors for Set II faces during the recognition test. Subjects were run so that each combination occurred equally often across subjects. Stimulus faces in the Inspection and Recognition sets were randomly ordered with the restriction that no more than 3 faces of the same race appear sequentially. The faces were presented one at a time using a Kodak Ektagraphic slide projector.

## Procedure

Subjects were greeted individually and seated at a table in an experimental room approximately 3 × 3.5 × 3.5m and approximately 2.5m from the matte white screen on which the faces were projected. Subjects were then given their orienting task instructions (i.e., superficial, inferential, or intentional). The 32 Inspection Set faces were presented sequentially for a period of 3 seconds each with an interstimulus interval of 1 second. The total image size of the projected slides was approximately 52 × 74 cm and the face (chin to top of the head) occupied a vertical distance equal to about 80% of the vertical dimension of the projected slide.

## Orienting Tasks

Subjects in the *intentional learning task* condition were told that the experimenter was interested in how well they could recognize faces of their own and of another race. They were provided with standard intentional learning instructions indicating that their task was to study the faces so that they would be able to recognize them in a subsequent recognition test.

Subjects in the *inferential and superficial orienting task* conditions were told that they were participating in a reaction time experiment testing their ability to make differential judgments about persons whose photographs they would be shown. Subjects who received the superficial (inferential) orienting instructions were told that the experimenter was collecting data on the variations in the speed with which people can make judgments about racial group membership (personality characteristics). They were asked to decide as rapidly as possible whether the person in the photograph was black or white (friendly or unfriendly) and to push the appropriate button on the reaction time apparatus. The buttons were assigned the labels "black" and "white" ("friendly" and "unfriendly") and the left/right position of the button labels was balanced across subjects. They were not told to expect a subsequent recognition test.

### Recognition Measurement

After viewing the 32 faces, subjects were informed that the experimenter was also interested in their memory for the faces they had just seen. All subjects were told that they would be shown 64 faces, the 32 they had just seen and 32 new faces, half of them black and half of them white. They were asked to indicate on a six-point rating scale how sure they were that they did or did not see each of the 64 faces before. The end points of the scale were labeled as –3 ("Sure I did not see the face before") to +3 ("Sure I did see the face before"). The 64 faces in the recognition set were shown sequentially, each for a period of 7 seconds with an interstimulus interval of one second. Following the recognition test, subjects were debriefed and thanked for their participation. Subjects in the inferential and superficial orienting task conditions were asked if they had anticipated a recognition test. None indicated that they had.

## RESULTS

Two measures of recognition were obtained: the number of correct identifications (hits) and the number of false identifications (false alarms). These were used to generate the a' index (Grier, 1971), a nonparametric analogue of the Signal Detection Theory d' index. The data were submitted to a 3-way mixed model analysis of variance (race-of-subject × orienting task × face-of-stimulus face) with race-of-stimulus-face a repeated measure (Winer, 1962). The analysis yielded a significant main effect for Orienting Task, $F(2, 42) = 5.53$, $p < .01$, and a significant race of subject × race of stimulus face interaction $F(1,42) = 41.76$, $p < .01$. There was no evidence that the race-of-subject × race-of-stimulus-face interaction was affected by orienting task instructions. The three-way interaction was not significant, $F(2,42) = 2.15$, $p < .20$. A Newman Keuls test performed on the means of the orienting task conditions revealed that the intentional and inferential task conditions differed significantly from the superficial task condition, but did not differ from each other. The a' scores for the analysis are presented in Table 1.

An additional analysis was performed in which the race-of-subject and race-of-stimulus-face conditions were collapsed to form an own-other-race dimension (own-/other-race × Orienting Task). This analysis like the one above, showed no indication of a smaller differential recognition effect under the different orienting tasks. The mean a' scores were .84 and .73 for the own-and other-race conditions, respectively, $F(1,90) = 8.41$, $p < .01$, but the interaction with orienting task was not significant, $F(2, 90) = 1.49$, $p = .23$.

## DISCUSSION

The differential recognition effect was replicated in all three instructional conditions, but there was no support for the hypothesis that differential

TABLE 1 Mean a' Scores

| | | *Faces* | |
|---|---|---|---|
| *Subjects* | *Instructions* | *Black* | *White* |
| | Inferential | .857 | .796 |
| Black | Superficial | .841 | .656 |
| | Intentional | .856 | .734 |
| | Inferential | .793 | .859 |
| White | Superficial | .670 | .803 |
| | Intentional | .779 | .863 |

*Note:* The individual Hit and False alarm scores can be obtained from the second author.

orienting strategies are related to differential face recognition. Although orienting strategy manipulations were clearly effective, the effect was comparable across all race-of-subject × race-of-face combinations rather than affecting own- and other-race face recognition differently.

If the differential orienting strategy hypothesis were correct, the superficial task would have led to a decrement in own-race recognition and the inferential task would have led to an increase in other-race recognition. As a result, the race-of-subject × race-of-stimulus-face interaction would have been of lesser magnitude compared with the intentional learning condition. This effect was not observed. Superficial orienting instructions instead led to decreased overall recognition performance compared with both inferential and intentional orienting task instructions, regardless of whether the faces were of the subject's own- or other-race. The number of subjects in this study is insufficient to serve as a basis for a strong claim that a differential orienting effect does not occur. However, if a differential orienting effect is present, it is clearly of a much smaller magnitude than either the differential recognition effect itself or the general effect of a manipulation of orienting task instructions on face recognition.

One might argue that the comparison between the intentional learning condition and the two orienting task manipulation conditions is confounded by the Intention to Learn variable. As a check on this potential confound certain subsets of the conditions of the study were administered to two sets of 20 white subjects. It was emphasized during the instructions that the subjects' ability to recognize faces was under study, that they were to learn the faces for a subsequent recognition test, and that shortly after the judgment task they would be tested for their recognition of the faces on which they made judgments. When the recognition data obtained from these subjects was compared with data obtained from the white subjects in the study reported above under the comparable processing depth manipulations, we found no significant differences between the two groups. The enhanced intentional instructions appeared to make no difference.[1] Other evidence in the literature also suggests that the intentional/incidental difference does not have differential effects on subsequent recognition performance (Bower & Karlin, 1974; and Winograd, 1981, demonstrated this effect for faces, and Hyde & Jenkins, 1969, for verbal stimuli).

In the present study, inferential orienting tasks appear to be no more effective than an intentional effort to remember faces because the recognition performance of the intentional and inferential groups is nearly equivalent and that there is no difference with respect to the race of the face. An implication is that subjects in these conditions are engaging in similar types of processing, leading to comparable recognition performance.

The present data also suggest that the orienting task effect is caused by a superficial orienting task manipulation depressing subjects' recognition performance in comparison to an inferential orienting task manipulation, and in comparison with what observers do when given no special orienting instructions. However, these findings are at odds with the findings of several studies that have found that inferential orienting strategies produce superior recognition performance when compared to both superficial orienting and intentional learning conditions (Warrington & Ackroyd, 1975; Blaney & Winograd, 1978; Smith & Winograd, 1978). We have no clear explanation for this discrepancy because both the procedures and the type of orienting task instructions given to subjects are similar for the present and previous studies.

It seems clear that in all cases, superficial orienting instructions lead to low levels of recognition performance. This finding is consistent with the oft cited failure of face recognition training to show improved recognition performance. Examination of such studies indicates that training methods that induce subjects to examine superficial features of faces sometimes result in lower recognition performance (see Malpass, 1981, for a review).

In summary, the differential recognition effect was found to be of approximately equal magnitude regardless of manipulations of intention to learn or orienting strategies. If there is a diminution of differential recognition of own- and other-race faces due to differential orienting strategies, the magnitude of this effect must be small in comparison with the other effects observed in this study.

## NOTE

[1] Paul Pekar collected these data.

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