Racial Classification of Racially Ambiguous Faces [1]

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Abstract

The cross-race effect occurs when it is difficult for a person to correctly identify people of another race. For this experiment we examined this phenomenon by using a racial classification task with ambiguous race faces, (faces that share facial features across racial and ethnic lines), and measured the participants' perception of the faces. Twenty (20) Hispanic UTEP participants were asked to categorize racially ambiguous faces, to rate the "raceness" of the face (how well that face fits their chosen racial category), and various facial features and personality traits. Results indicate that participants categorized the race of the face and this categorization drives the perceptual process.

Research has shown that it is more difficult for individuals to correctly identify people of another race than to identify same-race individuals (Chance & Goldstein, 1996; Malpass & Kravitz, 1969), and this *cross-race effect* is widely replicated in the literature (Bothwell, Brigham, & Malpass, 1989; Shapiro & Penrod; 1986). A number of theories attempt to explain the source of this bias in face recognition.

First, the *inherent stimulus differences hypothesis* is a psychophysical explanation for the cross-race effect that emphasizes that some groups of faces are more homogeneous than other groups due to the loss of facial details with decreased reflectance from dark skin and other race-related differences (Goldstein, 1979a). However, no evidence thus far supports this hypothesis (Chance & Goldstein, 1996).

Second, The *contact hypothesis* or the *differential experience hypothesis* asserts that the cross-race effect is due to a lack of contact with people of other races (Brigham & Malpass, 1985). Given minimal exposure to people of other races, it is possible that individuals do not observe the variations of other-race facial features that they recognize in own-race faces. This is an important theory given that anthropometric analyses, an anthropological procedure that measures facial characteristics and their variation among people, found that there is heterogeneity of facial characteristics of individual faces for each race (Goldstein, 1979a, 1979b). Using inverted faces, Valentine and Bruce (1985) found that participants had more difficulty recognizing inverted faces than upright faces. According to the researchers, discriminating upright faces is more familiar and socially more

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important, and after the over learning of recognizing upright faces, it is not necessary to have the ability to recognize an inverted face. It is possible that given a lack of contact with other races, one does not find it socially important and/or necessary to recognize the variation in other races. The contact hypothesis may also be explained by the *familiar face schema* (Chance, Turner & Goldstein, 1982). When face schemas are produced, they provide expectations about certain aspects of facial features which makes their encoding and recognition automatic (Carroo, 1987). Creating a familiar-face schema makes processing of familiar faces easier and processing of unfamiliar faces difficult (Carroo, 1987). In turn, using the same schemas to discriminate other-race faces that are used to discriminate same-race faces may not be appropriate and makes recognition difficult.

Third, the *differential orientation hypothesis* asserts that perceivers use different orienting strategies for own- and other-race faces (Chance & Goldstein, 1981). For instance, it may only be necessary to assign other-race persons to a racial category (usually done by skin color), whereas own-race persons need a more elaborate classification that involves more attention to facial detail and personality attributes (Devine & Malpass, 1985). However, Devine and Malpass found the cross-race effect to be of approximately equal magnitude among Blacks and Whites viewing Black and White faces regardless of the manipulation of orientation strategies.

Last, attitudes towards other races may also play an important factor in the inability to recognize other race faces. The *differential attitudes hypothesis* argues that social attitudes and racial prejudices interfere with perception, producing a higher frequency of misidentifications of other race persons (Platz & Hosch, 1988). Chance, Goldstein, and Anderson (1986) attempted to test this hypothesis by measuring college students' ability to recognize the faces of newborn infants. The majority of the participants expressed positive attitudes towards infants, yet they only had casual contact with infants. Results of this study showed that the participants were better at recognizing photos of adults than infants, but students who reported some experience with infants had a better recognition ability than those reporting none. As a result they concluded that the degree of contact appears to be the most reliable variable in predicting recognition for faces.

For the present experiment, racially ambiguous facial images were created using a computerized composite system, which integrated facial features associated with Blacks and Hispanics. The images were initially created without hair to examine how the manipulation of the hairstyle (either an African-American or Hispanic style) will change one's perception of the race, facial features, and, in turn, the personality of a racially ambiguous face. Based on this, it is predicted that participants will rate the other-race facial images higher on the "raceness" scale than own-race faces. If participants classify the image as an other-race face, they will not have seen the facial variations that they see in own-race faces. Therefore, if they perceive the face as Black, they will classify it higher on the raceness scale than they will the Hispanic faces. It is also predicted that classifying the image into a racial category will affect how they view the facial dimensions and personality attributes. In general, studies conducted on the cross-race effect, tend to support the contact hypothesis as an explanation for the cross-race effect. These predictions are made based on studies that found that the amount of contact one has with people in the out-group improves their ability to see facial variations of other-race people. (Chance, Goldstein, & Anderson, 1986; Malpass & Kravitz, 1969; Valentine & Bruce, 1985).

Method

Participants

Twenty (20) Hispanic undergraduate students at the University of Texas at El Paso participated in this study and received partial course credit. Participation was voluntary and the participants were treated accordingly using the "Ethical Principles of Psychologists and Code of Conduct" (American Psychological Association, 1992).

Stimuli

Twenty facial composite images were created using Faces 3.0 (1998), a computerized facial composite production system used by law enforcement agencies. "Racially ambiguous" facial images were constructed based on the criteria that facial features are associated with both Blacks and Hispanics (i.e., not mutually exclusive to either race). For instance, Blacks and Hispanics tend to have broader noses and darker skin tone, hair and eyes than Anglos. Therefore, the images were created integrating these features, producing a racially ambiguous face. Each image was created without hair since hair type is not a shared feature between Blacks and Hispanics and was manipulated in our study (with the hair manipulation of an African-American or Hispanic hairstyle to each composite, our stimuli totaled to 40 faces). An example of one racially ambiguous face given racial identity by choice of hair is provided in figures 1a and 1b.

Figure 1a: African-American hairstyle

Figure 1b: Hispanic Hairstyle

Procedure

Following informed consent, participants were assigned to a computer. Faces were displayed on the monitor using a Visual Basic program that recorded participants' responses. Participants were shown a face and asked to categorize the race as either Black, Hispanic, Italian, Asian, or Other and then to rate the "raceness" of the face using a 9-point Likert type scale (the numbers measuring the scale were not visible to the participants). Participants rated facial features such as, nose width, complexion, lips, mouth width, eyebrows, ears and chin. The personality traits measured in this study were based on Cattell's sixteen trait scale (1993): practical / creative, assertive/submissive, relaxed / tense, weak / strong, dependent / independent, trusting / suspicious, and cold / warm. Participants were instructed to use as much of the scale as possible, to form a strategy to help them select a race, and to keep that strategy throughout the duration of the experiment.

Results

Overall, 68% of the black faces (the facial composite with the African-American hair manipulation) were classified as black, 7% as Hispanic, and 25% as other. Sixty-eight percent of the Hispanic faces (facial composite with the Hispanic hair manipulation) were

classified as Hispanic, 1% as Black and 30% as Other (figure 2). Contrary to our prediction, Hispanic faces were rated higher on the raceness scale than were Black faces (t (1, 19)= - 3.92, p<.001). Given that one-third of the faces were perceived as a race other than black or Hispanic, subsequent analysis are limited to the faces categorized according to the hair manipulation.

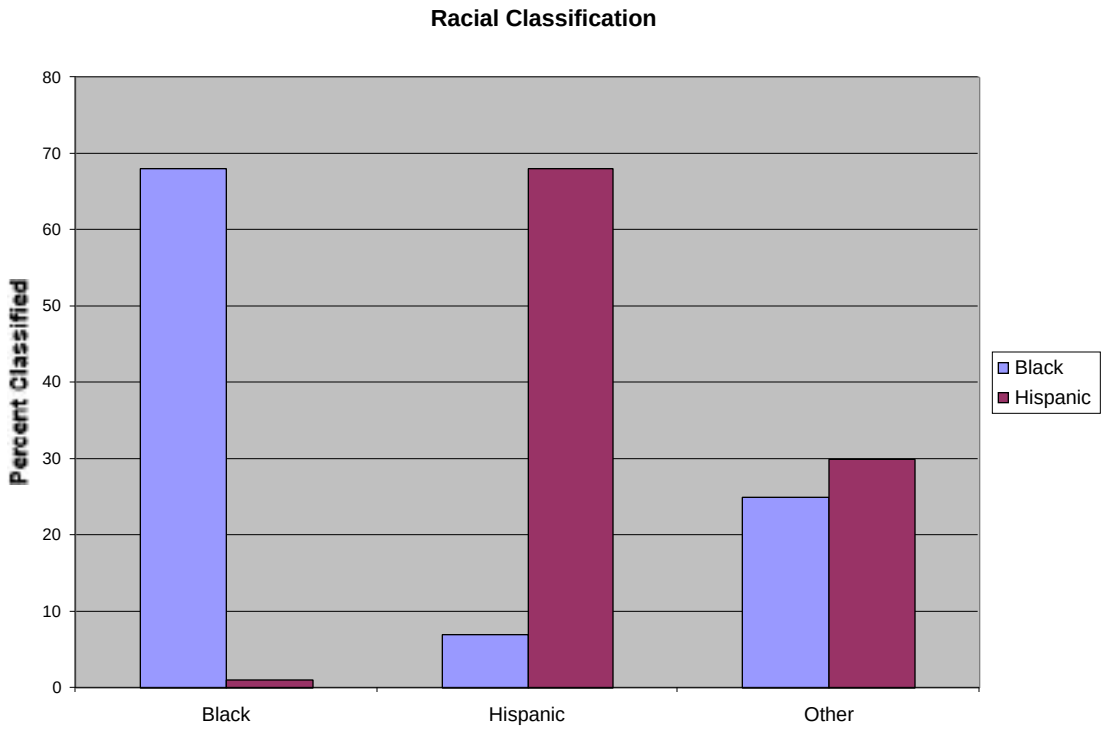

Figure 2: Racial Classification Results.

The rating scores for the faces rated as either Black or Hispanic, were averaged across each of the 40 faces for raceness and for the 18 facial feature and personality attributes. Means for the 20 Hispanic were compared to the means of the 20 corresponding Black faces using a repeated measures analysis Results are displayed graphically in figure 3. Black faces were perceived to have a darker complexion (M = 4.42) than their Hispanic counterparts (M = 4.07); (t (1, 19) = 2.48, p<.05). The mouths on the Black faces were perceived as wider (M = 5.88) than on the Hispanic faces (M=5.58); (t (1, 19) = 2.24, p<.05). Eyes on the Hispanic faces were rated as more protruding (M = 3.08) than the eyes of their black counterparts (M = 2.82); (t(1,19) = -2.16, p<.05). Black faces were rated as wider than Hispanic faces (M = 4.46) (t(1,19) = -2.56, p<.05). The personality of Hispanic faces was rated as "stronger" than black faces (M = 4.92 & M = 4.70, respectively; t (1, 19) = -2.14, p=.05), more "submissive" than Black faces (M=3.56 & M=3.16, respectively) (t(1,19)= 2.17, p<.05). more "tense" than black faces (M = 4.43 & M = 3.96, respectively; t (1, 19) = -2.34, p< 05) and more "suspicious" than those faces that were perceived as black (M = 4.93 & M=4.28, respectively; t (1, 19) = -4.41, p<.01). Lastly, black faces were perceived as "warmer" than Hispanic faces (M = 3.64 & M = 3.31, respectively; t (1, 19) = -2.40, p<.05).

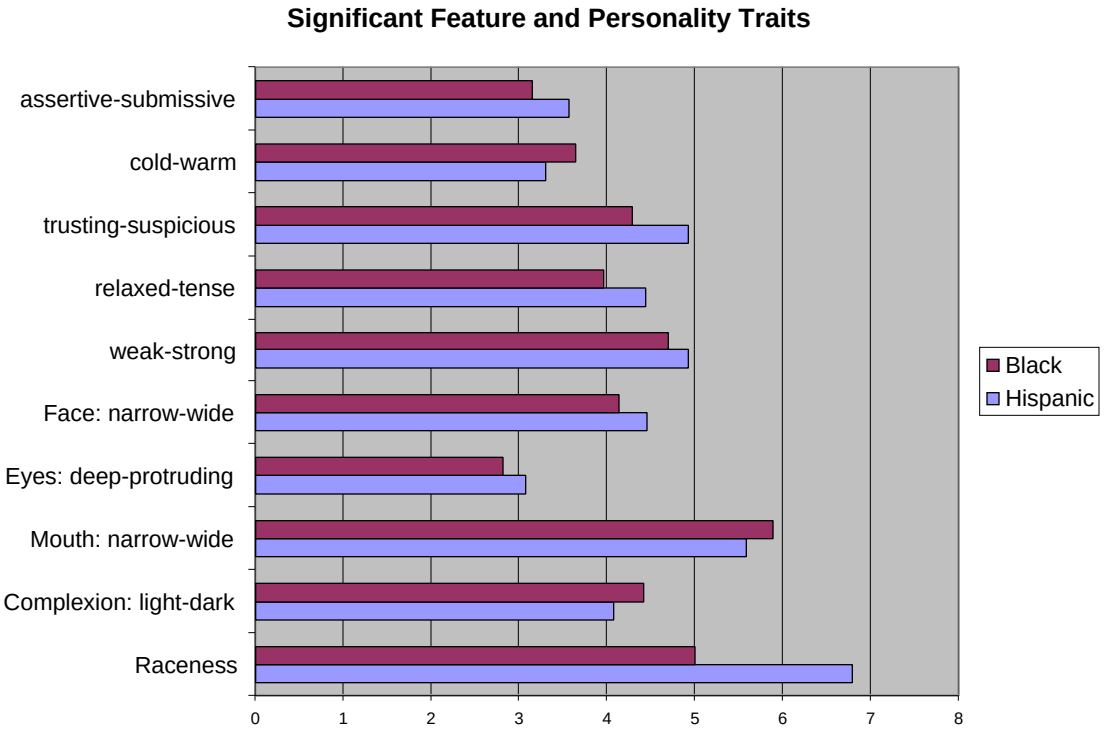

Figure 3: Feature ratings for Black and Hispanic faces

Discussion

Results showed no difference in the number of faces classified as Black or Hispanic, indicating that the original construction of the ambiguous faces showed no bias towards any particular race. More than two-thirds of the faces were classified according to the manipulated hair feature. This suggests that for the majority of the faces, the hair feature acted as a racial marker and strongly influenced the categorization and perception of race.

Contrary to our prediction, faces categorized as Hispanic were rated higher on the raceness scale than faces categorized as Black. There are several possible explanations for this. This may be the result of the composite program lacking diversity in their facial features on file. Alternatively, the composites were created by Hispanic and White researchers at a predominately Hispanic university located in a predominately Hispanic city, which could have created a bias towards producing composites that were "very Hispanic" on our raceness scale. Finally, a more plausible explanation could be the racial variation within the Hispanic community itself; one can be Black in terms of race and Hispanic in ethnicity. Puerto Rico, Cuba, and other Latin American countries have a large Black population, which gives this segment the ability to classify themselves as Black on a racial category and Hispanic/Latin on an ethnic category. Therefore, it is possible that the Hispanic participants who categorized the Black faces low on the raceness scale perceived the images as "Black-Hispanic" instead of just "Black."

Results demonstrated that facial features and personality attributes were also viewed differently by the participants depending on the race in which they were categorized. This is an interesting finding given that 50% of the faces were identical with the exception of the hair

manipulation. The differences in the personality attributes could be the result of the individual experiences the participants have with Blacks and Hispanics. However, we did not ask the participants about their personal experiences, therefore no direct inferences can be made.

Future experiments using racially ambiguous faces need to involve participants of other races and ethnicities. In addition, racially ambiguous faces could be created that have integrated the features of other ethnicities and races.

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