THE DIFFERENTIATION OF HUMAN FACES AS A
FUNCTION OF RACE, SEX AND STATUS

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ABSTRACT

THE DIFFERENTIATION OF HUMAN FACES AS A
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By

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One tenet found firmly rooted in popular wisdom is the
idea that various groups of people, as women or blacks, are
"all alike." Studies on stereotyping have expressed this
lack of discreteness in a variety of concepts: "generali-
zation," "categorization," etc. The purpose of this study
was to measure the discreteness with which several groups
of individuals were perceived. This was done by measuring
the discreteness in the perception of human faces repre-
sented by male and female, black and white portraits under
three conditions of ascribed socio-economic status: high,
low and neutral. Four tasks were devised to test for differ-
entiation in the responses to the four groups of stimulus
portraits: the sorting task, the facial recognition task,
the verbal differentiation task, and the homogeneity judgment.
These tasks were administered to white male and white female
subjects. The following significant results were obtained:
(1) Male portraits were perceived more discretely than female
portraits in the sorting and verbal differentiation tasks.
(2) Female portraits were perceived more discretely than male

portraits in the facial recognition task.

(3) More discrete responses were made to white portraits than to black portraits. This was demonstrated as a significant main effect in three tasks - the sorting task, facial recognition and the homogeneity judgment.

(4) The presence of status instructions induced stereotypic perception in the sorting task in both the high and low status conditions, in contrast to the neutral status condition. In the two ascribed status conditions white and male portraits were perceived more discretely than were black and female portraits. These dichotomizations along the dimensions of sex and race did not hold up in the neutral status condition.

(5) Female subjects made more discrete responses to female stimuli than did male subjects in the sorting task.

(6) Female subjects made more discrete responses to white stimuli than did male subjects in the sorting task.

The results confirm the prediction that women and blacks tend to be perceived as "all alike." These findings were interpreted as demonstrations of perceived anonymity, in contrast to the uniqueness attributed to males and whites, at least by white subjects in our culture.

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INTRODUCTION

This study concerns the perception and treatment of
members of various groups as "all alike." Particular instan-
ces of behavior and examples from popular wisdom suggest
that others' perceptions of women or blacks are not discrete,
discriminating, or detailed in their attention to individual
differences. Two instances from this domain of behavior
illustrate the absence of differentiation in the perceptions
of and interactions with these two groups. The first example
is found in a letter of Lord Chesterfield written to his son
over two centuries ago. The passage is interesting because
of its antiquity, suggesting a rather entrenched pattern of
behavior, and, second, it is surprisingly explicit in
stating the character of this perception. Lord Chesterfield
writes:

> Women are much more like each other than men;
> they have in truth but two passions, vanity and love;
> these are their universal characteristics (vol. I,
> p. 267).

The second example is an incident described in Baldwin's
The Fire Next Time. He and several friends ordered drinks
at Chicago's O'Hare Airport while awaiting a flight. The
waiter refused to serve them. After complaints to the manage-
ment the actions of the waiter were defended on the grounds
that he was new and could not yet distinguish between young

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and older blacks. He had accordingly judged them all to be
minors. The three blacks were, in fact, in their thirties.
In this incident blacks were not only perceived as "all
alike," but this mode of perception was itself used to
justify an act of racial injustice.

Theoretical Conceptions of Differentiation in Social Perception

Theoretical explorations of prejudice and stereotyping
articulate the absence of discrete differentiation in a
variety of concepts.

Generalization

Generalization is the most frequently used descriptive
term for the reduced discreteness of stereotypic perception.
To Bogardus (1950) "Stereotypes are in the main the unscien-
tific and hence unreliable generalizations that people make
(p. 286)." They consist of judgments and conclusions made
on the basis of limited experience and data. In a replication
of the trend-setting experiment of Katz and Braly, Gilbert
(1951) defined stereotypes as "cultural generalities" based
on some "kernel of truth." Stereotypes, according to Saenger
and Flowerman (1954), are "more or less faulty generaliza-
tions (p. 217)." They see prejudicial attitudes as consisting
of two components - an emotional and a cognitive component -
or positive and negative feelings toward a specific group
and prejudgments of a group in terms of specific attributes.
Prejudgments assume that all the members of a group are alike
in some aspect. Since such uniformity does not exist,

Saenger and Flowerman consider such generalization as "faulty."
Harding, Kutner, Proshansky and Chein (1954) believe stereo-
typing to be facilitated by overgeneralization which, ac-
cording to one direction of research, is associated with
a personality attribute. This concerns the relationship of
prejudice to intolerance of ambiguity (Frenkel-Brunswik,
Kutner, O'Connor) and narrowmindedness and dogmatism (Rokeach).
Generlaization, although not the key term in Allport's (1954)
conception of stereotyping, resembles most of the definitions
discussed above. It is the extensive unwarranted misappli-
cation of facts.

Categorization

Nearly as frequent is the conception of stereotyping as
a process of categorization. Simpson and Yinger (1965)
define it as "the categorical treatment of a member of a
group because he is a member of that group, and supposedly,
therefore, of a particular type (p. 19)." It is an easy
way of understanding and ordering the world. Classification
is necessary in all information processing. They point out
that in the natural sciences classification follows rules of
logic and evidence; whereas the traits assigned in stereo-
typing are selected on the basis of emotional predisposition.
Stereotypes give a highly exaggerated picture of the im-
portance of a few characteristics. They fail to show how
other groups share similar tendencies.

Vinacke (1957) sees stereotyping as the perception of
persons as members of a class rather than as individuals.

A person is given considerable training in the application and use of a plethora of classes which are defined in abstract and neutral terms. Instances of classes are defined in their own terms. An individual learns to proceed from the instance to the class and from the class to the instance. No such training exists in stereotyping. Blacks are brought to the attention of children not as individuals but as members of a class. There is no individual sampling of the class and, therefore, no familiarity with the individual member of the class.

Categorization is the key in Allport's conception of stereotyping. He characterizes the process of categorization as:

1. The formation of large classes and clusters that guide daily behavior. The individual encounters a multitude of events during a day. Each event must be reduced and placed into a familiar category. The individual cannot handle every event freshly in its own right.

2. Categorization assimilates as much as it can to the clusters. There is a general tendency of the mind to categorize events in the "grossest" manner possible. As long as a person can get away with coarse generalization, he will do so.

3. The category allows rapid identification of related objects. Its purpose is to facilitate perception by providing markers which serve as cues for categorization.

4. The category attaches to all of its members the same

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ideational and emotional flavor. Categories not only have
a meaning, but persons also have positive or negative
feelings for them.

5. Categories may be more or less rational. Scientific
laws are rational because of their high predictive validity.
Categories of stereotypes are irrational because they are
based on feeling.

Labeling

A third description of stereotyping which underscores
its undifferentiated character is the conception of an in-
clusive label. According to Bogardus (1950) stereotyping is
the application of a label without inquiring whether the
label is as general as it implies. Vinacke (1949, 1956)
defines stereotyping as "the tendency to attribute gener-
alized and simplified characteristics to groups of people
in the form of verbal labels, and to act towards the members
of those groups in terms of those labels (1949, p. 265)."
Moreover, stereotypes are a special kind of "concept-
system" which represents meanings elicited by social
stimuli.

Intensional Meaning Used Extensionally

In a subsequent elaboration of the nature of stereo-
typing, Vinacke (1957) proposes yet another, unique, charac-
terization. His formulation draws on a distinction commonly
made in philosophy, that of intensional and extensional
meaning. Intensional meaning refers to the unique experience
a person has with objects which constitute the personalized

meaning of a concept. This meaning, therefore, posesses features which may differ from those of other persons. Extensional meaning refers to the objective physical properties of objects. They are the properties upon which most people would agree. In stereotyping intensional properties are treated as though they were extensional.

Vinacke's conception is actually a more refined formulation of the various statements claiming that stereotypes are based on emotions. A simpler statement of this feature of stereotyping is offered by Allport - it is the perception of others through the individual's own "personal set of values." It is not the "directed thinking" which is guided by outer evidence and focused on the solution of objective problems but "partisan thinking" defending an individual's way of life.

Individual Differences

A fifth feature of stereotyping describing its indiscriminate aspect is the inattention paid to individual differences. Harding, Kutner, Proshansky and Chein (1954) define stereotyping as "the tendency to attribute the traits to all members of a group without due regard to individual differences (p. 1025)." A major feature of stereotyping is that it leaves no room for individual variation. It does not adjust to individual differences. To do so would be to destroy the "discriminatory" value of the stereotype, discrimination being defined as the indiscriminate treatment of persons.

Allport similarly takes note of the inattention to individual differences. Distinctions among people are made

on grounds of moral and social categories, which have no relation to an individual's capacities or his behavior.

Homogeneity

Finally, many researchers are aware of some degree of homogeneity assumed in stereotypic perceptions. Harding, Kutner, Proshansky and Chein point out that, not only are individual differences disregarded, there is also no recognition of the fact that differences within groups are possibly of a greater magnitude than differences between groups. Saenger and Flowerman (1954) define stereotyping as prejudgments which are based on the assumption that all members of a group are alike in some aspect. Vinacke (1957) points out that in the normal acquisition of class concepts the individual also learns to make distinctions within the class. This is not the case with stereotypic concepts where a member of a class is perceived only as a member of a class and not as a discrete entity. Distinctions within the class become, therefore, minimized.

Campbell (1967) has articulated this feature most explicitly. A major deficiency of stereotyping is the exaggeration of the homogeneity with which ingroup or outgroup members have the trait in question. He explains this perceived homogeneity as due to "the enhancement of contrasts through homogenization of differences within gestalt boundaries and the exaggeration of differences accross boundaries (p. 824)."

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Theoretical Explanations of Differentiation

The various theoretical conceptions discussed above suggest the central importance of non-discrete differentiation in stereotyping. Theoretical explorations of the causes of this feature have, however, remained almost entirely pedestrian. An attitude of disapproval and censure suggested by such terms as "erroneous generalization" without the demonstration of the nature of the "error" seems to prevail in many studies and may account for this dearth. However, one explanation has been reiterated without alteration ever since its inception by Walter Lippmann in the 1920's. Lippmann thought that in order to deal with a world which is too complex for direct assimilation, man constructed a "picture inside his head" of the world beyond his reach. Stereotyping thus reduced the amount of information into chunks that could be assimilated. Bogardus rationalizes that stereotyping arises from the fact that "the varieties of personalities and of groups are so numerous that it is almost impossible for most people in a busy world of activities to weigh every reaction of every person, minute by minute, in terms of its individual meanings and merits (p. 286)." Saenger and Flowerman similarly explain that "We cannot possibly investigate the characteristics of each group member (p. 217)." Our limited capacities prevent us from making discrete perceptions. According to Allport "Life is so short, and the demands upon us for practical judgments so great, that we cannot let our

ignorance detain us in our daily transactions. We have to decide whether objects are good or bad by classes. We cannot weigh each object in the world by itself. Rough and ready rubrics, however coarse and broad, have to suffice (p. 9)."

These explanations are inadequate since none of the authors have demonstrated the limitations of human information processing. Moreover, why should these be so extraordinarily limited when the subject concerns the perception of man? When we consider the natural sciences, we find not merely coarse generalizations but vast bodies of intricate and detailed information which would have been impossible to acquire if man's information processing capabilities were limited to the formation of gross categories.

Research on Differentiation in Social Perception

The stereotyping research has not concerned itself with the lack of differentiation. Reviewers (Harding et al, 1954; Brigham, 1971) stress the large gap between theorizing and research. Regardless of their theoretical orientations most researchers have with dogged persistence imitated Katz and Braly's paradigm and several generations of freshmen have assigned a variety of descriptive adjectives to a variety of national, racial, and religious groups.

There is one solitary effort of Secord (1956, 1959) which purports to explore classification within this paradigm. Secord (1959) hypothesized that the identification of photographs as black (either spontaneously through the

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perception of Negroid physiognomy or induced through experimental instructions) would be sufficient to evoke categorical responses. A categorical response is defined as "the judgment that the stimulus person possesses in full degree the attributes belonging to that category (p. 309)." Furthermore, categorization should be highest for prejudiced persons and be a function of stereotyping rather than the favorableness of the photograph. The stimulus material consisted of 10 photographs ranging from most negroid to most caucasoid and 5 white photographs. Four categories of trait attributes were chosen from previous studies - favorable stereotypic attributes of blacks, unfavorable stereotypic attributes, favorable traits irrelevant to stereotypic perception of blacks, and unfavorable traits irrelevant to stereotyping blacks. Four groups of subjects were assigned to four experimental conditions - one group was exposed to 10 black portraits without instructions that labeled these as black, a second group was exposed to the total 15 portraits, for the third group the group of 10 portraits were labeled black and for the last group each individual photograph of all 15 portraits was identified as either black or white.

For each picture traits were rated on a seven-point scale. Two scores were obtained for each portrait - the sum for all subjects of the stereotype traits assigned and, second, a favorableness score which was obtained by subtracting unfavorable from favorable irrelevant trait ratings. Subjects were next asked to indicate for each picture whether

they thought of it as black or white. An attitude scale
measuring the subjects' prejudice was also administered.

The results showed that subjects in groups 3 and 4, who
were informed of the race of the stimulus portraits, stereo-
typed the portraits more than subjects in groups 1 and 2.
They assigned a higher number of stereotypic traits. Subjects
high in prejudice stereotyped to a greater extent when ex-
perimenter identified the race of the stimulus portrait. There
was no relationship between favorableness of portrait (assign-
ing "irrelevant" traits) and stereotyping (assigning stereo-
typic attributes).

The chief deficiency of Secord's study is that it still
deals with adjectives and the content of stereotypes rather
than the structural categorizing aspect of stereotypes. The
refinement introduced in the distinction between stereotypic
"relevant" and "irrelevant" traits is largely taxonomic - it
merely labels results of previous research which are replicated
here.

Research on the Perception of Human Faces

There is a modest research tradition which has implicit-
ly attempted to measure the degree of homogeneity through
measuring the errors made in the recognition of black and
white faces primarily.

The Recognition of Children's Faces

In two studies Brooks and Goldstein (1963) and later
Goldstein and Chance (1964, 1965) considered the recognition

of faces by children. In the earlier study Brooks and Gold-
stein showed that in three- to fourteen-year-old subjects
accuracy of perception of inverted faces increased with age.
Nursery and elementary school children were asked to identify
upright photographs of their classmates. One week later the
photographs were presented with the faces inverted. The
subjects were asked to give the name of the girl or boy in
the picture. The results indicated that older children were
better able to recognize both upright and inverted faces than
were younger children.

In the above study the subject's age and the age of the
stimulus face were confounded. A second study was undertaken
to answer the question whether ease of discrimination was
related to age of stimulus face. There are some suggestions
that the faces of younger children are less differentiated.
One of these is the general fact that the younger an organism,
the less differentiation has taken place in its structures.
There is, therefore, greater similarity among very young
members of a group than among old members. Second, unsystem-
atic observations by adults suggest that young children look
more alike than older children. The study of Goldstein and
Chance (1964) attempted to determine whether the discrimi-
nation of young children's faces was more difficult than of
older children and whether there was an interaction between
age of subject and age of stimulus.

Three groups of subjects representing kindergarten,
third and eighth grade were selected. The stimulus material

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consisted of 8 photographs from each age group of "young," "middle," and "old." These were presented in three learning trials followed by eight test trials. During the test trial each "critical" picture was placed in a rack with five other "background" pictures and the subjects were asked to identify the faces they had seen before. The results showed that recognition improved with age of subjects and that younger stimulus faces were easier to recognize than older stimulus faces. None of the interactions was significant.

The Recognition of Black and White Faces

Seeleman (1940) investigated the relationship between racial attitudes and the recognition of black and white faces. She hypothesized that favorable attitudes toward blacks would be associated with higher recognition of blacks than preju-diced attitudes and with greater recall of favorable de-scriptive phrases. Seeleman reasoned that unfavorable attitudes toward a group obliterate the perception of individual differences among members of that group.

Two groups holding extreme positive and negative views toward blacks were identified by means of a questionnaire. These subjects were presented with 15 black and 15 white pictures. After a 10 minute interval subjects were presented with 23 black and 23 white individual faces. They were asked to identify the pictures they had seen in the preceeding exposures.

In the second part of the experiment subjects were presented with 14 black and 14 white pictures, with half

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of each group being described by favorable and the other half by unfavorable phrases. The results showed that both the pro-black and anti-black groups identified white faces equally well but differed in the identification of black faces - the anti-black group made more errors in recognition. The second part of the experiment showed that the pro-black group remembered more favorable labels that were presented with black pictures while the anti-black group remembered more unfavorable labels matched with black portraits.

In a recent study Malpass and Kravitz (1969) investigated the recognition of black and white faces by black and white subjects. The stimulus material was 10 white male faces and 10 black male faces projected singly for two seconds on a screen. The recognition task consisted of identifying the 20 male faces from a total of 80 faces (40 black and 40 white) again presented singly to the subjects. After the recognition sequence a questionnaire was administered to collect data on the subjects' experiences with the opposite race. The subjects were a group of black and white male students at the University of Illinois and another group from Howard University. The results show that white stimuli were recognized more than black stimuli. This was true of both the Illinois and the Howard subjects. The race of stimulus by race of subject interaction, such that subjects recognized faces of their own race better than faces of the other race, was significant for the Illinois group but not for the Howard group. There was no significant relationship between

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the exposure to the other race as determined by the question-
naire and recognition scores. Malpass and Kravitz suggest as
a possible explanation of the differential perception of
black and white stimulus faces the hypothesis that black
faces are more homogeneous.

Cross, Cross and Daly (1969) studied the effects of
several variables on the recognition of faces - sex, race,
age and beauty. 300 male and female, black and white
subjects at four age levels were tested for their recog-
nition of 12 portraits representing both races, sexes, and
three age levels. The stimulus material consisted of an
array of 24 faces presenting one face from each of the 12
age-sex-race categories. Two such arrays were prepared with
12 faces common to both. Subjects were shown one of the
arrays and asked to identify those they thought attractive.
They could pick as many as desired and take as long as
desired. Subjects were then shown the second array and were
asked to identify those faces they had seen in the preceeding
array.

The effect of race on recognition yielded a significant
race of face by race of subject interaction. Black subjects
recognized black and white faces equally well while white
subjects demonstrated poorer recognition of black faces.
Perceived beauty was another significant variable in the
recognition of faces. In every case, a higher percentage of
subjects who perceived beauty in a face were able to recognize
the face. The effects of sex and age on recognition yielded

a significant sex of face by sex of subject interaction.
Male subjects recognized the male and female faces with
equal facility while female subjects recognized the male
faces less often than did males and recognized the female
faces more often. There was a significant age of subject by
sex of subject interaction - recognition for males increased
with age of subject while it decreased for females.

Laughery (1972) studied the effect of the type of photo-
graph (black and white versus color) and intraracial versus
interracial identification. To measure the effect of race of
stimulus material on identification Laughery devised a unique
technique. Subjects viewed a target person for 30 seconds.
This individual had walked into the room and passed out
answer sheets for 30 seconds. Next, subjects looked at a
series of 132 projected slides containing pictures of male
faces. Their task was to identify the face of the target
person. They gave a confidence rating of their decisions
on a three-point scale. The target face appeared twice in
the series. A group of white and a second group of black
subjects went through the series twice - once with a white
target and white pictures and a second time with a black
target and black pictures. The results showed white subjects
obtaining 55% "Hits" for black targets (a score based on the
scale values assigned to the target picture) and 96% "Hits"
for white targets. The difference in "Hits" for identification
of black and white targets was not statistically significant
for black subjects.

Sex Differences in the Recognition of Faces

The differences in the ability to recognize faces by males and females tend not to be significant. One of the earliest studies to consider sex differences in the recognition of faces was Howells (1938). Howells thought the face to be the most salient physical aspect in the identification of individuals. The ability to recognize faces should be fundamental in establishing identity. He, therefore, set out to measure the ability to recognize faces, determine the extent of individual differences and determine the extent to which these differences are related to other traits and membership in various occupational and social groups.

Six pictures of each of 28 women and 14 men ranging in age from 20 to 58 were taken. Three pictures of each individual were mounted on one card. The total of 42 cards were the stimulus pictures; the remaining pictures were grouped on a large array. The subjects were exposed to a stimulus card for 10 seconds and then asked to identify the three faces of the stimulus card on the recognition array. The number of correct identifications constituted the recognition score. The results yielded differences between male and female scores which were not statistically significant.

The above test was also administered to a group of fraternity and sorority students and a group of non-fraternity-sorority students, to a group of sales personnel from retail stores and a group of farmers. The mean recognition scores of the fraternity-sorority group were higher than

those of the non-fraternity-sorority group. The mean recognition scores of sales personnel were higher than those of the farm group. The test also correlated positively with intelligence, high grades, Allport's A-S test. In another part of his study Howells tested for the ease of recognizing the upper part of the face in comparison to the lower part of the face. He found that recognition scores were higher with the lower part of the face in stimulus pictures.

Yin (1969) compared memory for upright and inverted faces with that for other classes of objects which, like faces are mono-oriented, familiar, complex, and not easily distinguished by simple labels. Yin used a forced-choice recognition task. Subjects were shown individual pictures, the inspection series, and then presented with pairs of pictures, the test series. In the test series they indicated the picture which had occurred in the inspection series. The inspection series consisted of 40 pictures of faces, houses, airplanes, men in motion. These were presented singly to the subjects. The test series consisted of 24 pairs of pictures. Each pair contained one picture from the inspection series and a new picture. Inspection and test series were presented twice to each subject, once rightside-up and once upside-down. The results showed all materials to be more difficult in the inverted presentation. Human faces were easiest to recall upright but most difficult when viewed in the inverted position. There were no sex differences in the total upright or inverted scores for males and females.

There was one single sex difference - the men's average upright and inverted scores for airplanes was higher than those of women.

In the two studies of the ability of children to recognize faces reviewed earlier Brooks and Goldstein found no differences in the performance of boys versus girls. Later, Goldstein and Chance did find that inverting a picture significantly reduced the performance of girls, but not of boys.

Sex differences in the performance of adults have been suggested in a study reviewed earlier. Cross et al. found a nonsignificant tendency for female subjects to recognize more faces than male subjects.

Proposed Measures of Differentiation

The above studies are limited as measures of differentiation. Low or high recognition of stimulus faces are not necessarily identical with the perception of homogeneity. This explanation for the differences in recognition needs to be tested itself.

This study proposes to consider the differentiation of faces in a more direct manner through several explicit techniques. To test for categorization in as literal a manner as possible subjects should be asked to make categories of persons. The task which would do this required subjects to sort portraits into groups of faces resembling each other. The grossness or discreteness of categories should be reflected in the number of categories made.

A second technique for measuring differentiation was suggested by some unnoticed results of McKee and Sherriffs (1957). They undertook to examine the characteristics males and females assigned to themselves and to each other. Male and female subjects were given a list of adjectives and asked to check those they thought to be descriptive of males and females. They found that more favorable adjectives and fewer unfavorable adjectives were assigned to males by both male and female subjects. More unfavorable and fewer favorable adjectives were assigned to females by both males and females. The data McKee and Sherriffs report exhibit an interesting feature the authors did not comment upon. Regardless of the content of the adjectives assigned to males and females, there is a difference in the absolute number of adjectives assigned. These are summarized in Table 1:

Table 1 - Absolute Number of Adjectives Assigned
More Often to Male and Female Stimuli
by Male and Female Subjects

	Adjectives assigned by both Males and Females	Adjectives assigned only by Females	Adjectives assigned only by Males
Female Stimuli	38	18	5
Male Stimuli	38	9	24

The total number of adjectives assigned to males appears to be considerably higher than the number assigned to females. 71 adjectives were assigned to males while 61 were assigned

to females. Female subjects assigned fewer adjectives to
their corresponding gender than did male subjects to theirs -
18 and 24 adjectives respectively. Male subjects assigned
fewer adjectives to the opposite sex "only" (5 for female
stimuli) than did female subjects to males "only" (9 for
male stimuli).

The number of adjectives checked off indicates that
males and females are not only perceived with varying degrees
of favorability but also with varying discreteness. This
finding suggested a modified technique for this study.
Subjects were asked to generate descriptive adjectives for
different portraits. The number of adjectives generated
constituted the measure of differentiation of any particular
group of portraits.

A third technique consisted of asking subjects to make
judgments of the degree of homogeneity perceived in various
groups of portraits on a five-point scale. The judgment
would be an index of differentiation for a particular group.

The fourth technique consisted of a facial recognition
task resembling those of the studies reviewed earlier. The
only modification adopted was one also used in the Cross et
al. study, namely, not informing subjects that they would be
required to recall faces at a later time.

The groups of individuals for which differentiation was
to be tested were white and black, male and female portraits,
representing 3 socio-economic status conditions - high, low
and neutral. Each of these groups represents differences

in positive and negative perceived attitudes, prejudicial
treatments, and affluence. Status in combination with the black
race variable or the female gender is rendered inconsistent
and, therefore, ambiguous. It should have its clearest effect
when associated with white males.

Hypotheses

1. Sex of Stimulus Picture

It is predicted that the perceptions of male portraits will
be more differentiated than the perceptions of female portraits.

(a) More discrete groupings will be made of male pictures.

(b) The recognition scores for male pictures will be higher.

(c) More adjectives will be generated for male pictures.

(d) Male pictures will be judged as less homogeneous.

2. Race of Stimulus Picture

It is predicted that white faces will be perceived as more
differentiated than black faces.

(a) More discrete groupings will be made of white faces.

(b) The recognition scores for white faces will be higher
than those for black faces.

(c) More adjectives will be generated for white faces.

(d) White faces will be judged as less homogeneous.

3. Status of Stimulus Picture

High status pictures will be perceived with greater dis-
creteness than will be low status pictures.

(a) More discrete groupings will be made of high status
pictures.

(b) The recognition scores for high status pictures will be higher than for low status pictures.

(c) More adjectives will be generated to the high status pictures than to the low status pictures.

(d) High status pictures will be judged as less homogeneous than low status pictures.

4. The Combination of Status, Sex, and Race of Stimulus Picture

High status in combination with the female gender or black race is considered to be "inconsistent." Responses to these combined variables should not reflect significant differences between status conditions. Differences in the perceptions of status conditions should be most clearly reflected in the responses to white male stimuli and the responses of white male subjects, with high status representing more differentiated responses than low status.

5. Sex of Subject

Discreteness in the responses of female subjects should be influenced more by the sex of the stimulus than the race of the stimulus. The concept of race is to a significant extent maintained by forces and institutions which exclude women, notably, the economy and political institutions. The extent to which women are excluded from these should be reflected in behavior which does not assume the polarization of the races. Male subjects, by contrast, should produce more discrete responses to white portraits than to black portraits in comparison with female subjects.

METHOD

Design

Four tasks were devised to test the differentiation of
human faces. Each task consisted of a 2x3x2x2 factorial design
with repeated measures on the sex of the stimulus picture
and race of the stimulus picture as outlined in Table 2:

Table 2 - Experimental Design

Sex of Subject	Male			Female		
Status of Stimulus	High	Low	Neutral	High	Low	Neutral
Race of Stimulus	B W	B W	B W	B W	B W	B W
Sex of Stimulus	M F M F	M F M F	M F M F	M F M F	M F M F	M F M F
N	25	25	25	25	25	25

(B=black, W=white, M=male, F=female)

Subjects

75 white male and 75 white female students enrolled in
beginning courses in Psychology at Michigan State University
participated for credit in this experiment. Twenty-five males
and 25 females were assigned to each of three experimental

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conditions - high status, low status, and neutral status.

Stimuli

The stimulus material consisted of 4 groups of individual portraits with 10 portraits in each group. The 4 groups represented white males, white females, black males and black females. These portraits were selected from university yearbooks. Standardization of photographs was aimed at by selecting portraits that differed as little as possible in hair style and facial expression. Any visible clothing was inked in with black India ink. Noticeable facial blemishes, eye glasses, and earrings were reasons for rejecting photographs. These pictures were photographically reproduced into 5x4 photographs and duplicated using the offset printing process to produce 10 sets of the four groups of pictures. Four large arrays (8 1/2 x 11 inches) of 40 faces on each array were prepared. These represented white males, white females, black males, and black females. The pictures for the arrays were also chosen from yearbooks. The criteria for selection were identical to those used for the individual portraits above. The 40 pictures of each array included the group of 10 individual portraits that corresponded in race and sex to the array. The array of white females, for example, included the 10 individual white female pictures. For each array the pictures selected were mounted in adjacent rows and columns and photographically reproduced to yield 10 sets.

The status conditions were created by instructions which were read prior to the experiment itself. These describe the socio-economic status of the portraits that were to be used in the experiment. The instructions for the high status condition were:

> The pictures you will be working with in this experiment are reproductions of identification cards of recent graduates from Midwestern medical schools who have found prominent positions in hospitals and universities in the State of Michigan.

The instructions for the low status condition were:

> The pictures you will be working with in this experiment are reproductions of identification cards of highschool graduates from the Midwest. They have recently found employment in factories in the State of Michigan.

The neutral status condition consisted of the introductory experimental instructions which did not refer to the socio-economic status of the portraits.

A system of numbers and letters were used to identify the pictures. The 10 individual portraits in each group were numbered 1 to 10 on the back sides. Each group was placed into envelopes which were numbered 1 (for white female portrait), 2(black males), 3(white males), 4(black females). The rows on the arrays were identified by letters and the columns by numbers. A particular picture on the array could be identified by referring to the number of the array itself and the row and column the picture was found on the array. The purpose for this method of labeling the individual and group portraits was to avoid as much as possible referrences to the sex or race of the pictures and thereby possibly

inform the subject of the nature of this experiment. The instructions and the subjects' responses referred to the number on the envelope, the number on the array, or the number of the individual portraits.

These materials were gathered into a large envelope and constituted the experimental kit for each subject. 10 such envelopes were prepared so that 10 subjects could participate in the experiment at one time.

Procedure

The 10 subjects (including both males and females) were seated at five large tables with two subjects facing each other at the ends of each table. This provided each subject with maximum working space and prevented him from observing the activities of the other subject at the table. The large envelope containing all the materials, an answer booklet, and a pencil were placed in front of each subject. The subjects were asked to perform four tasks consecutively.

The Sorting Task

Subjects were asked to take the small envelopes out of the large one, to pick up one particular envelope (e.g. envelope 4), and to empty its contents. They were requested to sort the pictures in that envelope into groups of faces that resembled each other. To get the subjects to focus on the faces of the pictures rather than possible peripheral details, the face was defined as extending from the tip of the chin to the base of the hairline and reaching from left

to right ear. A group was defined as consisting of a minimum
of two portraits. A single portrait did not constitute a
group. The critical word "resemble" remained undefined.
After having formed the groupings, subjects were asked to
turn the pictures face down and record the number on each
picture in a group in the appropriate space on the answer
sheet. They were asked to shuffle the pictures and to return
them to the proper envelope. Subjects were given 3 minutes
to sort, record, and return the shuffled pictures in one
envelope. This procedure was repeated for the remaining
3 envelopes. The order in which the subjects were asked to
work with the envelopes was randomly varied for each group
of subjects.

Of interest to the experiment was not what portraits had
been grouped together but merely the number of groupings
made. These were counted for each envelope and constituted
the categorization scores for the group of portraits in one
envelope.

The Facial Recognition Task

Subjects were asked to slip the arrays, which had re-
mained inside the large envelope, out of this envelope face
down. They were instructed to turn over the top array and to
examine the pictures on that array. They were to identify
those pictures they recognized to have appeared in the pre-
vious task. Ten identifications were to be made since 10 of
the 40 pictures on the array had occurred in the preceeding
sorting task. To identify a particular picture in an array

subjects were required to refer to the row and column the picture was located in. They were asked to record their identifications in the appropriate spaces (marked "Array I," Array II," etc.) on the answer sheet. Subjects were given 3 minutes for each array. At the end of the 3 minutes they were asked to turn the array face down, put it aside, and turn over the next array and make 10 identifications. This procedure was repeated with the remaining arrays. At the end of this task subjects were asked to shuffle the arrays, so that they would be in random order for the next user, and to return them to the large envelope. The number of correct identifications constituted a subject's facial recognition score for a particular sex and race represented by the array.

The Verbal Differentiation Task

Subjects were asked to return to the small envelopes containing the individual portraits. They were asked to pick up one of these envelopes. The order in which they were required to work with the envelopes was again randomly varied for each group of subjects. They were asked to take a look inside the envelope and from the picture that appeared on top to recall to themselves the remaining portraits in the envelope. Next, they were to generate adjectives which described the personality characteristics of the portraits in the envelope. Subjects were given 3 minutes for each envelope. The same procedure was repeated for the remaining envelopes. The number of adjectives generated for one envelope con-stituted the verbal differentiation score for the group of

portraits in that envelope. Quality of adjectives (positive, negative, etc.) was not taken into consideration.

The Homogeneity Judgment

In this task the subjects were asked to pick up one of the small envelopes. The order in which each group was asked to pick up the first envelope was randomly varied. They were asked to take a look inside the envelope and from the portrait that appeared on top to recall the remaining portraits in that envelope. Next, they were to make an overall judgment of the degree to which the faces resembled each other. These judgments were to be made on a five-point scale, with 1 representing little resemblance and 5 high resemblance of faces. Since this task would not require 3 minutes per envelope, subjects were not timed but merely told to work fairly rapidly and to proceed in the same manner to the remaining envelopes without the experimenter calling out which envelope they were to work on. The chosen number on the scale represented the measure of perceived homogeneity of the 10 individual portraits in one envelope.

RESULTS

A multivariate analysis of variance was performed on each of the four tasks. Significant results were obtained for three tasks.

THE SORTING TASK

The analysis of variance yielded two significant main effects: Sex of Stimulus ($F = 211.68$, df = 1, $p < .001$) and Race ($F = 42.41$, df = 1, $p < .001$). More discrete categories were made of male portraits than of female portraits. Male portraits were sorted into 4.1 mean number of categories while female portraits were sorted into a mean of 3.26 categories. More discrete categories were made of white portraits than of black portraits. The mean categorization score for white portraits was 3.86 and that for black portraits 3.49.

A significant Sex of Stimulus x Race x Status x Sex of Subject interaction ($F = 3.58$, df = 2, $p = .03$) suggests that all four variables under consideration jointly contribute to the discreteness in the categorization of human faces. To interpret this interaction a Newman-Keules test of significance was performed on all the group means. The differences between the means which were found to be significant ($q = .154$, df = 22, $p = .05$) are discussed first

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for the female subjects and then for the male subjects.

Female Subjects

(a) Black Male Stimuli - White Male Stimuli Comparisons

The means for black males and white males differed significantly in the high and low status condition but not in the neutral status condition. An examination of the respective means in Table 3 shows the mean categorization scores for white male stimuli to be 4.52 and for black male stimuli to be 3.88 in the high status condition. In the low status condition the respective means are 4.6 and 3.84 as compared with 4.44 and 3.92 in the neutral status condition.

(b) Black Female Stimuli - White Female Stimuli Comparisons

The mean categorization scores for black female pictures and white female pictures did not differ significantly from each other accross all status conditions.

(c) Male Stimuli - Female Stimuli Comparisons

The mean categorization scores for white male pictures differed significantly from black female pictures and white female pictures accross all status conditions. According to Table 3 the mean categorization score for white male pictures in the high status condition is 4.52, and 3.64 for white female pictures and 3.2 for black female pictures. The respective means in the low status condition are 4.6 for white male pictures and 3.52 and 3.0 for the white and black female pictures. The mean categorization score for white male pictures in the neutral status condition is 4.44, and 2.64 for white female pictures and 3.24 for black female pictures.

Table 3 - Mean Categorization Scores of Male and Female Subjects for Three Status Conditions

		High Status		Low Status		Neutral Status	
		Black	White	Black	White	Black	White
Male Subjects	Male Stimuli	3.96	4.64	3.64	4.08	3.72	3.92
	Female Stimuli	3.24	3.44	2.8	3.36	3.48	3.52
Female Subjects	Male Stimuli	3.88	4.52	3.84	4.6	3.92	4.44
	Female Stimuli	3.2	3.64	3.0	3.52	3.24	2.64

The pattern of categorization scores is quite different when the means for black male stimulus pictures are compared with those of the female stimulus pictures. In the high status condition there is no significant difference between these three means. In the low status condition, however, the mean categorization scores for black male pictures differed significantly from the means for black female pictures. According to Table 3 black male pictures were sorted into 3.84 mean groupings while black female pictures were sorted into 3.0 mean groupings. In the neutral status condition the mean categorization score for black male stimulus pictures differed significantly from the mean categorization score for white female stimulus pictures. Black male pictures were on the average sorted into 3.92 groups while white females were sorted into 2.64 groups.

Male Subjects

(a) Black Male Stimuli - White Male Stimuli Comparisons

The mean categorization scores for black male pictures and white male pictures differed significantly only in the high status condition. The mean categorization score for white male pictures in the high status condition was 4.64 and for black male pictures 3.96. This contrasts with the performance of female subjects who showed significant differences between these scores in the high and low status condition.

(b) Black Female Stimuli - White Female Stimuli Comparisons

The mean categorization scores for black female pictures and white female pictures did not differ significantly

from each other across all status conditions. This was also
true of the categorization scores of female subjects dis-
cussed above.

(c) Male Stimuli - Female Stimuli Comparisons

The mean categorization scores for white male pictures differ-
ed significantly from black female pictures and white female
pictures in the high and low status conditions but not in
the neutral status condition. In the high status condition
white male portraits were sorted into 4.64 mean categories
while white female portraits were sorted into 3.44 categories
and black female portraits into 3.24 categories. In the low
status condition the mean categorization score for white
male portraits was 4.08, for white female portraits 3.36,
and for black female portraits 2.8.

The pattern of categorization for black male stimulus
pictures compared with female stimulus pictures is in part
similar to that for female subjects discussed earlier. Like
these, male subjects showed no significant difference between
the scores of black male, black female, white female pictures
in the high status condition. In the low status condition,
however, the mean categorization scores for black male pictures
differed significantly from the means for black female pictures.
According to Table 3 black male pictures were sorted into
3.64 mean groupings while black female pictures were sorted
into 2.8 mean groupings. There was no significant difference
between the scores for black male, black female, white female
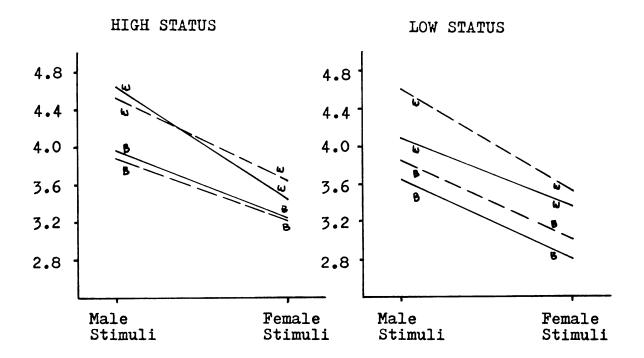pictures in the neutral status condition. This contrasts

with the performance of female subjects who showed a significant difference between black male and white female portraits.

Figure 1 provides a clear picture of this four-way interaction. The differences in scores between black male and white male portraits can be seen in the discrepancies between the plotted points for black male and white male portraits. In the high status condition this discrepancy is similar for male and female subjects. Moreover, it is similar to the differences in plotted scores of black and white male pictures for female subjects in the low and neutral status condition. However, the respective plotted scores for male subjects show a smaller discrepancy in the low and neutral status conditions.

The plotted categorization scores for white male portraits are higher than the plotted scores for female portraits for both male and female subjects across all status conditions, the only exception being the neutral status condition where male subjects show similar scores for all types of portraits.

Comparing the plotted scores of black male and black female portraits Figure 1 shows that male and female subjects responded very similarly to them. In the high status condition their scores are nearly identical. In the low status condition the slopes of the curves plotting categorization scores for black male and black female pictures are identical for male and female subjects, demonstrating a similar discrepancy between these scores and, hence, the significant difference
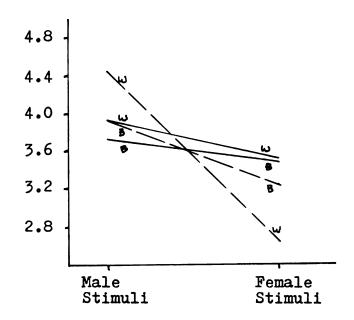
Figure 1 - Mean Categorization Scores of Male and
Female Subjects for Three Status Conditions

between them for both male and female subjects.

The significant difference between the scores for black male portraits and white female portraits of female subjects in the neutral status condition is demonstrated in the large discrepancy between the corresponding plotted points of Figure 1.

The Facial Recognition Task

Two significant main effects were obtained - Sex of Stimulus (F = 61.15, df = 1, p < .001) and Race (F = 153.1, df = 1, p < .001). Higher recognition scores were obtained for female portraits than for male portraits. The mean recognition score for female portraits was 7.03 while the mean recognition score for male portraits was only 6.1. Higher recognition scores were also obtained for white portraits than for black portraits. The mean recognition score for white portraits was 7.2 and for black portraits 6.02.

A significant Sex of Subject x Sex of Stimulus x Race interaction (F = 50.75, df = 1, p < .001) was also obtained. Female subjects recognized white female portraits best while male subjects recognized white male portraits best. The mean recognition scores of Table 4 show that female subjects obtained a mean of 8.29 correct recognitions for white female portraits. This mean differed significantly from the mean recognition score of 6.08 for white male portraits (t = 5.15, df = 35, p = .01), from 5.56 for black male

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Table 4 - Mean Facial Recognition Scores for
Male and Female Subjects

	Male Subjects		Female Subjects	
	Black	White	Black	White
Male Stimuli	5.48	7.65	5.56	6.08
Female Stimuli	6.48	6.76	6.57	8.29

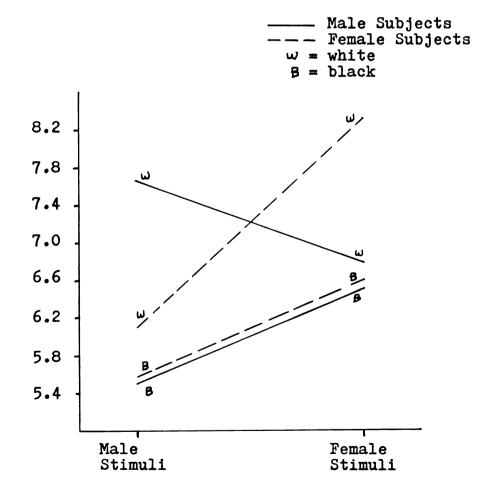——— Male Subjects
— — — Female Subjects
ω = white
β = black

Figure 2 - Mean Facial Recognition Scores for
Male and Female Subjects

portraits (t = 5.79, df = 35, p = .01) and from 6.57 for
black female portraits (t = 3.52, df = 35, p = .01). For
male subjects the mean recognition score for white male
portraits was 7.65. This mean differed significantly from
the mean recognition score of 6.76 for white female portraits
(t = 2.44, df = 35, p = .05), from 6.48 for black female
portraits (t = 2.03, df = 35, p = .05), and from 5.48 for
black male portraits (t = 4.39, df = 35, p = .01).

In addition, male and female subjects responded differ-
ently to those portraits which did not correspond to them
in sex and race. For female subjects the differences between
the three mean recognition scores for white male, black
male, black female portraits were not significant (see
Appendix for tests of significance). Male subjects, by
contrast, recognized white female portraits significantly
better than black male portraits (t = 2.39, df = 35, p = .05).

The plotted means of Figure 2 show a strong Sex of
Subject x Sex of Stimulus interaction, with each group of
subjects recognizing best those portraits that correspond
to its own race and sex. The remaining means are considerably
lower and are closely clustered together. Of these the highest
score is plotted for white female portraits by male subjects.
It will be recalled that this score did differ significantly
from the mean score for black male portraits obtained by
male subjects which is the lowest plotted score in Figure 2.

The Verbal Differentiation Task

Two significant main effects were obtained in this task: Sex of Stimulus ($F = 33.06$, df = 1, $p < .001$) and Race ($F = 84.32$, df = 1, $p < .001$). More adjectives were generated to male portraits than to female portraits. The mean verbal differentiation score for male portraits was 6.7 while the mean differentiation score for female portraits was 5.93. More adjectives were generated for white portraits than for black portraits. The mean verbal differentiation score for white portraits was 6.93. This compares to a mean score of 5.79 for black portraits.

A significant interaction of Sex of Subject x Sex of Stimulus ($F = 4.77$, df = 1, $p = .03$) was obtained. Both male and female subjects generated more adjectives to male portraits than to female portraits. However, female subjects generated more adjectives to female portraits than did male subjects. Table 5 shows male subjects obtaining a mean of 6.4 adjectives for male portraits while female subjects generated on the average 6.85 adjectives to male portraits. Both groups of subjects reacted differently toward female portraits. Male subjects obtained mean scores of 5.49 while the mean number of adjectives for female subjects was 6.38.

Figure 3 shows the slope of male subjects to be steeper, suggesting a greater discrepancy in the number of adjectives generated for male and female stimuli. The slope for female subjects, by contrast, is more level and suggests a smaller discrepancy in the number of adjectives generated for male and female portraits.

Table 5 - Verbal Differentiation Scores for Male and
Female Stimuli of Male and Female Subjects

	Male Subjects	Female Subjects
Male Stimuli	6.4	6.85
Female Stimuli	5.49	6.38

———— Male Subjects
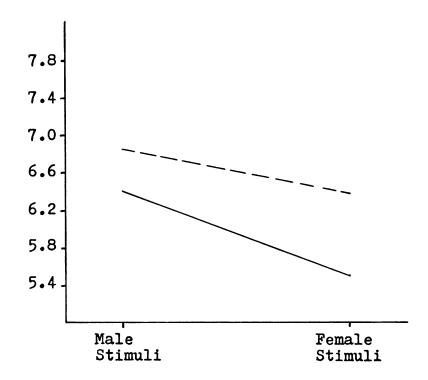— — — Female Subjects

Figure 3 - Verbal Differentiation Scores for Male and
Female Stimuli of Male and Female Subjects

A second interaction of Sex of Stimulus x Race turned out to be highly significant (F = 19.61, df = 1, p < .001). Table 6 shows that nearly the same number of adjectives were generated to black male and black female stimuli - 5.83 for black male portraits and 5.57 for black female portraits. This was not the case for the white portraits. More adjectives were generated for white male portraits ($\bar{X}$ = 7.56) than for white female portraits ($\bar{X}$ = 6.29).

The greater discrepancy in the means for white male and white female portraits is illustrated by Figure 4 which shows a steeper curve for white portraits and a nearly level curve for black portraits.

A third interaction, Sex of Subject x Race, approached significance (F = 3.52, df = 1, p = .06). Table 7 shows that male and female subjects generated nearly the same number of adjectives to black portraits - 5.55 for male subjects and 5.88 for female subjects. The responses of the two groups, however, differed in the descriptions of white portraits. Female subjects generated more adjectives to white portraits than did male subjects, obtaining a mean score of 7.35 as compared to 6.36 for male subjects. The differences in the performance of the two groups of subjects is illustrated in Figure 4 by the differences in the slopes of the curves. The slope is considerably steeper for female subjects.

Table 6 - Verbal Differentiation Scores for White
Male and White Female, Black Male and
Black Female Portraits

	Male Stimuli	Female Stimuli
Black	5.83	5.57
White	7.56	6.29

——— Black
— — — White

Figure 4 - Verbal Differentiation Scores for White Male
and White Female, Black Male and Black Female
Portraits

Table 7 - Verbal Differentiation Scores for Black and
White Stimuli of Male and Female Subjects

	Male Subjects	Female Subjects
Black Stimuli	5.55	5.88
White Stimuli	6.36	7.35

——————— Male Subjects

— — — — Female Subjects

Figure 5 - Verbal Differentiation Scores for Black and
White Stimuli of Male and Female Subjects

The Homogeneity Judgment

None of the variables under consideration produced significant differences in the homogeneity judgments.

DISCUSSION

The results obtained in this study do suggest that individuals representing male and female genders, black and white races, and three socio-economic status conditions are perceived with varying degrees of discreteness.

Hypothesis 1 predicted that male portraits would be perceived more discretely than female portraits. This prediction was confirmed by significant main effects for Sex of Stimulus in the sorting task and the verbal differentiation task. In both tasks male portraits received higher mean scores than did female portraits. However, an interesting reversal of hypothesis 1 occurred in the facial recognition task. The recognition scores for female portraits were higher than for male portraits. This difference in the recognizability of male and female portraits confirms earlier findings of Cross et al. In this study it was also found that attributed beaty of faces contributed significantly to the recognition of faces. It seems reasonable to attribute the differences in recognition of male and female portraits found in this present study to the "beauty" of female portraits. Females as objects of beauty, and hence as objects of considerable ogling, should be recognized more readily.

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Hypothesis 1 is also confirmed, with qualifications, by several interactions. In the sorting task female subjects made more discrete categories of white male portraits than of black female and white female portraits in all status conditions. Male subjects responded similarly but only in the high and low status conditions. Male and female subjects made more discrete categories of black male portraits than of black female portraits in the low status condition. In addition, female subjects made more discrete categories of black male portraits than of white female portraits in the neutral status condition. In the verbal differentiation task more adjectives were generated to white male portraits than to white female portraits by both groups of subjects.

Hypothesis 2 predicted more discrete perceptions of white portraits than of black portraits. This prediction was confirmed by a significant main effect for Race in three tasks. More discrete categories were made of white portraits than of black portraits, white portraits were recognized more frequently than black portraits, more adjectives were generated for white portraits than for black portraits.

Several interactions tended to qualify this hypothesis. In the sorting task male and female subjects made more discrete categories of white male portraits than of black male portraits in the high status condition. Female subjects, in addition, made more discrete categories of white male portraits than of black male portraits in the low status condition. Male and female subjects made more discrete

categories of white male portraits than of black female
portraits across all status conditions except for the
neutral status condition for male subjects.

In the recognition task male subjects received higher
recognition scores for white female portraits than for black
male portraits.

Hypothesis 3 predicted that high status pictures would
be perceived as more discrete than low status pictures. This
hypothesis was not confirmed by any of the tasks. Status,
however, did have an unpredicted effect on the sorting task.
In the two conditions in which status instructions were read
prior to the task itself, distinct differences in mean cate-
gorization scores were obtained for all four groups of
portraits. When these instructions were absent, the differ-
ences in categorization scores became non-significant for
males or modified for female subjects. The clear distinction
in categorization scores between male and female portraits
and between black and white portraits in the high and low
status conditions suggest that the status instructions
served to induce stereotypic perception. They seemed to have
induced dichotomization of the portraits along the dimensions
of sex and race, reflected in the higher scores of male
portraits and white portraits and the lower scores of female
portraits and black portraits. No such dichotomization
was discernible in the neutral status condition. Male subjects
made no significant differences between the four groups of
portraits. Female subjects, to some extent, reversed the

pattern of responses of the high and low status conditions. In the low status condition black male portraits received significantly higher categorization scores than black female portraits. However, in the neutral status condition black male portraits received significantly higher categorization scores than white female portraits. The results suggest that stereotypic perceptions will occur if the circumstances call for them or allow them to occur.

The results of the sorting task may have been affected by a methodological artifact. The status instructions had no effect on any of the other tasks. It will be recalled that the sequence in which these tasks were performed proceeded from the first task, which required subjects to sort the portraits, to the recognition task, the verbal differentiation task and, finally, the homogeneity judgment. The status instructions were read at the beginning of the experiment, just prior to the sorting task, and were not repeated before or during any of the remaining tasks. The status instructions may have had a more dramatic impact on sorting because of this order of presentation. Moreover, each new task engaged the subjects' attention and performance anew and may have served to weaken, if not the memory of the instructions, certainly the relevance of these instructions to the task.

Hypothesis 4 predicted that the different status conditions would affect the performance of white male subjects and the perception of white male stimulus portraits more than the performance of white female subjects or the

perceptions of black or female stimulus portraits. Distinctions in socio-economic status are most applicable to white males who, in fact, occupy most high status positions in government, industry, and the universities. There are, therefore, many white men who, in reality, occupy high status and low status positions. This is not the case for blacks and women who, for the most part, hold unskilled or semi-skilled positions in the labor market. The occasional black man or woman who does hold a high position does not receive the salary or social esteem of her white male counterpart. Women and blacks are not defined by what they do (this places them into one category of unskilled or semi-skilled) but by who they are, by the color of their skin or their gender (this too places them into one category of being black or female). By barring blacks and women from high status, socio-economic status enforces the perception of blacks and of women as being "all alike." None of the results of any of the four tasks provided either direct or indirect evidence for this hypothesis. Status was a significant factor only in the sorting task. However, the performance of the high and low status conditions were nearly identical. Difference in performance was produced by the presence or absence of status instructions. High and low status did not produce different categorization scores for white male portraits. White male pictures were treated in nearly identical fashion in both the high and the low status condition by both male and female subjects.

Hypothesis 5 predicted that female subjects would make more discrete responses to female portraits in comparison to male subjects. The pressures which describe women as "all alike" also tell them that they are, above all, women and mothers. They are forced to relate to each other and, in fact, do develope many relationships to other women but not as readily to other men. The Sex of Subject x Sex of Stimulus interaction of the sorting task confirmed this hypothesis. Female subjects generated more adjectives to female portraits than did male subjects.

The second part of hypothesis 5 predicted that male subjects would make more discrete responses to white portraits than would female subjects. No evidence was found for this hypothesis. Indeed, in one instance the converse occurred - female subjects generated more adjectives to white portraits than did male subjects.

The implications of these results are interesting. With regard to themselves women, in part, reject the definitions of the dominant culture by making more discrete perceptions of female stimuli in comparison to white male subjects. With regard to another oppressed group, notably blacks, women respond in an even more conventional manner than white males. In the verbal differentiation task female subjects generated more adjectives to white portraits than did male subjects.

Several facial recognition studies have attempted to explain the differences in recognition scores obtained for

black and white stimulus pictures by considering the amount
of prior experience subjects had with the opposite race.
Malpass and Kravitz (1969) attempted to measure the degree
of association between prior experience and facial recognition
of black portraits. They administered a questionnaire which
asked about the number of other-race persons of various roles
and occupational categories encountered in the course of an
average week's time, the number of opposite race persons
known by first name, the number of other race persons in the
subject's school classes from elementary to secondary school.
The results showed no relationship between the experience
index and the recognition scores obtained for black faces.

The Cross et al. study attempted to measure the effect
of familiarity on recognition by selecting subjects from
racially integrated neighborhoods and segregated neighbor-
hoods. They found that for black adolescents, racial environ-
ment had no effect on recognition ability. Both integrated
and segregated black adolescents recognized black and white
faces with equal facility. For white subjects, however,
racial segregation or integration was related to recognition
ability. Both integrated and segregated white subjects
recognized more white faces than black faces. The segregated
white adolescents, however, recognized significantly more
white faces than did subjects from racially integrated
neighborhoods.

The Malpass and Cross studies suggest that the effect
of familiarity on facial recognition is inconclusive. The

results obtained in this study suggest that familiarity may
not be a particularly salient factor in the differentiation
of human faces. The differences in responses to male and
female stimulus faces cannot be accounted for by this expla-
nation, since there is a great deal of contact and familiarity
between the two sexes. Rather, the results of this study re-
flect a tendency to perceive members of some groups as more
"unique" than members of others by cognitively and perceptually
differentiating the former to a greater extent than the latter.
Uniqueness, in this study, is defined as the extent to which
individuals perceive themselves and others as a set or class
whose membership extends to only one member, namely the
individual himself or some other person. A class of one
member is established whenever it is demonstrated that any
entity X has property "f" and that there is no other entity
which has property "f." Conversely, any entity X is anonymous
if it has property "f" and every other entity has property
"f." This study is not a direct demonstration of uniqueness
since the various properties "f," such as race, sex, status,
are held in common by large groups of people rather than
individuals as the definition of uniqueness would require.
This study does, however, demonstrate that property "f,"
when held in common by a group, is associated with increased
discreteness in the perception of that group. For example, the
property of belonging to the male gender or to the white race
is associated with more discrete categorizations of these
portraits in the sorting task. The discreteness in

categorization, verbal differentiation, and facial recognition demonstrates a tendency for exclusivity in the perception of some stimulus persons (who have property "f," such as being white or male) and anonimity of others (who do not have property "f" but are black and female).

CONCLUSION

The purpose of this study was to examine the discreteness
in the perceptions of human faces represented by male and
female, black and white portraits under three status con-
ditions: high, low, neutral. Four tasks were devised to test
for differentiation in the responses to the four groups of
stimulus portraits: the sorting task, the facial recognition
task, the verbal differentiation task, and the homogeneity
judgment. These tasks were administered to white male and
white female subjects. The following significant results
were found:

(1) Male portraits were perceived more discretely than female
portraits in the sorting and verbal differentiation tasks.

(2) Female portraits were perceived more discretely than
male portraits in the facial recognition task.

(3) More discrete responses were made to white portraits than
to black portraits. This was demonstrated in a significant
main effect in three tasks - the sorting task, the facial
recognition task and the homogeneity judgment.

(4) The presence of status instructions induced stereotypic
perception in the sorting task in the high and low status
conditions but not in the neutral status condition. In the
high and low status conditions white and male portraits were
perceived more discretely than were black and female portraits.

These dichotomizations along the dimensions of sex and race did not hold up in the neutral status condition.

(5) Female subjects made more discrete responses to female stimuli than did male subjects in the sorting task.

(6) Female subjects made more discrete responses to white stimuli than did male subjects in the sorting task.

APPENDIX

Means and Standard Deviations of the Sorting Task

			High Status		Low Status		Neutral Status	
			Black	White	Black	White	Black	White
Male Subjects	Male Stimuli	X̄ =	3.96	4.64	3.64	4.08	3.72	3.92
		σ =	.61	.7	.64	.81	.89	.64
	Female Stimuli		3.24	3.44	2.8	3.36	3.48	3.52
			.72	.96	.65	.49	1.01	.71
Female Subjects	Male Stimuli		3.88	4.52	3.84	4.6	3.92	4.44
			.83	.65	.69	.65	.81	.77
	Female Stimuli		3.2	3.64	3.0	3.52	3.24	2.64
			.71	.76	.91	.71	.93	.91

Means and Standard Deviations of the Facial Recognition Task

			High Status		Low Status		Neutral Status	
			Black	White	Black	White	Black	White
Male Subjects	Male Stimuli	$\bar{X}$ =	5.44	7.92	5.6	7.76	5.4	7.28
		σ =	1.53	1.53	1.29	1.33	1.89	1.43
	Female Stimuli		6.64	7.08	6.6	6.76	6.2	6.44
			1.85	1.94	2.02	1.76	1.47	1.36
Female Subjects	Male Stimuli		5.16	5.92	5.76	6.16	5.76	6.16
			1.75	1.26	1.48	1.11	1.3	1.37
	Female Stimuli		6.64	8.36	6.64	8.28	6.44	8.24
			1.5	1.41	1.38	1.4	1.81	1.39

Means and Standard Deviations of the Verbal Differentiation Task

		High Status		Low Status		Neutral Status	
		Black	White	Black	White	Black	White
Male Subjects	Male Stimuli $\bar{X}$ =	5.76	6.80	5.48	7.0	6.08	8.12
	σ =	2.42	3.28	2.29	2.26	2.63	3.1
	Female Stimuli	5.08	5.08	4.92	4.96	5.84	7.04
		2.3	2.57	2.04	1.79	2.27	2.56
Female Subjects	Male Stimuli	6.08	7.96	6.0	8.44	5.6	7.04
		2.66	2.88	2.57	3.74	2.38	3.03
	Female Stimuli	5.76	7.04	6.0	7.32	5.84	6.32
		2.3	2.57	2.48	3.05	2.56	3.1

Means and Standard Deviations of the Homogeneity Judgment

		High Status		Low Status		Neutral Status	
		Black	White	Black	White	Black	White
Male Subjects	Male Stimuli	X̄ = 2.96	3.24	3.24	3.44	3.24	3.2
		σ = 1.1	1.01	.93	.96	.97	.96
	Female Stimuli	3.08	3.48	2.88	3.2	3.2	3.2
		.81	1.1	.88	.76	1.04	.82
Female Subjects	Male Stimuli	2.96	2.96	3.16	2.88	2.88	3.0
		.93	1.1	.94	.88	1.09	1.23
	Female Stimuli	3.08	3.4	3.12	2.96	3.12	2.84
		.95	1.08	1.01	1.02	1.01	.9

Analysis of Variance Results for the Sorting Task

Source of Variance	df	F	p
Between Subjects			
A (Sex of Subject)	1	.41	.52
B (Status)	2	2.76	.07
A x B	2	1.79	.17
Within Subjects			
C (Sex of Stimuli)	1	211.68	<.001
AC	1	7.05	.01
BC	2	.27	.76
ABC	2	7.86	<.001
D (Race)	1	42.41	<.001
AD	1	.06	.81
BD	2	8.58	<.001
ABD	2	.7	.5
CD	1	13.42	<.001
ACD	1	3.35	.07
BCD	2	3.13	.05
ABCD	2	3.58	.03

Analysis of Variance Results for the Facial Recognition Task

Source of Variance	df	F	p
Between Subjects			
A (Sex of Subject)	1	.03	.85
B (Status)	2	.49	.61
A x B	2	.87	.42
Within Subjects			
C (Sex of Stimuli)	1	61.15	<.001
AC	1	53.58	<.001
BC	2	1.27	.28
ABC	2	.28	.75
D (Race)	1	153.10	<.001
AD	1	.32	.57
BD	2	.87	.42
ABD	2	.16	.85
CD	1	2.55	.11
ACD	1	50.75	<.001
BCD	2	.32	.73
ABCD	2	.03	.97

Analysis of Variance Results for the Verbal
Differentiation Task

Source of Variance	df	F	p
Between Subjects			
A (Sex of Subject)	1	2.63	.11
B (Status)	2	.22	.80
A x B	2	2.55	.08
Within Subjects			
C (Sex of Stimuli)	1	33.06	<.001
AC	1	4.77	.03
BC	2	1.39	.25
ABC	2	.12	.89
D (Race)	1	84.32	<.001
AD	1	3.52	.06
BD	2	.43	.65
ABD	2	4.74	.01 (overall F was not significant for A x B)
CD	1	19.61	<.001
ACD	1	.25	.62
BCD	2	.43	.65
ABCD	2	.15	.86

Analysis of Variance Results for the Homogeneity Judgment

Source of Variance	df	F	p
Between Subjects			
A (Sex of Subject)	1	3.80	.05 (overall F was not significant)
B (Status)	2	.17	.85
A x B	2	.29	.75
Within Subjects			
C (Sex of Stimuli)	1	.2	.65
AC	1	1.16	.28
BC	2	2.1	.13
ABC	2	.3	.74
D (Race)	1	.7	.4
AD	1	1.88	.17
BD	2	1.1	.34
ABD	2	.51	.6
CD	1	.14	.71
ACD	1	.08	.78
BCD	2	.69	.5
ABCD	2	.43	.65

Tests of Significance for the Recognition Task

T-tests were performed on all of the means pooled across
status conditions:

Male Subjects

(a) White male stimuli - white female stimuli comparisons

t = 2.44, df = 35, p = .05

(b) White male stimuli - black female stimuli comparisons

t = 2.03, df = 35, p = .05

(c) White male stimuli - black male stimuli comparisons

t = 4.39, df = 35, p = .01

(d) White female stimuli - black female stimuli comparison

t = .16, df = 35, p is not significant

(e) White female stimuli - black male stimuli comparison

t = 2.39, df = 35, p = .05

(f) Black male stimuli - black female stimuli comparison

t = 1.36, df = 35, p is not significant

Female Subjects

(a) White male stimuli - white female stimuli comparison

t = 5.15, df = 35, p = .01

(b) White male stimuli - black female stimuli comparison

t = 1.04, df = 35, p is not significant

(c) White male stimuli - black male stimuli comparison

t = .27, df = 35, p is not significant

(b) White female stimuli - black female stimuli comparison

t = 3.52, df = 35, p = .01

(e) White female stimuli - black male stimuli comparison

t = 5.79, df = 35, p = .01

(f) Black male stimuli - black female stimuli comparison

t = 2.0, df = 35, p is not significant.

Introductory Experimental Instructions

The purpose of this experiment is to explore how left-handed and right-handed persons perceive human faces. The envelope in front of you contains various photographs. You will be asked to do several things with them. Before we start, fill out the first page of the answer booklet.

Instructions for the Sorting Task

Take the small envelopes out of the large envelope.
Each envelope contains several portraits. Working with one
envelope at one time, sort the photographs in the envelope
into groups of faces that resemble each other. For this task
a face is defined as extending from the tip of the chin to
the base of the hairline and reaching from ear to ear. A
group is defined as a class of at least two entities. A
class of one entity is not a group. Keeping these definitions
in mind, you can form from 1 to 5 groups of portraits that
share facial resemblances. Record the portraits in each
group by recording the number on the back of each picture.
Use a separate line for each grouping. You have 3 minutes
for each envelope. When finished, gather up the portraits,
shuffle them, and return them into the same envelope in
which you have found them. Wait till the 3 minutes are up.
Pick up envelope #_____, empty its contents, and begin.

Instructions for the Recognition Task

Slip the large arrays out of the envelope face down. Leave these face down untill instructed to turn them over. Work with one array at a time. Inspect the portraits on the array and record those you recognize by recording the letters and numbers of the corresponding row and column. For example, one of your choices might be A 1. It is the upper picture on the left side. Since you have seen 10 of these photographs before, make 10 choices. Guess if you cannot recall all of them. You have 3 minutes for each array. Should you finish early, wait till the 3 minutes are up. Turn the top array over and begin.

At the end of the last 3-minute segment subjects were instructed: "Shuffle the four arrays and return them to the large envelope."

Instructions for the Verbal Differentiation Task

This task and the following one require you to make overall judgments of the portraits in each of the small envelopes. Moreover, you will have to make these judgments largely from memory.

In the present task open one envelope and look inside to see the top portrait. Close the envelope. Recall the remaining members of this envelope and form an impression of the personality characteristics of the entire group. On the answer sheet write down adjectives that describe their personality attributes. Do not write an essay, paragraph, sentence, or even a phrase; only adjectives. These can be hyphenated and can include popular expressions. You have 3 minutes for each envelope. When finished do not go on to the next envelope but wait till the 3 minutes are up. Pick up envelope #_____, take a look inside of it, and begin.

Instructions for the Homogeneity Judgment

The small envelopes are required for this task. Open
one envelope and take a look inside to see the top portrait.
Close the envelope. Recall the remaining members of this
envelope and make a judgment of the degree of resemblance
of the entire group of portraits. Make your judgment on a
scale from 1 to 5, with 1 representing little resemblance
and 5 high resemblance. Circle the number on the scale
which corresponds to your judgment. Since this does not
require 3 minutes, you will not be timed. Working rapidly,
proceed to the remaining envelopes.

<u>Answer</u> <u>Sheet</u> <u>for</u> <u>the</u> <u>Biographical</u> <u>Information</u>
<u>on</u> <u>Handedness</u>

Check if you are Male_____

     Female_____

Check if you are left-handed_____

    right-handed_____

Check if your <u>mother</u> is left-handed_____

      right-handed_____

Check if your <u>father</u> is left-handed_____

      right-handed_____

Number of <u>brothers</u> who are left-handed_____

       right-handed_____

Number of <u>sisters</u> who are left-handed_____

       right-handed_____

Answer Sheet for the Sorting Task

Envelope 1

Group 1_____Group 4_____

Group 2_____Group 5_____

Group 3_____

Envelope 2

Group 1_____Group 4_____

Group 2_____Group 5_____

Group 3_____

Envelope 3

Group 1_____Group 4_____

Group 2_____Group 5_____

Group 3_____

Envelope 4

Group 1_____Group 4_____

Group 2_____Group 5_____

Group 3_____

Answer Sheet for the Recognition Task

Array I _____

_____

Array II _____

_____

Array III _____

_____

Array IV _____

_____

Answer Sheet for the Verbal Differentiation Task

The answer sheets for the verbal differentiation task consisted of four blank pages, with one page to be used for one envelope. Subjects were asked to label these pages by indicating the number of the envelope they were working with.

Answer Sheet for the Homogeneity Judgment

	Little Resemblance				High Resemblance
Envelope 1:	1	2	3	4	5
Envelope 2:	1	2	3	4	5
Envelope 3:	1	2	3	4	5
Envelope 4:	1	2	3	4	5

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