

AD 666455

STUDIES OF ATTITUDE
AND
ATTITUDE MEASUREMENT
FINAL AFOSR TECHNICAL REPORT

AF Grant No. 436-66

STUDIES OF ATTITUDE AND ATTITUDE MEASUREMENT

Final Technical Report

March 1, 1968

Stuart W. Cook

**Attitude Research
Institute of Behavioral Science
University of Colorado**

TABLE OF CONTENTS
STUDIES OF ATTITUDE AND ATTITUDE MEASUREMENT

CHAPTER		PAGE
1	Measures Based Upon Overt Behavior Toward the Attitudinal Object	1-1
	A. Photograph Release Test	
	B. Person Reaction Test	
2	Measures Based Upon Interpretation of and Reactions to Incomplete or Ambiguous Stimuli	2-1
	A. Interpretation of Incomplete Scenes	
	B. Sentence Completion	
	C. Informational Estimates	
	D. Inferential Ability	
3	Measures Based on Adequacy of Task Performance	3-1
	A. Differential Memory	
	B. Differential Picture Recall	
4	Measures Based Upon Judgments of Attitudinally Relevant Materials	4-1
	A. Judgments of Favorableness of Statements	
	B. Judgments of Plausibility of Arguments	
	C. Evaluations of Persons	
	D. Prediction of Effectiveness of Programs for Negro Progress	
5	Measures Based on Choice of Classificatory Principles	5-1
	A. Verbal Clustering	
	B. Picture Classification	
6	Measures Based Upon Perceptual Responses	6-1
	A. Binocular Rivalry	
	B. Dichotic Listening	
7	Measures Based Upon Involuntary Physiological Responses	7-1
	A. Pupillary Change	
	B. Semantic Generalization of Conditioned Autonomic Responses	

TABLE OF CONTENTS (Continued)

CHAPTER		PAGE
8	Measures Based on Verbal Self-Reports	8-1
	A. Multifactor Racial Attitude Inventory	
	B. Susceptibility of Multifactor Racial Attitude Inventory to Faking	
	C. Empathic Reactions	
	D. Reactions to Discriminatory Practices	
	E. Derogatory Beliefs	
	F. Pro-Negro Generalizations	
	G. Interviews	
	H. Differential Social Distance	
	I. Forced-Choice Inventory	
9	References	9-1
10	Publications	10-1

STUDIES OF ATTITUDE AND ATTITUDE MEASUREMENT

Brief Summary of Work Accomplished and in Progress

The goal of the project is to make a systematic and comprehensive study of the effect of an attitude upon a variety of responses. Depending upon the outcome of this work, certain responses will be chosen as indicators of attitude. These responses will be utilized as bases for the construction of attitude measures.

Many of these measures will be based upon indicators which do not involve introspection or self-description on the part of the subject. For this reason they should be free of some of the disadvantages characteristic of self-report questionnaires and interviews; among these disadvantages are tendencies of the subjects to answer in terms which they believe to be acceptable or expected. Hence, the end result could be said to be the development of a set of standardized measuring instruments which can provide a clear basis for inference about attitude and in which the effects of probable response determinants other than attitude are minimized or systematically controlled.

The responses being studied and the measures being developed are classified in terms of the nature of the evidence they provide and the nature of the inferences drawn from response to attitude direction and strength. Eight categories of potential measures are being explored:

1. Overt behavior toward the attitudinal object.
2. Interpretation of and reactions to incomplete or ambiguous stimuli.
3. Adequacy of task performance.
4. Judgments of attitudinally relevant materials and persons.
5. Choice of classificatory principles.
6. Perceptual responses.
7. Involuntary physiological responses.
8. Verbal self-reports.

The work being carried out in each of these categories is described briefly below. This summary is intended as a diagrammatic overview. More detail on the findings of much of the work is given in reports which have been published or are available in mimeographed form.

1. Measures Based Upon Overt Behavior Toward the Attitudinal Object

Here we are exploring conditions under which inferences may be drawn from reactions to representatives of an object-class (i.e., Negroes) to specific and concrete instances of anticipated relationships with representatives of the object-class. In this case the inference is direct. Where the experimental procedure makes it possible to divorce the reactions to attitudinally relevant stimuli from those to other determinants, a simple correspondence between attitude and reaction is assumed, (i.e., friendly reaction indicates favorable attitude).

Outline

- A. Photograph Release Test
- B. Person Reaction Test

A. The Photograph Release Test

a. Background

This test is essentially a situation (devised by DeFleur and Westie, 1958) in which the subject is asked to pose for photographs with members of the social group which is the object of the attitude. The object of this technique is to obtain a graded set of responses to a specific and concrete instance of anticipated public association with Negroes. As DeFleur and Westie used it, white subjects viewed a number of color slides showing a young Negro man and a young white woman, or a young white man and a young Negro woman, in a social setting. Subjects described the pictures and answered specific questions about them. At the close of the interview following this session, subjects were told that another set of such slides was needed for further research, were asked if they would be willing to be photographed with a Negro of the opposite sex and then were given "a standard photograph release agreement," containing a variety of uses to which such a photograph would be put. These ranged from laboratory experiments where it would be seen only by scientists to a nationwide publicity campaign advocating racial integration. The subject was asked to sign his name to each use of the photograph which he would permit. DeFleur and Westie report that subjects "uniformly perceived the behavioral situation posed for them as a highly realistic request."

bb. Purpose

The purpose of our work has been to develop a behavioral measure of attitude which would appear more realistic than the situation used by DeFleur and Westie. We also wished to control for the other influences which might determine the behavior of the subject in the situation (e.g., interest in modeling as a determinant of willingness to pose for interracial photographs).

The situation chosen is that of posing for photographs for use in textbooks to be published in the near future. The subject receives a letter on the stationery of the Unified College Press stating that a local representative had been hired to locate people who might be included in such photographs. The subject is asked whether he would like to report for a paid interview where the details of the situation would be explained to him. After having received the letter, he is called on the telephone to arrange for the interview.

A textbook published by the Unified College Press is shown to the subject. He is then shown a series of scenes or is read a description of such scenes. For each he is asked to indicate his interest in posing in the role of a designated person in the scene, and if interested, he is asked to sign a "release" which would free the publisher to use the photograph

for a designated purpose. An explanation is given which limits the subject to accepting no more than half the pictures. Another explanation leads the subject to sort the accepted pictures into preferred and non-preferred groups.

c. Pilot Study A

Development of Materials. Half of the sketches shown to the subject involved only white persons, the other half were interracial. The characteristics of the all-white and interracial situations were chosen in order to make pairs of pictures as similar as possible except for their racial composition. The scenes varied along six steps in the intimacy and status relationship pictured between the participants. Pretests had shown that the type of scene in which the subject was to be photographed in a friendly relationship with a Negro person of the opposite sex gave the highest proportion of rejections.

An additional dimension was added by asking the subject to indicate his willingness to allow each picture for which he posed to be used in a specific way. The ways varied from a textbook to be published only in a foreign language and sent to another country, to a Life magazine story to be based upon the preparation of such textbooks. It was assumed that the subject imagined that few people would see the photograph published in the first case and that many, including his family and close friends, would see the photograph in the magazine story.

Data Collection. After the scenes had been pretested, a number were revised and a standardized procedure for administration was adopted. A preliminary study was then conducted in which the subjects were ten extremely anti-Negro engineering students and ten very equalitarian engineering students. These subjects were selected from a group of 311 students constituting an entire engineering freshman class. In the course of the test 48 photograph releases were considered by the subject, and he could sign as many as half of this number. A difference score was derived which reflected the number of interracial scenes rejected minus the number of all-white scenes rejected.

Data Analysis. The results obtained in this preliminary study showed a strong and significant relationship between the tendency to reject posing for interracial photographs and racial attitude as determined by a self-report attitude inventory. There was relatively little overlap among the two groups of ten subjects each. Further analysis revealed the fact that there were no differences between groups in the choice of interracial and all-white scenes (1) at the least intimate level of relationship pictured and (2) when the photograph was to be used for the textbook to be published in a foreign language for use overseas. Moreover, while the other three types of use specified for the

photographs all resulted in significant differences between prejudiced and unprejudiced subjects, we did not find the step-wise increase associated with the type of use which DeFleur and Westie postulated. Because it was desirable to shorten the test, we followed the leads indicated above, eliminating the less discriminating type of scene and type of use.

d. Pilot Study B

Data Collection. A pilot study was conducted to examine the relationship between photograph release scores and racial attitude under conditions of group administration. A heterogeneous group of college-age girls served as subjects. Following the completion of the photograph release procedure these girls completed a self-report attitude inventory (Multifactor Racial Attitude Inventory) under anonymous conditions.

Data Analysis and Results. A significant correlation was obtained between photograph release scores and the attitude inventory scores with the more anti-Negro subjects rejecting a higher proportion of interracial scenes than all-white scenes.

e. Pilot Study C

Data Collection. A third pilot study was conducted to examine the feasibility of using the group form of the test with an organized group and with a college class, these being the two types of groups used in the final validation studies. A college sorority served as an example of the organized group, and a race relations class as an example of the college class.

Data Analysis and Results. In both cases the group administration procedure was carried out satisfactorily. The activity of signing the photograph release statements was regarded by all subjects, either as individuals or in groups, as highly realistic. No subject questioned the reality of the situation in the course of these pilot studies.

A finding of incidental interest arose from the fact that among the 12 female subjects recruited from the college class three were from the South and nine from the North. Examination of the results of the three Southerners showed a marked difference in the pattern of scenes they chose to take part in, i.e., they rejected considerably more of the interracial scenes in favor of all white ones.

f. Study D

This study was carried out as a Ph.D. dissertation. It included an examination of the effect upon choice of scenes of (1) the subject's attitude, (2) the degree of intimacy of the relationship pictured in the photograph, and (3) the type of audience the

textbook was to have. In addition it manipulated the socio-economic-educational characteristics of a Negro associate of the publisher's agent. In one treatment the Negro dressed and acted as a slovenly person with uncultured manners, while in the other he was presented as a typical, middle-class, college student. It was anticipated that the way the Negro associate looked would set up in the subjects an expectation that this same type of Negro might take part also in the photographs in which the subject was later to pose.

Data Collection. Two groups of 22 subjects each are being compared. One of these was relatively anti-Negro, falling within 1.5 to .5 standard deviations below the mean of a University of Colorado sample on the Multifactor Racial Attitude Inventory. The other was relatively equalitarian with scores on the MPAI ranging from .5 to 1.5 standard deviations above the sample mean. The subjects were recruited from college classes and received the Photo Release test in small groups of variable size. The experimenter served as the agent for the publishing company and carried out the procedure of showing the scenes to be photographed and obtaining the preferences of the subjects for scenes in which they would agree to participate. Attitudes of subjects were determined through classroom testing carried out by a second experimenter at a later date. The attitude inventory was administered as a part of a battery of other measures.

Data Analysis and Results. The two groups of subjects differing in attitude differed in their selection of scenes in which to participate. The moderately anti-Negro subjects rejected a significantly larger proportion of interracial scenes ($p < .01$). On a scoring procedure which ranged from -1 (all white and no interracial scenes) to +1 (all interracial and no white scenes) the mean of the moderately favorable group was .00 (an equal number of both types of scenes) while that of the moderately anti-Negro group was -.25. For the 44 subjects taken together the correlation between attitude test scores and Photo Release scores is $r = .43$ ($p < .05$), with those having more anti-Negro attitude scores rejecting more interracial pictures.

In addition to the finding that attitude was related to the selection of scenes in which to pose the results showed, as expected, that for the total group of subjects the frequency of rejecting interracial scenes increased as the intimacy of the relationship pictured in the scene increased. It was also discovered that the variable of intimacy interacted with the extent of anticipated disapproval (as indicated by the type of audience the textbook was to have). As the audience became more and more likely to include the subjects' friends and family the intimacy of the relationship in the photograph had a greater and greater effect in producing rejection of interracial scenes.

8. Work Proposed

The work with the Photo Release test has come to a point where it is technically feasible to carry out a final validation study.

This study will follow the method used in prior validation studies in this program. The test will be administered to groups of known racial attitude, ranging from pro-civil rights groups on the equalitarian end of the dimension to organized groups who oppose desegregation on the anti-Negro end of the dimension. The Photo Release test will be administered in group sessions. As has been customary in other studies the work will be replicated in at least two regional areas--one area in the South and one in the North.

B. Person Reaction Test

a. Background

For some years individuals studying social attitudes have recognized the need for a measure of direct reaction to the attitudinal object (e.g., a representative of a disliked social group). Such a measure is needed to supplement the usual measures which involve the respondent's reactions to a symbol representing the attitudinal object, such as a name, picture, group label, etc.

A desired characteristic of such a performance measure, in addition to the presence of a member of the attitudinal object group, is that it makes use of a "natural" rather than an experimental setting. The experimental setting invokes in most research subjects a sensitivity to the presumed values and expectations of the experimenter or the institution of which the experimenter is a member. In the case of college student subjects, it is likely that this experimental caution would modify the behavior the subject would otherwise show and mask the expected relationship between his attitude and his performance.

On the other hand, the situation chosen must be under the control of the experimenter if a standardized stimulus situation is to be presented. Moreover, the situation must be relatively simple if it is to be usable by other experimenters. For this reason compromise between the "natural" and controllable features of the test setting must be made.

b. Purpose

When working through this dilemma some years ago, I became convinced that the situation which came nearest to meeting these various requirements was that of a waiting room. The research subject can be given a purpose for his presence, that is, the job or interview or experiment waiting for him in another nearby room. If this purpose is sufficiently familiar and meaningful, the subject will have no need to question the incidental fact of his presence in the waiting room. With this as a starting point it is possible to introduce into the waiting room a variety of controlled interventions. As indicated above, one of these is the presence of a representative of the disliked social group toward which the attitude under study is held. Another is the presence of experimental confederates through whom "guided conversations" may be introduced to inform

the subject of the characteristics of the representative of the disliked group, of the opinions of the confederates, etc. Various choices may be presented to the subject under these circumstances from within the waiting room (e.g., choice of seat, acceptance of food handled by the disliked individual, etc.). Others may be presented outside the waiting room (e.g., choice of one of two or more persons in the waiting room as experimental partners, coworkers, coffee break associates, etc.).

Rokeach and his associates have been working along lines similar to those described. In a recent issue of Science, Rokeach has described three studies, two involving choice of coffee break partners and a third involving willingness to work with persons selected from the experimental confederates encountered in the waiting room. In these studies, Rokeach has shown the practicability of the waiting room as a means of introducing control of experimental variables of which the research subject is unaware.

c. Pilot Study A

Data Collection. Subjects were identified in terms of a self-report attitude scale (Multifactor Racial Attitude Inventory) administered as part of a test battery in a dormitory setting. From this pool three groups of subjects were chosen, one extremely anti-Negro, one highly equalitarian and one intermediate, i.e., located close to the mean of the college student population. These students were invited individually some weeks later by a second experimenter to participate in an ESP experiment. They were paid but in addition were put under strong social pressure to appear in order to round out the requirements of a "random sample" of the student body. When they appeared for the ESP experiment they were required to wait in an adjoining waiting room equipped for one-way observation and sound recording. Waiting with the subject were two experimental confederates, one white and one Negro.

In this pilot study we explored the utility of three classes of measures. The first were the choices by the subject. Seats were arranged so that the subjects who entered the waiting room last could elect to sit either by the Negro confederate, by the white confederate, or between them. Following a period of activity in the waiting room, a second choice was made by the subject, this time of a person to participate with him as a "transmitter" in the ESP experiment. (I shall not take the time to describe all of the experimental arrangements which make these and subsequent activities believable to the subject.)

A second class of measures explored were the subject's behavior in the waiting room in relation to the two confederates: such things as the time he spent in speaking to one rather than the other, the number of questions he asked of one rather than the other, etc. In order to induce behavior of this sort the confederates were trained to conduct "guided conversations" on specified topics; these conversations draw the subject into verbal interaction with the confederates.

The third class of measures explored had to do with the affective reactions of the subject to certain information introduced into the conversations by the Negro confederate about himself. This information was chosen so as to deviate from the characteristic expectations of anti-Negro persons. It involved representing the Negro as having a father with a Ph.D., as being embarrassed at civil rights demonstrations, as being a poor dancer, etc.

Data Analysis and Results. In general, the pilot study was successful in demonstrating the general feasibility of this experimental setting. The subjects engaged in natural conversations with the experimental confederate and made the choices posed to them without questioning the natural quality of the experience. The results with respect to choice of partner are entirely consistent with predictions from attitude. Seat choice, however, did not follow the expected pattern. Similarly, the interaction with the two confederates showed no relationship to attitude nor was it possible to determine by observation any difference in the affective reactions (as judged by comments and facial expressions) to the stereotype-discrepant information introduced by the Negro confederate.

d. Pilot Study B

A second pilot study was carried out in the 1965-66 academic year. A diagnosis was made that the Negro confederate's presence in the waiting room inhibited the attitude-related behavior of the anti-Negro subjects in the first pilot study. From this we inferred that if we could remove the Negro confederate at a certain point in time and have the white confederate probe the subject, the expected antagonistic behavior would show itself. We repeated the study with this and several other minor modifications.

Data Collection. Subjects were identified and recruited as described for the first pilot study. Again the ESP experiment was used as the explanation for the subject's presence. The seat choice and partner choice items were retained and a food acceptance or rejection choice was added. The effort to observe affective reactions was continued as was the observation of differential interaction with the two confederates. The nature of the ESP experiment was changed in such a way as to make it reasonable to withdraw the Negro confederate after an initial period of three-way interaction among the subject and the two confederates. When the white confederate was alone with the subject, he used the "guided conversation" approach to introduce standardized probes regarding the subject's reaction to the stereotype-discrepant information introduced by the Negro confederate prior to his departure.

Data Analysis and Results. The findings fully support the diagnosis on which the major modification in procedure was made. With the Negro confederate absent the different types of subjects do, in fact, show markedly different behavior. As expected, the anti-Negro subjects doubt, or give derogatory explanations for, the information which the Negro confederate introduced, whereas the

equalitarian subjects accept, and give equalitarian explanations for, this information. As in the first pilot study there appears to be little observable difference in the behavior of the different types of subjects when the Negro confederate is present. Partner choice is less highly related to attitude than had been the case in the first pilot study; the reason for this is a heavy overchoice of the Negro confederate not only by the equalitarian subjects but by the anti-Negro subjects as well. We have reason to believe that this was a consequence of the programmed interviewing and probing behavior of the white confederate which had the effect of making her appear to talk about the Negro confederate behind her back. It should not be difficult to correct this impression in redoing the experiment. Acceptance or rejection of food offered by the Negro confederate was unrelated to attitude. As was the case in the first pilot study, seat choice is significantly related to attitude but in the direction opposite to prediction, i.e., anti-Negro subjects more frequently choose from three available seats the one near the Negro confederate. While we do not, as yet, understand this behavior, it has turned out to be consistent enough to warrant further study.

e. Pilot Study C

A third pilot study was carried out in the academic year 1966-67. One major change, having to do with the timing of the partner choice, was made in the experimental procedure. We considered it possible that the overchoice of the Negro confederate in the earlier pilot studies had been due to the subject's favorable contacts with the Negro confederate during the waiting room conversation and perhaps to some of the behavior required of the white confederate in that conversation. In order to eliminate this possibility the experimental procedure was changed in such a way that the partner choice was made soon after the subject and the two confederates gathered in the waiting room and before any conversation other than greeting took place. Two other changes of lesser significance were also made. First, in view of our consistent failure to obtain anything of significance from our observations of the subject's interaction in the waiting room with the two confederates, all observational measures were eliminated. Second, changes were made in the content of two of the four topics discussed by the confederates with the subject. In the earlier pilot studies the Negro had always made comments which were contrary to the stereotype held by anti-Negro individuals. In the current study this was continued for two topics (the Negro having a father with a Ph.D., and the Negro being engaged to a white person). For the other two topics, however, the Negro's remarks were congruent with the expectations of an anti-Negro individual (the Negro spoke favorably of spending money on luxury items and blamed her personal difficulties on racial discrimination).

Data Collection. The subjects were female undergraduates. Most were freshmen or sophomores. All had taken the Multifactor Racial Attitude Inventory several months before the study. They

were recruited for this experiment by someone who had had no connection with the earlier attitude testing. Fifteen of the subjects were selected from the equalitarian end of the distribution of persons tested and 15 from the anti-Negro end of this distribution.

The subject had an opportunity to make two choices between the white and Negro confederates: one of these was the choice of a seat beside one of the two; the other was choice of one of the two as a partner in the ESP experiment. In addition the subject was offered four opportunities to respond to the Negro confederate in either reserved or friendly terms: (1) acceptance of an offer of mint candy from an already opened bag, (2) touching the Negro's ring hand when the ring was proffered for examination, (3) touching the Negro's wallet containing her fiance's picture when it was extended toward the subject, (4) picking up the Negro's scarf when she dropped it. Each of these six events was scored by the experimenter in terms of either Negro-white preferences or acceptance-rejection. Each was analyzed separately.

The subject's remarks in the "guided conversation" with the white confederate were tape-recorded and scored by coders on a five-point continuum from very favorable toward Negroes to very unfavorable. The four conversational topics were analyzed separately as well as in terms of a total score based on all four.

Data Analysis and Results. In both the seat choice and the partner choice the Negro confederate was overchosen by a 2-1 margin. Partly as a consequence of this, no difference between the two attitudinal groups was obtained. On three of the other four items (acceptance of candy, touching the ring hand, and picking up the Negro's scarf) very few of the subjects showed the acceptance reaction. Again no differences between groups were observed. A significant difference did develop in frequency of touching the wallet containing the fiance's picture. One of the 15 anti-Negro subjects did this while seven of 15 equalitarian subjects did so.

The results from the subject's conversation with the white confederate fully confirmed the findings of the second pilot study, i.e., the two attitudinal subgroups differed significantly in the expected direction on all four topics.

f. Study of Student's Expectations Regarding Racial Attitudes of Strangers in a College Setting

The 2-1 overchoice of the Negro confederate in the third pilot study (as in the second) raises the possibility that our assumption about the ambiguous and unstructured character of the waiting room situation might be in error. We decided that we should determine whether students comparable in attitudes to those with whom we were working viewed a university waiting room as a place in which they could act and speak without inhibition.

Accordingly in the summer of 1967 we gave the MRAI and a questionnaire regarding expectations of others to an additional 102 students. Other questionnaires were used as buffer instruments.

The subjects were asked to imagine themselves in a waiting room at the University of Colorado where they might meet other students also waiting. They were then asked to tell whether they thought those other persons would be favorable, unfavorable, or ambivalent toward Negroes and racial integration. This question was followed by one which asked whether the subjects would speak openly about their views in the presence of people in the waiting room or conceal their opinions. Sixty of the 101 subjects who completed the questionnaire would expect to encounter other people with opinions favorable to Negroes and integration; 35 would expect to encounter other people with ambivalent opinions regarding Negroes; and only six would expect to find other people with opinions unfavorable to Negroes. Seventy-nine of the subjects said they would speak openly about their opinions and 22 said they would conceal their opinions.

The responses of subjects whose MRAI scores were within the same range as the scores of those subjects who took part in the Person Reaction test were examined for purposes of comparison. The low-equalitarian (anti-Negro) subjects in the Person Reaction test had MRAI scores of 48 and lower; the high-equalitarian subjects had MRAI scores of 90 and higher. Twenty-seven subjects who completed the questionnaire, "Predicting Opinions of Others," had MRAI scores of 90 (high-equalitarian) and higher; 13 had MRAI scores of 48 (low-equalitarian) and lower. Of the 27 high-equalitarian subjects six said they would conceal their opinions. Of the 27 high-equalitarian subjects 17 would expect to encounter another person who is favorable to integration and Negroes; nine would expect to find a person who is ambivalent; three would expect to encounter a person who is unfavorable towards Negroes and integration. Of the 13 anti-Negro subjects six would expect to encounter a person who is favorable; four, a person who is ambivalent; and three, a person who is unfavorable.

It is probably reasonable to conjecture that what can be said of this group can also be said of the subjects in the Person Reaction study. We should, therefore, evaluate the results of the Person Reaction test in light of the probability that over 50% of the subjects expected to encounter a person who was favorable toward integration and Negroes; that a very small number of subjects would have expected to encounter a person who was unfavorable toward Negroes and that the percentage of prejudiced subjects who would conceal their opinions was substantially greater than for unprejudiced subjects.

This offers a possible explanation for the consistent over-choice of the Negro confederate, especially by prejudiced subjects, in the choice measures both in the second study and the present one. It is not unlikely that these subjects were responding to what they

thought would be acceptable behavior by the other girl in the waiting room. Those who expected to meet girls who were favorable toward integration and Negroes, might be influenced to choose the Negro confederate as an ESP partner and as a seatmate. Twenty-two of 30 subjects did make this partner choice and 20 of 29 subjects chose the seat next to the Negro confederate.

g. Work Proposed

It seems probable, in view of the outcome of these studies, that the assumption that a college waiting room is a neutral setting from the point of view of social expectancies influencing race related behavior is false. If this is the case it would seem wise to remove the studies to a setting off campus which would be more likely to meet the original requirement. An attempt will be made to do this in the future.

2. Measures Based Upon Interpretation of and Reactions to Incomplete or Ambiguous Stimuli

The studies being conducted in this category explore the possibility of drawing inferences from the individual's interpretation of or reactions to incomplete or ambiguous stimuli relevant to the attitudinal object. The assumption here is that when one's responses are not guided by the stimuli being responded to, they are guided by his own disposition toward the object class.

Outline

- A. Interpretation of Incomplete Scenes
- B. Sentence Completion
- C. Informational Estimates
- D. Inferential Ability

A. Interpretation of Incomplete Scenes

a. Background

A number of investigators have used ambiguous pictures as projective tests of attitudes. They share the assumption that, in the absence of unambiguous stimuli, the subject must supply from internal sources the elements needed to support a meaningful interpretation. From our preliminary review of these studies, we believe such tests are likely to be most useful if the pictures, and the questions asked about them, are designed to produce responses relevant to specific scoring assumptions. For example, Riddleberger and Motz (1957) found that criterion groups differing in attitude toward Negroes differed in their explanations of how the whites and Negroes in a set of pictures had happened to come together; subjects unfavorable toward Negroes were more likely to interpret the meetings as having occurred by chance.

b. Purpose

The approach we chose in this study is based upon the observation that persons frequently misread or distort social situations about which they have incomplete information. Attribution of unworthy motives to one or more persons in the situation is one form of such distortion. Another is the inference that one of the parties is engaged in unfriendly or even hostile behavior. Our effort has been to expose the subject to test situations similar to real-life situations in the expectation that, here too, he will make internally motivated interpretations.

In order to disguise our intent, the stimuli were presented in the form of an objective task. We told the subject that the activity was parallel to an aspect of detective work. We indicated that, given minimal evidence, some individuals are able to make more correct inferences about what people have done or are doing than are others. Paced and speeded presentation was used to further induce a task performance set.

c. Pilot Study A

Development of Materials. The preliminary form of the test contained 20 sets of sketches. Each set was designed to be shown to the subject in five stages. The first stage containing the least amount of information was the most ambiguous. As succeeding stages were presented, more and more pictorial information was given. Stage five represented the stage containing the most information while still maintaining a degree of ambiguity about the relationship between the two central characters. At each of the stages the subject was asked a series of questions about these two figures labelled A and B. One of the figures was clearly a Negro. The questions were designed to inquire into

the presumed relationship between the Negro and white figures as more information was added with the presentation of each stage.

Data Collection. The test materials were administered to 125 subjects. Some of these had self-report attitude scores reflecting strong anti-Negro attitudes, while others had scores indicating strong equalitarian views.

Data Analysis and Results. Although not enough data were collected to give stable statistical results, they were analyzed for leads to item revision. This was done picture by picture, stage by stage, and question by question. Several conclusions were reached: (1) The technique seemed promising enough to warrant the investment of more time and effort. (2) The five stage approach of gradually giving more information, yet maintaining a degree of ambiguity throughout, was a good one. (3) Some of the pictures would have to be redrawn or eliminated in order to eliminate cues that tend to elicit friendly or aggressive responses that were independent of the presence or absence of Negro figures and that were independent of the subject's level of prejudice. (4) The form of answering could be moved further in the multiple choice direction to eliminate problems of categorizing responses to open-ended questions. (5) The test could be considerably shortened.

d. Study B

Development of Materials. Based upon the conclusions drawn from the first pilot study, the test materials were revised and arranged in two parallel forms. In each form, five sets of pictures were interracial and five all white. At each of the five stages in the presentation of each scene the subject responded to the following questions in a multiple choice format:

- (1) Are A and B friends? (a) Yes (b) No
- (2) (a) A and B planned to meet
(b) A and B preferred not to meet
- (3) A feels (a) angry (or annoyed) about what B is doing
(b) happy (or pleased) about what B is doing
- (4) B feels (a) angry (or annoyed) about what A is doing
(b) happy (or pleased) about what A is doing
- (5) (a) A and B will want to meet again
(b) A and B will want to avoid meeting again

In addition, questions (in a multiple choice format) were prepared relevant to the content of the specific scene.

Data Collection. In order to determine whether or not this second version of the test was sufficiently promising to warrant investment in a criterion group study, each of the two forms was administered to 100 subjects in the Northeast and 100 in the border South. Thus, a total of 400 subjects was studied. These subjects were selected from subject pools where experience had shown that considerable variation in self-reported racial attitudes could be anticipated. Following the administration of the incomplete scenes, each subject was asked to complete the Multifactor Racial Attitude Inventory.

Data Analysis and Results. Subjects in each group varied widely in their self-described attitudes toward Negroes. Nevertheless, to our surprise the relatively favorable and relatively unfavorable subjects showed little or no consistent difference in their characterization of the incomplete scenes. While a study of individual items is still in progress, there is little ground for hoping that its results will encourage us to continue with this approach.

e. Work Proposed

Previous work with projective methods as well as observation of everyday social interaction made the approach taken in this study seem quite promising. Nevertheless, for reasons which are not yet clear, racial attitude seems not to influence the manner in which subjects supply missing information in these incomplete scenes. Unless we come to understand better the basis for this unexpected finding, we have no grounds for proceeding further in this direction.

B. Sentence Completion Questionnaire

a. Background

The PDPQ (Paired Direct and Projective Questionnaire) is a technique devised by Getzels (1951) and Getzels and Walsh (1958) for measuring attitudes. It is a sentence completion test in two parts: The first part with stubs worded in the third person ("John thinks. . .") is presented as a verbal speed test; the second part, consisting of the same stubs worded in the first person ("I think. . .") is administered after a period of time (usually about two weeks) as a measure of the respondent's own views.

The test is based on two assumptions: (1) when the subject is asked, especially under speed conditions, to describe the reaction of a hypothetical third person to a specified stimulus, the most readily available source of response is his own spontaneous reaction; (2) when he is asked his own views, especially if he is not pressed to answer quickly, he takes account of the requirements of the situation and modifies his response accordingly.

b. Purpose

The purpose of our studies in this area has been to check the assumptions underlying the use of third person sentence completions as indicators of social attitudes. In the event these results seemed hopeful, a further objective was to revise the sentence completions relating to racial attitude used by Getzels and to increase somewhat their number.

c. Study A

Development of Materials. For our first work with the PDPQ we retained Getzels' ten sentence stubs about Negroes. To these we added ten stubs for each of four other areas--internationalism, the welfare state, government control, and civil liberties--in which we believed a greater range of positions might be obtained from criterion subjects with known attitudes. In addition, in the third person form, we added fifty "filler" items, less personal in reference than those used by Getzels.

Data Collection. The PDPQ, along with other instruments, was then given to 147 northern college students: 72 from "liberal" organizations; 75 from "extreme conservative" organizations. The third person speeded form was administered at the first session; the first person form and other instruments were given at a second session about two weeks later.

Data Analysis. Shifts on responses to the incomplete sentence stubs were consistent with Getzels' hypotheses about the meaning of such responses. In every area, responses to the first person form were more in keeping with perceived norms of social acceptability

than were those on the third person form. As predicted, the discrepancy was especially great in the area of attitude toward Negroes.

In our data, third person completions and subjects' perceptions of how other people would respond were related. As a result we saw no way of choosing between two alternative hypotheses about the meaning of the third person responses: Getzels' hypothesis that they represent projections of one's own attitude, vs. the hypothesis that they represent realistic estimates of typical others.

d. Study B

Although the results of our first study did not make it possible to choose between alternative interpretations of third person sentence completions, they seemed promising enough to warrant a study of the ability of this technique to discriminate among criterion groups with known racial attitudes. Hence, we decided to make a study of this relationship.

Development of Materials. The revised forms of the PDPQ questionnaire contain 15 racial items. These items have been carefully selected from a larger pool subjected to extensive pre-testing. For the non-racial items which form the context for these 15 racial items, we decided to use items in which the subject might be deeply involved and which for this reason might capture his attention. These items dealt mostly with personal competence in a variety of situations and with a series of relationships with parents. A separate form for men and women was necessary. In order to facilitate speeded administration of the third person form, the third person items were arranged in two separate test booklets, the first containing 38 stubs, the second 37.

Data Collection. Third person and first person forms of the PDPQ, as revised, were administered to members of criterion groups in three sections of the country, 240 in the Northeast, 192 in the Rocky Mountain area and 95 in the border South. Both third person and first person scores show a strong and significant relationship with criterion group membership. For the third person form the eta's in the three regions enumerated above are .49, .43 and .76 respectively. For the first person form the eta's are .54, .57 and .82 respectively. Discrepancy scores between the third person and first person responses do not show a significant relationship with racial attitude. A paper reporting our findings on these sentence completion studies is being prepared.

e. Work Proposed

Of the 15 racial sentence completions, item validity studies are highly satisfactory for 13. Two items appear to be of questionable value and will be revised or discarded. However, aside from

these changes, it is planned to keep the present items as a satisfactory test of this type. No further use of the items is contemplated until the point arrives at which studies of the relationships of various instruments in our total program is appropriate.

C. Informational Estimates

a. Background

This approach utilizes items, referring to some social group, which either have no correct answers or are so unfamiliar that it can be assumed that few if any respondents will know the correct answers. Characteristically the investigator offers the subject alternative responses which he believes would indicate relatively favorable or relatively unfavorable attitudes. The assumption is that, when forced to make a guess on ostensibly factual questions where he has no objective basis for an answer, the subject is likely to choose the alternative most consistent with his own attitudinal disposition. Studies by Hammond (1948) of attitudes toward labor and management, of Meschler (1950) of attitude toward Russia, and of Rankin and Campbell (1955) of attitude toward Negroes, have lent support to the usefulness of this approach. More recently Harding, Schuman and Allport (personal communication) have explored the usefulness of this technique for measuring attitudes toward several minority groups: Negroes, Jews, Mexican Americans, etc. Since their work appeared to be most relevant to our own objectives, we began our efforts at the point where these investigators left off.

b. Purpose

As indicated above, our work in this area will explore ways in which apparently factual information can be used to reflect the influence of one's own attitudinal position. We start with the assumption that answers having derogatory implications will be chosen over other answers by persons with unfriendly attitudes. It will be necessary to contend with two problems: one is to avoid materials in which the derogatory alternative can be chosen on truly factual grounds; the other is to avoid presenting the subject with a situation in which his derogatory answers would accumulate to such an extent as to make him uncomfortable and suspicious about the purpose of the questions being asked.

c. Pilot Study A

Development of Materials. We added additional items to those selected from the Harding and Schuman information test, creating an initial form of 39 items. In developing these items we worked with a number of assumptions. One of these was that the prejudiced white overestimates the number of Negroes in the population. A second was that he exaggerates the tendency of the Negro to spend his income for luxuries as contrasted to investments like education having more long-range value. A third is that he subscribes to a variety of derogatory beliefs regarding cleanliness, work habits, etc., of the Negro. In many cases the items chosen are ones in which the performance of Negroes is inferior to that of whites (at least in terms of middle-class values). Our expectation, however, was that this difference would be over-emphasized by the person with unfavorable attitudes and

perhaps de-emphasized by the individual with favorable attitudes. We hoped that the fact that the items were presented in factual form would make the anti-Negro respondents somewhat freer to record derogatory views than they would be if asked to supply their own opinion on the same points.

Data Collection. The information items were administered to 153 subjects. Following its completion, the same subjects were asked to respond to the Multifactor Racial Attitude Inventory.

Data Analysis and Results. Using the scores from the Multifactor Racial Attitude Inventory as a criterion, we made item validity studies of the informational items. This led us to discard 14 of the 39 as relatively non-discriminating. A total information test score based on the remaining 25 items correlated .46 with the Multifactor Racial Attitude Inventory score. This provided a first estimate of the degree of correspondence between informational estimates and attitude and gave support for continuation of this approach.

d. Pilot Study B

Development of Materials. The item validity data from the first pilot study provided a basis not only for discarding certain item types but also for augmenting types of items which were shown to be discriminating. An additional 17 items were prepared, producing a total of 42 items for use in this second study.

Data Collection. The second version of the information test was administered to a group of 105 college students. The format of the test was identical with that of the initial test. Some changes were made in the ranges of quantitative alternative answers used in some of the items; these changes also were based on the data from the item validity study of the first test. Upon completion of the information test, the subjects answered the Multifactor Racial Attitude Inventory.

Data Analysis and Results. The data from this pilot study were also used for item analysis. The subjects were divided into upper, middle, and lower thirds based upon their Multifactor Racial Attitude Inventory scores. Frequency distributions of responses to each item were compiled for each of the three groups. These data made it possible to eliminate certain items which had badly skewed distributions and to modify the alternatives in other.

e. Pilot Study C

Development of Materials. Additional items were developed on the basis of information provided by the item analyses of the two previous versions of the test. This led to a third version containing 60 items. No change was made in the general form of the test.

Data Collection. The information test was administered to 166 subjects in the Rocky Mountain area and to 106 subjects from the border South. Following completion of the test the subjects answered the Multifactor Racial Attitude Inventory.

Data Analysis and Results. Within each area the score on the information test was correlated with the Multifactor Racial Attitude Inventory score. The coefficient obtained in the Rocky Mountain area was .35, while in the border South the coefficient was .40.

Scores on individual items were also correlated with Multifactor Racial Attitude Inventory scores. For the Rocky Mountain area 35 of the 60 items had significant correlations with the Multifactor Racial Attitude Inventory ($p < .05$ or better). In the border South the number of items with significant correlations was 29. Using these item validity data, 35 items were selected for a final version of the information test.

f. Study D

Development of Materials. As indicated above, the final version of the information test contains 35 items about Negroes. In order to make it more difficult for the subject to become aware of the cumulative impact of the derogatory characteristics he was attributing to Negroes, the test was presented as a test of information about minority groups and parallel items were constructed for Puerto Rican and American Indian groups, using the same wording and range of responses in the item alternatives.

Data Collection. The information test was administered to attitudinal criterion groups in the Rocky Mountain area and in the border South. There were 138 subjects in the Southern sample and 188 subjects in the Rocky Mountain area. There were three attitudinal criterion groups in each region: 1) subjects with strong equalitarian attitudes and an active involvement, e.g., CORE members, 2) subjects with strong equalitarian attitudes but not active involvement, e.g., students taking elective courses in intergroup relations, 3) subjects in right wing political organizations and exclusionist fraternities and sororities. After taking the information test subjects also answered the Multifactor Racial Attitude Inventory.

Data Analysis and Results. Scores based upon the Negro items in the information test are significantly related to other indicators of racial attitude. When the attitudinal criterion groups are used as the attitude indicator, the eta coefficient between information and attitude is .40 for the Rocky Mountain area and .57 for the border South. Scores based on the Puerto Rican items are also significantly related to racial attitude. Here the eta coefficients are .34 in the Rocky Mountain area and .49 in the border South. An article describing these findings is in preparation.

g. Work Proposed

Since a satisfactory version of an information test is available, no further work is proposed in this area.

D. Inferential Ability

a. Background

Searchers for indirect indicators of attitude have always been attracted to the idea that task performance might be affected when the task involved attitudinally relevant material. My efforts in this program to locate such an effect in learning and memory have, as yet, been unsuccessful. Elsewhere in this report I have described my inability to replicate several familiar studies in this area. In general, the work on the influence of attitude on task performance has been characterized by this variability of experimental results. The most likely explanation of this, I suspect, is that the variance attributable to task-related individual differences in abilities is so great as to mask the potential effect of attitude.

b. Purpose

Recently I have undertaken to work along the lines of an apparent rather than a real task. The notion is to present the respondent with an activity which he interprets as a test of his ability. But the nature of the material is such that the choice of a "correct" alternative from among those offered is not in fact possible, based upon the information available to the subject.

c. Study A

Development of Materials. The presumed task is presented to the subject as a type of thinking process described as inferential ability--the ability to make correct interpretations of related scientific facts. The subject is told, as one might assume, that some people excel in such inferences while others do less well. The work is timed, with bonuses presented for both accuracy and speed.

A reading comprehension format is followed. Each item consists of a paragraph of information. The paragraph is followed by the two interpretations. The subject's task is to judge the extent to which each interpretation is supported by the information given in the paragraph. An example of such an item follows:

From Integration of High Schools by Cassidy. ". . . the number of incidents of violence observed in high schools which are integrating in a step-fashion varies according to the degree of integration. In general, those schools which integrate by grade show few incidents of violence in the first year of integration, with an increase of 20% by the beginning of the second year. The incidence of violence continues its increase until the middle of the third year. After this peak in the third year the amount of violence decreases at a slightly faster rate

than that of the increase, until by the end of the fourth year the amount of violence is roughly equal to that observed during the initial three months of integration. . . . The authors believe that the high rate of violence seen during the third year can be substantially decreased by changing the present methods of integrating schools."

- A. Since the process of integration often results in increasing trouble before stability is attained, integration should proceed slowly, carefully avoiding tension situations resulting from too much intergroup contact.
- B. Since the process of integration often results in increasing trouble before stability is attained, integration should proceed quickly, avoiding as much of the trouble occurring in the transition period as possible.

Neither of the alternatives is supported by the information in the paragraph, although upon a quick reading the information seems clearly relevant to both alternatives. Another way of saying this is that to some extent both alternatives appear to receive some support from the paragraph. The alternative interpretations are chosen in such a way that one might expect one of them to be favored by equalitarians while the other would be favored by persons with anti-Negro attitudes. Subject to confirmation by item analysis, we anticipate that alternative "B" in the above example will be favored by the equalitarians (who tend to believe in immediate school integration), and alternative "A" by the anti-Negro individuals (who tend to advocate gradualism in desegregation).

Items such as these have been mixed with items of similar form having to do with a variety of social issues and social groups.

Data Collection. A pilot study providing data for an item analysis was carried out. This item analysis led to the discovery of certain principles of item writing for this type of item. In a second pilot study the test was administered to two subgroups of students, one with equalitarian scores and the other with anti-Negro scores on the Multifactor Racial Attitude Inventory.

Data Analysis and Results. An item-by-item analysis of the difference in the way in which these two subgroups rated the alternate interpretations in Negro-content items was not encouraging. On the other hand, some items did show differences in the expected direction, making it seem worthwhile to study the technique further.

d. Work Proposed

Should it prove to be possible to identify the characteristics of items which are relatively effective in separating the two attitudinal subgroups, an additional revision of the instrument will be attempted and a further study of its relationship to attitude carried out. On the other hand, if we conclude that it is not possible to discover such differentiating characteristics among the effective and ineffective items, I will not take the instrument through this additional step.

3. Measures Based on Adequacy of Task Performance

Studies in this category approach the measurement of attitude from the point of view of its effect upon the adequacy of performance on objective tasks. Characteristically, the subject is presented with a task involving both attitudinally relevant materials and neutral materials. The inference is that a systematic difference in performance on neutral and attitudinally relevant materials reflects an attitudinal influence.

Outline

- A. Differential Memory
- B. Differential Picture Recall

A. Differential Memory Test

a. Background

Several investigators have reported differential recall of attitude-relevant statements, with subjects memorizing more quickly, and remembering longer, material that is in keeping with their own position on an issue. Jones and Kohler (1958), differentiating between "plausible" and "implausible" statements, found that subjects learned more quickly the plausible statements favoring their own position and the implausible statements favoring the opposite position. The effect was sufficiently strong to separate with no overlap the extreme thirds of the attitude continuum as measured by a self-report questionnaire.

b. Purpose

Our purpose here was first, to check the validity of the general assumption regarding the effect of attitude upon learning and memory and second, to utilize this effect as an indicator of attitude strength.

c. Study A

First, we carried out a direct replication of the original Jones-Kohler study. This was done in the South, as was the original study. We used the 12 statements developed by Jones and Kohler. These were of four types, plausible pro-integration, plausible pro-segregation, implausible pro-integration and implausible pro-segregation.

Data collection. The statements to be learned were administered to 42 subjects in a border South city--14 in each of three subgroups. The statements were read by the experimenter to the subject at a standard rate, approximating that which Jones and Kohler had used. Recall was attempted immediately following the reading of the statements. There were five trials.

One of the three subgroups was strongly pro-segregation, another was strongly pro-integration, and another was at a point midway between these two. Attitude position was determined in advance by persons not connected with the experimentation proper. Two self-report inventories, one stressing desegregation policy, the other, acceptance of interracial social relationships, were used to estimate subject's attitudes.

Data Analysis and Results. We failed to confirm the results of the Jones-Kohler study. The subjects, contrary to prediction, did not remember congenial plausible and uncongenial implausible material better than they did uncongenial plausible and congenial implausible material.

d. Study B

In addition to replicating the Jones-Kohler study we carried out a second study closely parallel to it. In this second study we used new and improved materials.

One experiment was done with 75 subjects in the border South; a second involved 24 subjects in the Northeast.

Development of Materials. We constructed a new set of items controlled for difficulty, familiarity, and affectivity of wording. These items were pre-tested on 50 northern and 50 southern college subjects. Revisions were necessary to insure that pro-integration and pro-segregation items as well as plausible and implausible items were equated in other respects.

In order to make these materials more adaptable to general use, we prepared them for group administration. The reading of the statements was paced and the items recalled were written on separate pages of answer booklets.

Data Collection. The revised materials of the second study were administered to 294 subjects in two regions of the country, the Northeast and the border South. This administration took place in classroom groups of not more than 30 subjects each. The experiment was introduced as a study in learning. The administrator timed and paced the reading of the items. As in the first study, the items were read and recalled five times. This was followed by administration of a 57-item self-report inventory of racial attitudes. In terms of scores on this inventory, three groups of 25 subjects each were selected from the pool of subjects from the border South. Two of these groups held extreme attitudes while the third was intermediate in nature. Following a similar procedure two extreme groups of 12 subjects each were selected from the subjects in the Northeast. The N was small because it was difficult to find subjects in this area representing attitudes as strongly anti-Negro as were available in the southern sample.

Data Analysis and Results. Again, we failed to confirm the Jones-Kohler finding that persons best remembered plausible statements supporting their own attitude position and implausible statements supporting the opposite position. In this study we also were unable to confirm the Levine-Murphy (1943) findings to the effect that persons remembered best materials supporting their own attitude with the element of plausibility disregarded. Jones and Kohler had also failed to find support for this idea.

The results of this study and of the Jones-Kohler replication (Study A) have been accepted for publication in the Journal of Personality and Social Psychology.

e. Study C

Partly because of our unexpected failure to confirm the Jones-Kohler findings and partly because we suspected that the Levine-Murphy type of experiment using a lengthy text rather than separate statements was more likely to reflect attitudinal influence, we decided to do a third study in this series. Our effort in this study was to parallel the Levine-Murphy experiment as closely as possible.

Development of Materials. Our objective was to present the subject with a lengthy text embodying statements supporting and statements opposing integration. To this end we adopted the format of a roundtable discussion in which different speakers voiced their opinions in sequence. From a pilot study focused on the implausibility and plausibility of a pool of potentially useable phrases, we selected 16 for the experiment. Four of these were pro-integration and relatively plausible; four were pro-integration and relatively implausible; four were plausible pro-segregation and four were implausible pro-segregation. These phrases were worked into the roundtable discussion. The discussion was tape recorded in order to pace the speed of presentation evenly for all subjects. Subjects read a transcript of the discussion while they listened to it on tape.

A scoring system was developed for use with free-recall protocols of the material remembered. Under this system three points were given for a phrase reproduced verbatim or very close to it, two points for a phrase whose meaning was reproduced in substantially correct form, and one point for a phrase which could be identified in the protocol but which was of poor quality in its reproduction. In addition, two tests were developed to check for recognition of phrases and ideas contained in the roundtable discussion. In each test 20 phrases that had appeared in the discussion were mixed with 20 that had not.

Data Collection. The experiment was carried out in five sessions spaced as evenly as possible over a period of two and one-half weeks. Sixty-eight college student subjects attended all of the five sessions. Following the fifth session these 68 subjects answered the Multifactor Racial Attitude Inventory. On the basis of their scores on this inventory we chose 22 subjects who were strongly equalitarian and 22 who ranged from moderately to strongly anti-Negro. The analysis was carried out in terms of a comparison of these two subgroups.

During the first three experimental sessions, the subjects read through once a transcript of the discussion and at the same time listened to it on tape. After a three-minute break they wrote down what they could remember of the discussion. The fourth and fifth sessions were limited to recall and recognition only. The subjects again wrote their free-recall protocols and in addition took the two recognition tests.

Data Analysis and Results. Scoring reliability for the free-recall protocols was quite high; we obtained interscorer reliability coefficients of .85 or higher.

On all three measures, scores were obtained for memory of the four types of phrases, plausible pro-integration, implausible pro-integration, plausible pro-segregation, and implausible pro-segregation. Ratio scores were developed reflecting the proportion of pro-integration material remembered to the total material remembered; in these scores plausibility of the material was disregarded. Other scores reflected the proportion of plausible pro-integration plus implausible pro-segregation material remembered to the total amount of material remembered; this is parallel to the type of score derived in Studies A and B following the Jones-Kohler paradigm.

On none of these scores did we find a difference between the equalitarian and anti-Negro subgroups. Moreover, there was no evidence of any trend toward a difference. The only clearcut outcome of the study was the finding that implausible material was remembered better by both subgroups of subjects than was plausible material. In view of the general credence given to the principle that attitude influences learning and memory, including its presentation in textbooks on introductory psychology, an article reporting the negative results of this study has been accepted for publication by the Journal of Educational and Social Psychology.

f. Work Proposed

I continued to feel that the attitude-memory effect should show itself if the proper materials are used. However, at the moment no leads more hopeful than those we have investigated are available. Hence, no more work in this area is contemplated.

B. Differential Picture Recall

a. Background

There is some evidence (Horowitz and Horowitz, 1938; Seeleman, 1940-41) that an unfavorable attitude toward a social group interferes with perceptual discrimination of members of the social group. These investigators presented photographs of a number of people from different racial groups and then asked the subjects to identify, from a larger number of photographs, those that had been presented earlier. Subjects with unfavorable attitude toward Negroes, as measured by a self-report scale, were less successful in identifying whether or not the picture of a given Negro had been included in the first presentation.

In addition, Seeleman's subjects were shown photographs paired with descriptive phrases, some favorable and some unfavorable. Later the subjects were asked to pick from a group of phrases the one which had been paired with each photograph. Seeleman detected a significant tendency to err in the direction of incorrectly associating unfavorable phrases with Negro photographs.

Seeleman examined the familiarity of her subjects with Negroes by questioning them on the types of interracial contact they had had prior to the experiment. She interpreted her findings as indicating that the errors in picture recall and in association of phrases with pictures were due to racial attitude rather than to familiarity.

b. Work Proposed

We have begun a replication of the Seeleman study. We shall use both her photograph identification and her photograph-phrase pairing techniques. We will use Oriental as well as white and Negro photographs. The degree of favorableness of the phrases to be used has been determined by pilot testing. The test of prior familiarity will be based not only on types of previous contact with Negroes but also upon the frequency of such contacts.

We will determine first whether or not the Seeleman procedures differentiate successfully between attitudinal subgroups selected by a self-report attitude inventory, the MRAI. If they do we will then determine whether or not the techniques will successfully differentiate between attitudinally-relevant criterion groups.

4. Measures Based Upon Judgments of Attitudinally Relevant Materials

Studies in this category ask the subject to rate attitudinally relevant statements on characteristics such as plausibility, or favorableness to the social group in question. Inferences as to attitude strength are drawn from the direction of "bias" in resulting judgments or evaluations. The presumed basis of these inferences is that judgment, being relative to some reference point, varies as a function of "anchors" established by one's own attitude.

Outline

- A. Judgments of Favorableness of Statements
- B. Judgments of Plausibility of Arguments
- C. Evaluations of Persons
- D. Prediction of Effectiveness of Programs for Negro Progress

A. Judgments of Favorableness of Statements

a. Background

It has long been known in sensation-perception studies that judgments of objects are made in relation to some background, "anchor," or frame of reference. Hovland and Sherif (1952), applying this principle to the study of attitudes, found that criterion groups of subjects differing in attitude toward Negroes differed in their ratings of the favorableness of the items used by Hinckley in developing a scale of attitude toward the position of Negroes. While there are differences in findings and interpretations reported in subsequent studies, the principle which Hovland and Sherif formulated has received additional support from Hovland, Harvey & Sherif (1957), Prothro (1955, 1957), Weiss (1959), Manis (1960, 1961) and Upshaw (1962).

b. Purpose

Our first objective was to check Hovland and Sherif's findings, since some subsequent investigators reported failure to confirm their results. A second objective, dependent upon the outcome of the first, was to investigate ways in which the measure might be made more sensitive and/or more reliable as an indicator of attitude.

c. Study A

Development of Materials. We used 112 of the 114 items used by Hinckley in the development of his scale of attitude toward the position of Negroes. The standard Thurstone instructions to judges for sorting of items were followed.

Data Collection. Two substudies were carried out. In the first the items were rated by 352 subjects in five criterion groups ranging from strongly equalitarian to strongly anti-Negro. In the second study ratings were made by 212 subjects taken largely from introductory psychology classes. Based on the self-report attitudes expressed by these later subjects, three subgroups were selected: the least prejudiced quintile (38 subjects), the middle quintile (33 subjects), the most prejudiced quintile (22 subjects).

Data Analysis and Results. A linear relationship was found between evaluations of favorableness of statements and racial attitude in the case of statements very unfavorable to Negroes and of statements with intermediate scale values (moderately unfavorable to Negroes). Our most equalitarian subject group rated these items as most unfavorable. Our most anti-Negro group rated them as most favorable and our three intermediate groups took their place between the two extremes in stepwise fashion. The findings held equally well for both of our substudies. When the items were analyzed separately to indicate which were the more susceptible to attitudinal influence, certain subgroups were found. It appeared, for example,

that two-sided or double-barreled items could be counted upon especially to reflect the attitudinal position of the rater. These types of items were increased in number in preparing materials for the second study.

d. Study B

Development of Materials. The Hinckley racial attitude items used in the first study suffer from the fact that a high proportion were so unfavorable that all subjects regardless of attitude rated them at the extreme unfavorable end of the favorableness continuum. There were correspondingly few items in which equalitarian and laudatory statements regarding Negroes were made. For these and other reasons, a new set of 106 items were constructed, carrying over the more differentiating items from the Hinckley set and adding items more favorable in nature.

Data Collection. These items were administered to subjects in three regions of the country--342 in the Northeast, 81 in the Midwest and 54 in the border South. In each region subjects were chosen to represent criterion groups differing in racial attitude.

Data Analysis and Results. Analysis of the relationship between racial attitude as determined by criterion group membership and ratings of favorableness of statements gave clear and significant results in all regions. When items were arranged in five subgroups from very unfavorable to very favorable, the influence of attitude was shown to be strong for the very unfavorable, moderately unfavorable and intermediate subgroups. Eta coefficients based upon the F ratios for these relationships ranged from .42 to .53. As was true in the first study (and as has been found by other investigators), there is either no influence of attitude or the influence of attitude is reversed for items favorable to Negroes. This same analysis was repeated in relation to attitude as determined by self-report attitude inventory. The results parallel exactly those reported for the criterion group analysis.

We computed a summated judgment score based on the favorableness ratings; in this score we included only extremely unfavorable, moderately unfavorable and intermediate items. We related this score to attitudinal group membership in each of the three geographic regions. Eta coefficients based on the F ratios are .42, .42 and .53. Within each region we also correlated the scores from the favorableness ratings and those from the self-report attitude inventory (Multifactor Racial Attitude Inventory). These correlations range from .42 to .45.

e. Study C

Studies by Upshaw (1962) and others have shown that scale values assigned to items by judges rating them for degree of favorableness are influenced by the context of the item being rated,

e.g., by the range of favorableness covered by the total group of statements. Thus, if a group of the most unfavorable items is removed from a set of statements, those statements previously rated as moderately unfavorable will, in a new rating, be assigned more unfavorable scale values. Data collection in Studies A and B above made it possible to examine the effect of context on ratings from a somewhat different point of view. While the sets of statements in Study A and Study B did not differ in the range of favorableness represented, they did differ in the proportion of unfavorable and favorable statements included. In Study A there were a relatively high proportion of unfavorable statements. In Study B the proportion of unfavorable statements was reduced and the proportion of favorable statements was increased, making for a symmetrical distribution of favorable and unfavorable statements.

Thirty items were common to the two sets of statements in Studies A and B. Subjects in the two studies were comparable in that the subjects in each study came from designated criterion groups representing different levels of racial attitude. This meant that, for the thirty critical items, the ratings of a high equalitarian subgroup (made up, for example of CORE members) in Study A could be compared with the ratings of members of the same subgroup in Study B.

Development of Materials. Thirty statements common to Studies A and B were used.

Data Collection. Ratings collected in Studies A and B on the thirty selected items were used.

Data Analysis and Results. Median scale values assigned by five attitudinal criterion groups (subjects in Study A) for thirty statements about the social position of Negroes were compared to values for the same items in a different item context assigned by other subjects from comparable attitudinal criterion groups (subjects in Study B). Findings were:

1. Scale values of attitude statements change as a result of change in context. For example, an item which read, "The Negro should have freedom but never be treated on an equal basis with the white man," was assigned scale values of 1.3, 1.6, 2.2, 3.0, and 3.4 by groups I-V respectively in Study A and values of 1.4, 2.0, 2.3, 2.5, and 1.9 by the comparable groups in Study B, resulting in shifts of +.1, +.4, +.1, -.5, and -1.5.
2. Unfavorable and favorable items are affected differently by change in context. Unfavorable items were generally rated lower (more unfavorable) in the second (symmetrical) context (Study B) than in the earlier (predominantly unfavorable) one (Study A). Favorable items were generally rated higher (more favorable) in the symmetrical context than in the earlier one.

3. Groups of raters differing in attitude react differently to change in context. The tendency to see the unfavorable items as more unfavorable in the second context increased with the unfavorableness of the raters' attitudes.

A paper describing this work (Study C) has been published (Journal of Social Psychology). No further work of this kind is proposed.

f. Work Proposed

Two papers, one describing Study A and one Study B have been published (Journal of Personality and Social Psychology). In view of the consistency of our findings, no further work on judgments of favorableness is intended for the time being. A test based upon items from the second study is now available and will be used in later work when it becomes appropriate to examine the interrelationships of various measures found to be indicative of racial attitude.

B. Judgments of Plausibility of Arguments

a. Background

To our knowledge there has been no previous study of the relationship between social attitudes and ratings of plausibility of statements about the social group which represents the attitudinal object. We came upon the possibility in the course of pilot work on new materials for a differential memory test. For this test we needed 40 statements, intended to constitute four subsets of ten items each: plausible arguments for segregation, implausible arguments for segregation, plausible arguments for integration, implausible arguments for integration. In order to check our classification of the statements, we had both northern and southern college subjects rate them for plausibility or effectiveness. While both groups of subjects clearly distinguished the items in the different subgroups on a scale of effectiveness, the average ratings by the two groups differed considerably. In particular, neither the plausible nor the implausible arguments in favor of segregation seemed effective to northern subjects. This suggested to us the possibility that ratings of effectiveness of arguments about an issue might be influenced by one's own position on the issue, and thus that such ratings might provide a measure of attitude.

b. Purpose

Our purpose here is to study the influence of attitude upon judgments of plausibility, convincingness, effectiveness, etc., of statements about the attitudinal object. If preliminary indications support the idea that this influence is strong, a second objective is to utilize such judgments as an indicator of attitude strength.

c. Study A

Development of Materials. As indicated above under Background, we prepared 20 statements supporting segregation and 20 supporting integration. These were chosen from a larger number as a result of pretest information regarding their rank order on a plausibility-implausibility continuum. Two studies have been carried out using these items. Following the first study, minor changes were made in several items.

Data Collection. A total of 232 subjects in the Northeast, Midwest and border South were used in the pilot work leading to the final form of the 40 statements used in this study. These statements were then rated by 199 subjects, 111 from the Midwest and 88 from the border South. Data from these two subsamples were analyzed separately as well as in combination. In addition to the ratings of plausibility, the subjects gave a self-report of their own racial attitudes on our Multifactor Racial Attitude Inventory.

Data Analysis and Results. Correlations between these attitude scores and scores based on the judgments of plausibility were .64 in the Midwest and .88 in the border South. For the total group the correlation was .84. A paper reporting these findings has been published (Journal of Personality and Social Psychology).

d. Study B

Development of Materials. The 40 arguments for integration and segregation used in Study A were also used in this study.

Data Collection. Ratings of plausibility were obtained from subjects in criterion groups differing in racial attitudes. A total of 534 subjects were used, 241 in the Northeast, 199 in the Rocky Mountain area and 94 in the border South.

Data Analysis and Results. As was true in the first study, a strong and significant relationship between judgments of plausibility and attitude as indicated by criterion group membership was found. Eta's representing the strength of this relationship are .63 in the Northeast, .33 in the Rocky Mountain area and .72 in the border South. In addition the results of the first study were checked by correlating judgment scores with an attitude score derived from a self-report attitude inventory. Correlations were again high, running .76 in the Northeast, .54 in the Rocky Mountain area and .78 in the border South. A paper reporting these findings has been published (Journal of Social Psychology)."

e. Pilot Study C

The statements with which we worked in Studies A and B supported either segregation or integration. It is possible that statements for or against other race-related issues might also seem more convincing to persons with favorable attitudes than to those with unfavorable attitudes and vice versa. This possibility was put to test in a study of reasons for and against interracial marriage.

In a review of the history of arguments for and against marriage across social group lines, whether these be religious, racial or national, it became clear that the emphasis given to different arguments changes over time. This suggested the possibility that such changes might be investigated by studying the arguments stressed by parents, on the one hand, and their children, on the other. In the course of following up this idea we carried out the first stages of what will be a full scale study of the relationship between racial attitude and ratings of effectiveness of arguments for and against interracial marriage.

Development of Materials. Based upon our review of the literature we prepared twenty arguments against interracial marriage and

twenty for interracial marriage. An example of an argument against interracial marriage is as follows: "Each race has its own culture, its own heritage, and its own habits; these are best preserved when the races are not mixed." An example of an argument for interracial marriage is as follows: "If interracial marriages were to increase in the United States, we could more effectively lead the new nations of Africa toward democracy." The arguments on both sides of the issue vary considerably in degree of acceptability ranging from quite extreme arguments which relatively few people will endorse to others which are acceptable to a large number.

Data Collection. The cooperation of 27 families was enlisted in the study. In each family we studied the mother and father and a college-age student. Members of the family made their ratings independently on a scale ranging from very effective to very ineffective. After the arguments had been rated the respondent was asked to indicate his own opinion on intermarriage on a seven-point scale ranging from very strongly opposed to very strongly in favor.

Data Analysis and Results. A total score was developed for the ratings of the forty arguments. High, or favorable, scores were obtained for rating pro-intermarriage arguments as effective and anti-intermarriage as ineffective. When we correlated this score with a score based upon the self-rating of attitude regarding intermarriage, the correlation coefficient was .67 for the 27 students and .74 for 49 parents.

f. Study D

The fact that the research on policies toward interracial marriage in pilot study C confirmed the relationship between attitude and judgment of race-related arguments lead to a final study. The purpose of this study was to extend further the generality of the relationship. Accordingly, we selected from our factor analytic work with racial attitude items in the MRAI three attitudinal components where the items are stated in policy terms. These are: gradual versus rapid integration in segregated areas (gradualism); federal government intervention versus local governmental autonomy in desegregation (local autonomy); and minority group rights as contrasted with the rights of individuals (private rights). Arguments for each side of these three policy problems were developed. In addition, the arguments for and against interracial marriage from pilot study C were revised and extended.

Data Collection. The judgment items were administered to 132 subjects distributed among three attitudinal criterion groups selected from two Southwestern universities. Following the completion of the judgment items the subjects completed the 100-item MRAI plus an additional 40 self-report attitude items dealing with intermarriage and with policies regarding the best way to improve the status of the Negro minority.

Data Analysis and Results. The plausibility ratings of the new items differentiate effectively between the three criterion groups used in the study. For each rating measure, an analysis of variance between criterion groups yields an F ratio which is significant at well beyond the .001 level. An indication of the strength of the relationship between the plausibility rating scores and criterion group membership is given by eta (correlation ratio). For the three-component (gradualism, local autonomy, private rights) and the racial intermarriage scales, the eta values are .57 and .54, respectively. These values are comparable to those reported by Selltitz and Cook for the plausibility rating of integration-segregation items.

Scores on each of the three subscales taken separately (gradualism, local autonomy, and private rights) also are effective criterion group discriminators. F ratios of 19.79, 25.14, and 25.31 were obtained, for all of which $p < .001$. The corresponding eta values are .48, .53, and .53. As expected, scores on the self-report measure (MRAI) were also significantly related to criterion group membership.

A strong correlational relationship was obtained between scores on the two rating scales and score on the MRAI ($r = .82$ for the three-component scale and $.78$ for the intermarriage scale). These correlations are of similar magnitude to those reported by Waly and Cook (1965) and Selltitz and Cook (1966) between their plausibility rating measures and a 100-item version of the MRAI.

Scores on the two rating measures also correlate highly with each other ($r = .70$), although not quite as strongly as either measure with the MRAI. Correlations of the three subscales of the three-component scale with each other range from .65 to .83. The total score on the three-component rating scale correlates slightly more strongly with MRAI score ($r = .82$) than do any of the individual subscales ($r = .71$ to $.77$).

g. Work Proposed

The work on judgments of favorableness of statements has led to a satisfactory instrument in this area. Similarly, the work on judgments of plausibility of arguments has led to a satisfactory instrument. For reasons which are not entirely clear the relationship between racial attitude and judgments of plausibility of arguments is consistently higher than the relationship between racial attitude and judgments of favorableness of statements. In view of the consistent success of the instruments already available in discriminating attitudinal criterion groups we have no plans for future work in this area.

C. Evaluation of Persons

a. Background

A number of previous investigators have used pictures of members of a social group in attempting to develop an indirect measure of social attitude. Among these are Horowitz and Horowitz (1938) and Seeleman (1940). However, in neither case has the picture been used as one of several sources of information on the basis of which an evaluation of the person portrayed is made. Hence, there is no literature directly relevant to this part of our work.

b. Purpose

We began here with the observation that persons are evaluated and accepted into social relationships to some extent in terms of their achievement and personal characteristics, but also to some extent in terms of their group membership. Often this process is unconscious and would be denied by the evaluator. Our purpose was to develop materials which would allow us to study the strength of this tendency in relation to strength of attitude toward the social group under consideration. It seemed reasonable to assume that the phenomenon would be most likely to occur when the subject had reason to think that his evaluations were being made primarily on the basis of socially desirable characteristics such as responsibility, ambition, cooperation, &c., and could assume that photographs were intended to supply him with information regarding the physical characteristics of the person he was judging.

Moreover, as is true with other measures, we assume that a subject might be put off guard against social desirability considerations if he were led to believe that the evaluation task was a realistic one, i.e., that persons with the responsibility for employing people often face the necessity for making accurate judgments of others based upon the type of information being provided in the test situation. This we hoped would give the subject a set to perform the task as well as possible and relieve him of the social need to appear "unprejudiced."

c. Study A

Development of Materials. We created personality descriptions by systematically varying four arbitrarily chosen variables. The variables were: (1) occupation, (2) sociability, (3) dependability, and (4) ambitiousness. We used only high and low extremes of each variable. This generated 16 personality descriptions, ranging from a description where all the variables were high, through various combinations to one where all the variables were low. Three sets of these personality descriptions were constructed, giving us "trios" of descriptions that should be equivalent across all variables. One of the trio of descriptions was accompanied by

a photograph of a Negro, another by a photograph of a Japanese American and the third by a photograph of a white person. If the personality descriptions are equivalent, any differences in the assessments of the personalities within each trio should be a function of the accompanying photograph.

Our first task was to equate the members of each trio of descriptions. We decided to have evaluations made both in terms of social acceptance as indicated by social distance items, and in terms of adjective ratings of the sort used in the semantic differential. Accordingly, two rating forms for each personality description were developed. The semantic differential version contained nine adjectives loading on the evaluative factor, two adjectives loading on the potency factor, and two adjectives loading on the activity factor. The social distance version contained 12 social distance items.

Photographs were taken of persons posed against a grid showing height and breadth. Our hope was that this would give the impression that the photograph was an identification photograph giving information about the individual's height and weight. Two photographs are obtained of each individual; a standing full face picture and a standing profile.

Data Collection. The semantic differential form (without photographs) was given to 101 students enrolled in an introductory psychology course. The social distance version (without photographs) was given to 102 students enrolled in the same course.

Data Analysis and Results. Means and standard deviations for each personality description were obtained on each adjective and social distance item. Means and standard deviations were also obtained for each of the three factors of the semantic differential and for the total of the 12 social distance items. The results clearly show that the ratings of the person described are strongly influenced by the number of factors that are "high" in the personality sketch. Reactions toward different members of the trios we created were very similar. However, differences were found in some cases; here we attempted revision in order to increase similarity within the trio. Subsequent ratings by 75 new subjects indicated that these revisions had been successful.

Another aspect of this preliminary analysis was directed to the selection of items from the pool of social distance and semantic differential items with which we started. We correlated the evaluative, potency, and activity mean values obtained on the semantic differential version with the mean social distance values obtained for the identical descriptions. This resulted in Pearson correlation coefficients of: .93 between social distance and the evaluative factor; .59 between social distance and potency; .91 between social distance and activity. This result would indicate a fair amount of interchangeability between social distance items and semantic differential adjectives.

Hence, ignoring the semantic differential factors, we selected the five adjective pairs that seemed to discriminate best between the relatively favorable and relatively unfavorable personalities we had sketched. Using the same criterion we selected six social distance items. The final form of the test thus requires ratings of each person on eleven items.

d. Study B

Data Collection. The test with photographs attached to the personality descriptions was now administered to 77 subjects in a preliminary study of its promise. These same subjects recorded their self-report attitudes on our Multifactor Racial Attitude Inventory.

Data Analysis and Results. Difference scores for each trio of persons rated were obtained for the semantic differential adjectives, the social distance items and a score based on the total item set. Thus, for the trio of persons having personality descriptions made up of four unfavorable traits a difference score reflecting the evaluation of the white and the Negro is available. Similarly, a difference score for the white and the Japanese American and one for the Negro and the Japanese American were obtained. Each of the difference scores was correlated with the attitude score from the Multifactor Racial Attitude Inventory.

When one considers only the relatively favorable personality sketches, the difference in the rating of equated Negro and white sketches is not only marked, but highly correlated with the attitude score. The correlations are in the area of .40 to .70; the median is .50. This, of course, is in line with our expectation in developing this instrument. To our surprise, however, the results are just as clear when one considers the difference scores in the rating of the Negro and the Japanese American. Here again the Negro is rated sufficiently lower by the anti-Negro subject to give rise to a strong correlation with the self-reported attitude. When we examined the difference scores for the white and Japanese American sketches, few differences are found, and as a result, there is little or no correlation with attitude scores.

However, when one looks at the difference scores based on trios of persons with predominantly unfavorable attributes, the picture changes. Correlations with self-reported attitude for such difference scores are low (.02 to .24). For persons with descriptions half favorable and half unfavorable the correlations are intermediate and variable in size, i.e., they range from .00 to .58. It seemed quite clear that for the unfavorable sketches we are dealing with a "ceiling" effect. For these sketches the

ratings are too low for each of the three ethnic groups to give much room for differences to arise between the evaluations.

e. Study C

Development of Materials. A final form of the Evaluation of Persons Test emphasizing favorable personality sketches was prepared. This step was based on the findings of the preceding study in which Negro-white difference scores based on favorable sketches were found to correlate with attitude whereas similar scores based on unfavorable sketches did not. Enough unfavorable sketches were retained in the test, however, to maintain the same range of personality descriptions as had been present in earlier versions.

Data Collection. The test was administered to attitudinal criterion groups in two sections of the country, 138 subjects in the border South and 188 subjects in the Rocky Mountain area. After completing the Evaluation of Persons Test, the subjects answered the Multifactor Racial Attitude Inventory.

Data Analysis and Results. Results showed a strong relationship between anti-Negro attitude and the degree to which Negro sketches are rated more unfavorably than matched white sketches. This finding held not only for a total score on the Evaluation of Persons Test but also for two subscores, one based on social distance ratings and the other on adjectives of the semantic differential type. The eta coefficients between attitude as measured by membership in the criterion groups and total scores on the Evaluation of Persons Test are .44 for the Rocky Mountain area and .52 for the border South.

To some extent the same results are found when scores are derived reflecting the extent to which the Negro sketches are rated lower than the Japanese sketches. Here the eta coefficients for the total score against attitude are .37 for the Rocky Mountain area and .40 for the border South. An article describing the results of this study is being prepared for publication.

f. Work Proposed

A satisfactory form of this test is available. No further work on it is anticipated.

D. Prediction of Effectiveness of Programs for Negro Progress

a. Background

In the course of a study directed at the resolution of conflict through discussion, subjects were asked to predict the probable degree of racial equality in a nation which they were told was characterized by a specified level of educational opportunity for Negroes and a specified, but different, level of legislated assurance for Negroes of equal opportunity in the political, economic and social spheres. It became clear that students differed greatly in the extent to which they based their prediction of racial progress upon one or the other of these two characteristics. This is similar to other differences of opinion, regarding the best way to improve the lot of the Negro citizen. Casual observation of every day debate about racial problems suggests that relatively anti-Negro individuals tend to favor approaches which emphasize Negro self-improvement, while equalitarians tend to stress programs aimed at changes in society.

b. Pilot Study

A first examination of the possible relationship noted above has been carried out. The prediction instrument taken over from the earlier study was administered to 99 research subjects. In this instrument the subject makes a series of predictions or estimates of the degree or level of minority group equality in a number of fictional nations. As a basis for his estimate for each nation, two characteristics of the nation are given him. One of these is the degree of opportunity provided for the education of minority groups while the other is the extent of constitutional and legislative assurances of political, economic and social opportunity for minorities. In making his estimate, the subject can give greater, equal or lesser emphasis to one or the other of the two characteristics.

Four methods of scoring this instrument were used. All utilized the fact that information about the two characteristics from which the prediction was made was given in terms of numerical values on a graphic scale. Similarly the subject recorded his estimate of minority equality in numerical terms on a third graphic scale.

The first scoring method involved a direct comparison of the scale values of the two information scales with the value assigned by the subject to the scale reporting his estimate. This score reflected the relative closeness of the first two scales to the latter and, hence, gave an indication of which of the two national characteristics was being emphasized in the prediction. The three other methods were derived from a multiple regression analysis of the data. They were (1) the beta weight squared for Scale A, (2) the beta weight squared for Scale B, and (3) the ratio of 1 over 2.

The scores derived by these four methods were intercorrelated. They ranged from a .61 to .88. The two highest correlations were

between the two beta weight scores and the first of the four scores described above; these correlations were .86 and .88.

The subjects were also administered two self-report attitude questionnaires. One of these was the Multifactor Racial Attitude Inventory, described in detail later in this report. This is an instrument which covers a broad range of issues involved in racial attitudes. The second instrument was a twenty-item questionnaire dealing with the question of whether Negro progress would be more enhanced by efforts of Negro self-improvement for making legal and policy changes which might benefit the Negro. The ideas in this second questionnaire were somewhat similar in content to those involved in the prediction instrument described earlier.

Correlations between the scores on the prediction instrument were correlated with those from the two questionnaires. No significant correlations were obtained.

c. Work Proposed

Although this first pilot study was not encouraging, my interest in the contrasting philosophies of Negro self-improvement and societal change is strong enough so that an additional study will be undertaken. The prediction instrument will be broadened to include other comparisons than that between educational opportunities, on the one hand, and constitutional and legislative guarantees of equal opportunity in political, economic and social spheres, on the other. Pretesting of items will be undertaken in order to guarantee a satisfactory distribution of scores. Finally, another exploratory study of the relationship of the instrument to self-reported racial attitudes will be carried out.

5. Measures Based on Choice of Classificatory Principles

Our studies in this category focus on the extent to which the attitudinal object figures prominently in the subject's organization of his environment, that is, its salience for him. Inferences are drawn from the individual's selection of one from a number of possible characteristics as a basis for organizing or grouping objects. The choice of this alternative over others as a grouping principle is assumed to indicate that the characteristic in question is significant or salient in the individual's organization of experience.

Outline

- A. Verbal Clustering
- B. Picture Classification

A. Verbal Clustering

a. Background

A number of studies of verbal behavior have found that when words drawn from various categories are presented in random order, subjects tend to recall them in clusters, with several words representing a given category being recalled together even though they were not next to each other in the list presented. We know of no attempt to use this technique in the study of attitudes.

b. Work Proposed

We hope to develop a measure of clustering in recall of objects for which alternative classificatory principles are available, as an indication of the salience for the subject of various characteristics of the objects. While we do not as yet know what verbal stimuli we will use, the following will illustrate the approach: the subject would be presented, in random order, with names of well-known people from several different occupational categories--e.g., four baseball players, four musicians, four political figures, four actors; one name in each category would be that of a Negro. The measure of tendency to classify in terms of race would be the extent to which names of Negroes are grouped together in recall.

B. Picture Classification**a. Background**

This technique requires the subject to select which of several objects "belong together," when alternative bases for grouping are available. An example is the "categories test" developed by Horowitz and Horowitz (1938) to assess the relative strengths of race, sex, age, and socio-economic categories. In their test, five pictures are mounted on a page, and subjects are asked which one does not belong. A page might contain pictures of three white boys, one white girl, and one Negro boy. If the subject replies that the white girl does not belong, this is taken to mean that for him sex is a more important category than race; if he replies that the Negro boy does not belong, the interpretation is that race is a more important category for him than sex.

b. Work Proposed

Selection or development of appropriate pictures, probably introducing other characteristics in addition to those used by Horowitz and Horowitz. Administration of the test to subjects from criterion groups with known attitudes.

To the extent that the subject is aware of the true purpose of either of the above tests, the desire to give socially acceptable responses may confound the results, since some subjects may feel that classifying people in terms of social group membership is disapproved. In order to make the concern with the attitudinal object less apparent, both tests would include some stimuli irrelevant to social group membership. The measures would be presented as tests of memory (verbal clustering) and of intelligence (picture classification), in the expectation that under these conditions concern with social approval would lead simply to a desire to perform the task as well as possible rather than to appear "unprejudiced."

6. Measures Based Upon Perceptual Responses

Studies in this category proceed from the phenomena of fusion and rivalry in perception. Characteristically we are limited to a single visual percept or a single auditory percept at one point in time. Stimuli are fused to produce such a percept. When fusion is for some reason not possible, certain of the stimuli dominate the percept while others are suppressed. In the latter case there is often an oscillation of percepts. Prior work making use of this principle has been limited largely to the visual area where it has taken advantage of the possibility of presenting different sets of stimuli to the two eyes. Provided that certain technical problems can be dealt with, such as eye dominance in the case of binocular rivalry, it is reasonable to assume that mediating processes in the central nervous system will influence the outcome of the rivalry of stimuli furnished the two eyes or the two ears. Social attitudes may be found to constitute one such mediating process. If so, the outcome of binocular rivalry utilizing attitudinally relevant materials may be employed as an attitude indicator.

Outline

- A. Binocular Rivalry
- B. Dichotic Listening

A. Binocular Rivalry

a. Background

Based on the pioneering work of Engel (1956), several investigators (Bagly, 1957; Pettigrew et al., 1958) have reported that when a pair of attitude-related stimuli are presented to subjects under conditions of binocular rivalry, the subject's attitude influences which stimulus becomes dominant.

b. Purpose

Our studies in this area have the primary purpose of determining whether the resolution of two stimuli presented stereoscopically is influenced by relevant attitudes. If this turns out to be the case, we would undertake to develop a standardized test for racial attitude utilizing this principle.

c. Pilot Studies

Because of the numerous methodological problems encountered in work with binocular rivalry we found it necessary to carry out six pilot studies in which we tested approximately 120 subjects. We have dealt with four classes of problems. These are described below together with the solutions at which we arrived. The four problem classes are: 1) equipment, 2) eye dominance, 3) selection and preparation of stimuli and 4) ambiguity of report of the percept experienced.

(1) Equipment. While early work in binocular rivalry utilized the Engel stereoscope, Engel suggested the use of the troposcope. Recent investigations by Purcell and Clifford (1964) have used this instrument. The troposcope has three principal advantages over the stereoscope: a) it provides for better accommodation to the ocular characteristics of different individuals, b) it provides for finer control for obtaining fusion and c) it permits independent control of the intensity of illumination to each eye.

In our work we discovered a need for two additional modifications. First, it was desirable that subjects not know they were viewing two slides. We wanted to encourage them to experience the content of only one of the two slides and, conversely, hoped to discourage the formation of a percept fusing aspects of both. Accordingly, we constructed a large screen which fit over the troposcope in such a way as to conceal from the subject the fact that the experimenter was inserting two slides rather than one into the troposcope chambers.

The second modification grew out of a need to control the exposure time for the stimuli. We wished to do this for the same reasons that led us to construct the screen, i.e., to encourage the formation of a single percept without fusion or without oscillation

from the content of one slide to that of another. A short exposure time helps to accomplish this objective. Accordingly, we attached an interval timer to provide control of the onset and termination of the light exposing the stimuli. However, as we varied the intensity of the two lights illuminating the separate chambers, we observed that a light at low intensity had a greater lag in reaching full brightness; this meant that the stimulus exposed by the brighter light was seen before the one exposed by the dimmer light. This led to the addition of a second interval timer, permitting the independent timing of two lights in such a way as to eliminate this problem.

(2) Eye Dominance. For most individuals one eye or the other is sufficiently dominant to control which of two stimuli is seen when one is presented to one eye and one to the other. Previous investigators (e.g., Purcell and Clifford, 1964; Tompkins, 1964) have attempted to deal with this question through tests of visual acuity. They found, however, that even when both eyes tested at the same level of visual acuity on an instrument such as the Bausch and Lomb Orthorater, one eye was likely to be dominant in binocular perception.

If one eye is strongly dominant for a subject, he will see only that member of a pair of stimuli which is presented to the dominant eye. For such a subject there is, in effect, little or nothing to work with from the point of view of resolution of binocular rivalry. In subjects where dominance is present, but not so extreme, the experimenter can approach the problem by alternating which member of the stimulus pair is presented to the dominant eye, e.g., if the pair can be presented more than once the arrangement of the slides will be reversed in the second presentation. However, this solution is of relatively little value, since the experimenter can never be sure how much his subject has been influenced in his percept by the content of the slides and how much by the extent of his eye dominance. Hence, if the phenomena of binocular rivalry are to apply to more than a few people, some means of controlling eye dominance must be found.

The basic approach used in our work, and by others, is to regulate the intensity of illumination to each eye separately, providing lower illumination to the dominant eye. Ideally, one lowers illumination in the dominant eye to the point where neutral stimuli are seen equally often by the dominant and the non-dominant eye. Our first efforts to achieve equidominance in subjects were made in this manner, using pairs of stimuli composed of two-digit numbers, a technique suggested by Izard (1962). In this test, illumination was adjusted for the two eyes separately until a point was reached after which, for 10 trials, the subject reported one of the two-digit numbers half of the time with each eye or until he reported numbers containing one-digit from the left and other from the right.

Using this technique it is possible to bring the great majority of subjects to the point of equidominance. However, we soon discovered that equidominance was not a stable state. When eye dominance

was rechecked after exposing experimental stimuli, it was not unusual to find that in two-thirds to three-fourths of the subjects one of the two eyes was again dominant. Sometimes it would be the previously dominant eye, at other times it would be the previously non-dominant eye. We also learned that equidominance established under one level of illumination did not necessarily hold at another level. We came to suspect, in addition, that equidominance established on one type of stimuli either did not hold at all, or did not hold for long, for stimuli quite different in character.

The first consequence of these observations was a procedure for checking eye dominance with material very similar to that to be used in our experimental slides. For our eye dominance test we prepared pairs of slides each containing one of a pair of similar words. The words differ in only one letter, e.g., wild and will. The two words are printed on the forehead of a photograph of a face. (Experimental word pairs to be described later are also presented in this way.)

The second consequence for our procedure was the development of a mid-experiment recheck for equidominance. First, a subject is brought to equidominance at the beginning of the experiment. He is then shown 12 experimental stimulus pairs, after which he is rechecked for eye dominance and, if necessary, brought to equidominance again. Indications from our pilot studies show that this second equidominance adjustment is more stable than the first. Under this procedure rechecks of eye dominance at the end of the experiment show only a few subjects for whom one eye again has become dominant.

(3) Selection and Preparation of Stimuli. Binocular rivalry is enhanced when the two stimuli presented to the eyes have overlapping contours. In order to objectify as much as possible the problem of determining the percept formed by the subject, we constructed pairs of stimuli in such a way that it would be clear from subject's response which of the two had been dominant. Thus, for example, in response to, "What did you see?" or "What's happening?", the subject could respond with one of two numbers, one of two words, or a description of one of two scenes differing only in a single meaningful characteristic (e.g., man pointing gun vs. man pointing finger).

It was, of course, necessary for the stimuli to differ in some way that could be meaningfully related to attitude toward Negroes. We decided to experiment with several types of stimulus pairs which seemed to meet this requirement. One of these involved the use of words differing in one letter only, such as "bad" and "bag." The words chosen were matched according to frequency of usage (Thorndike-Lorge), and were pre-tested for equivalence in the troposcope. Each of the two words is placed at the same spot on the forehead of one of a pair of photographs of a face. Thus the two slides when presented are of the same face but each carries one of the pair of words. Our hypothesis is that when such a pair is presented on the photograph of a white face, they will be seen

with equal frequency by anti-Negro subjects, but when presented on the forehead of a Negro face, the word with derogatory connotations (in this case "bad") will be seen.

A second type of stimulus pair involved photographs of a single person engaged in some type of activity. Again, the same person is presented to both eyes. This time, however, one aspect of the photograph differs in such a way as to suggest a different activity. For example, a hand in one case carries a screwdriver and in the other case a knife. In choosing objects like the screwdriver and knife, care is taken to see that they overlap in contour as much as possible. In choosing objects which imply different activity by the person photographed, we had several hypotheses. One of these involved association of threat or danger with Negroes; another involved the assumption of uncontrolled or irresponsible behavior. Again, comparable pairs of Negro slides and white slides have been constructed.

The third type of stimulus pair portrays social interaction between Negroes and whites. A parallel pair of slides presents a similar activity involving whites only. To illustrate, one such pair of slides includes one in which a Negro male hands a white female a small package. In the second slide of the pair the identical Negro male holds the hand of the white female. Our hypothesis in constructing stimulus pairs of this sort was that anti-Negro subjects would be motivated to see the alternative in which the relationship between the Negro and white participants was more distant and less intimate.

We learned that the subjects often were not aware of the critical area of the photograph in which we were interested unless that particular area (i.e., the hands) was the photographic highlight of the slide pair. Thus, in the illustration above, the distinction between handing over a package and hand-holding became evident to the subjects only when we magnified the photograph to show only the area in which the hands were the central feature.

At the beginning of our work we had assumed that we could present the same stimulus pair, (e.g., the screwdriver and the knife) on two occasions--once associated with a Negro and a second time associated with a white. This turned out to be impossible because of the strong influence exerted upon the formation of a percept by recent memory. If one member of a pair of slides was seen on the first showing of the pair it was almost certain to be seen again on the second. This made it necessary for us to shift to the use of matching slide pairs which would be similar in diagnostic meaning. Thus, in one slide pair involving a white man and white woman, one slide shows an affectionate act while the other shows an aggressive act. In a matching slide pair involving a Negro man and white woman, a slide showing an affectionate act is again matched with

one showing an aggressive act. While the assumption that these two slide pairs are equivalent is a risky one, once we had discovered the memory problem we had no alternative to this course of action.

(4) Ambiguity of Report of the Percept Experienced. As the material used in the slide pairs becomes more complex it becomes more and more of a problem to determine from the subject's verbal report what it is that he has seen. The subject's answer to the request to "Tell us what you saw.", very often dealt with aspects of the photograph in which the experimenter was not interested. We could not, of course, ask questions directly dealing with the crucial difference between the slide pairs, such as "Was it a gun or was it a screwdriver?", since we had not let the subject know that he was being shown two pictures rather than one.

Our first effort to deal with this difficulty involved a set of standardized questions such as "How many people were involved?", "What objects, if any, were in the picture?", etc. While this represented an improvement over the free report procedure, it still left us with too high a proportion of ambiguous answers. We came finally to use a checklist of one-sentence descriptions including a number of misleads; the checklist contained 27 entries and was presented to the subject after he viewed each slide pair.

Another approach to improving clarity of report of what the subject saw is to give more than one exposure of a slide pair. This is necessary only for slides containing the more complex scenes. Four exposures, each of .5 seconds in duration, is sufficient for almost all subjects to arrive at a clear report of what he has seen.

d. Study A

Our objective in this study was to present the stimulus materials we had prepared to two groups of subjects differing in racial attitude. In line with the theory behind our exploration of binocular rivalry as an attitude indicator, we expected to find the following. First, we anticipated that anti-Negro subjects would tend to perceive words with negative connotations rather than neutral words when a negative-neutral pair was presented against the background of a Negro face, and that the reverse would be true when a similar stimulus pair was presented against the background of a white face. We anticipated that the equalitarian subjects would see both negative and neutral words but without relation to the racial context in which they occurred. Second, we anticipated that, in slide pairs contrasting activities of a derogatory and neutral nature, anti-Negro subjects would tend to perceive the activity with an unfavorable connotation when a Negro was involved and the activity with a favorable or neutral connotation when whites were involved. We assumed there would be no such differences when equalitarians viewed these pairs of scenes.

Apparatus. We presented the stimulus pairs in a troposcope equipped for independent illumination of the two slide chambers. The bulbs in the chambers were activated by interval timers which controlled separately their onset and termination. A screen shielded the subject from the experimenter, concealing from him the fact that he was viewing two pictures rather than one.

Development of Materials. Sixteen of the slide pairs contained words, half of them against a background of Negro faces and half against a background of white faces. These words differed only in a single letter, one word being neutral while the other carried a derogatory connotation. An example of such a pair is "trunk - drunk." Ten of the slide pairs were of scenes, half involving Negroes, half involving whites. The activity pictured on one slide in each pair had derogatory implications while the activity in the other scene was neutral. An example is a person pointing a gun and a person pointing a finger.

Data Collection. There were two groups of 14 subjects each. One was equalitarian, consisting, in part, of members of groups working for desegregation, and, in part, of persons who obtained strongly favorable attitude scores on an attitude inventory. A second group was anti-Negro, consisting, in part, of members of a "radical right" student group and, in part, of persons having strongly unfavorable attitude scores on an attitude inventory. Three subjects from each group did not meet criteria of maintaining equidominance in the experiment and were eliminated. Hence, the analysis was based upon 11 subjects in each group.

For each subject the illumination in the troposcope was adjusted so that the subject saw half of a group of 10 test slides with each eye, (i.e., a condition of equidominance). The subject was then shown half of the experimental slide pairs. The word pairs were exposed once each for .5 seconds. The scene pairs were exposed three times in succession for .5 seconds each time. On the word pairs the subject responded by announcing the word he saw. On the scene pairs he responded by checking what he saw on a checklist of 27 one-sentence descriptions. The experimenter then checked the subject for eye dominance, and, if he did not reach a criterion of at least a 6 - 4 split on the test slides, adjusted the troposcope to again bring him to equidominance. The remainder of the experimental slides were then presented. A final check for eye dominance was carried out.

Data Analysis and Results. The word pair stimuli were scored in such a way that a high (or favorable) score was obtained for seeing more positive words against a Negro-face background than against a white-face background. There were no differences in the perceptions reported by the anti-Negro and equalitarian groups. Both groups saw significantly more positive words against the background of a Negro-face than against a white-face background ($p < .01$).

The scene pair stimuli were scored in such a way that high scores were earned for seeing activities with positive connotations where Negroes are involved. Again there were no differences between the equalitarian and anti-Negro groups in their perceptions. A difference of some interest did occur, namely, that the equalitarian subjects saw more activities with positive connotations regardless of whether whites or Negroes were pictured in the scene. There is some reason to think that this finding might be related to others in which certain personality types have been shown to see activities with positive interpersonal affect more frequently than activities with negative affect.

e. Work Proposed

The research literature on resolution of binocular rivalry in relation to dispositional characteristics, although it is full of contradiction and uncertainty, encouraged us to explore this phenomenon as a potential indicator of social attitude. The results of this exploration have been negative. Unfortunately, we can be sure neither that methodological difficulties have been satisfactorily resolved nor that salutary choices of stimulus materials have been made. Nevertheless, since no leads to new work with a greater potential of success are available, I intend for the time being to discontinue this line of research.

B. Dichotic Listening

a. Background

The principle that a subject's attitudinal disposition might mediate the resolution of two stimuli into a single percept applies as well to the case in which the stimuli are presented to the ears as to the eyes. When stimuli are presented simultaneously to the two ears (by means of a dual track tape recorder) the phenomenon is referred to as dichotic listening.

When a pair of words are used as stimuli the parallel to the resolution of binocularly presented stimuli is close, i.e., it might be possible to present a pair of words only one of which would be heard. However, since the usual experience is to hear both words, a pair of words must sound very much alike if this is to happen.

b. Work Proposed

We have been searching for pairs of words which sound alike but which when combined with a group name like Negro, French or American will differ in attaching favorable, neutral or derogatory meaning to that group. An example is the word pair "hasty" and "nasty." Attaching both to the word Negro gives a pair of phrases "hasty Negro" and "nasty Negro." The former is neutral toward Negroes while the latter is derogatory. Comparable pairs of words

will be attached either to the word "American" or to the words "white man."

After completing the preparation of such pairs of phrases we will present them simultaneously to the two ears in the manner indicated above. The type of analysis anticipated will be similar to that used in the work on resolution of binocular rivalry, i.e., the proportion of derogatory words heard when combined with Negro will be compared to the proportion heard when combined with American or white man.

Dichotic listening offers a second possible approach to assessing the effect of attitudinal disposition on the formation of auditory percepts. This second approach depends on the nature of grouping of elements in recall when a series of auditory stimuli are presented to the two ears simultaneously. When three or four pairs of words are presented in close succession they may be recalled in either of two ways: (1) All the words presented to one ear will be recalled first and these will be followed by all the words presented to the other ear, or (2) Those of the first pair will be recalled first, followed by those of the second pair, etc.

In general, the method of grouping is determined by the time interval between pairs during their presentation. When the time interval is very short the method of grouping in terms of words heard by one ear followed by words heard by the other is characteristic. As the time interval increases all individuals will, at some point, shift to grouping by the method of recalling pairs of words in the sequence they were presented.

There are individual differences in the point at which this shift in method of grouping occurs. It seems reasonable to suppose that if one way of grouping the material conveys meaning while the other does not, that the point of shift in method of grouping might be influenced in such a way as to accelerate shift toward the method giving a meaningful grouping. It might be found in addition that when the meaning was congenial to the listener's attitude the shift was still further accelerated, while the reverse was true when the meaning was uncongenial.

In order to explore this possibility, we are creating word pairs which when grouped by one of the two grouping methods make a meaningful sentence. Some of these sentences will be congenial to an anti-Negro person while others will be uncongenial. An example is as follows:

Pair One	Negroes	intelligent
Pair Two	are	than
Pair Three	less	whites

When the pairs above are read at an interval of one second, all listeners will recall the words as pairs and hence render a series

of words without sequential meaning. As the interval is shortened some listeners will shift to the ear-by-ear grouping and recite the sentence which this grouping provides. By studying persons with known racial attitudes, we will determine whether in instances like this example, anti-Negro persons shift more quickly than do equalitarians (or vice versa when the meaning is congenial to equalitarians). This comparison must of course be relative to the point of shift when the material used is neutral in meaning.

7. Measures Based Upon Involuntary Physiological Responses

A number of investigators have explored the possibility that physiological reactions might serve as indicators of social attitudes. Their work has shared the assumption that the magnitude of the physiological reaction is directly related to intensity of feeling; thus, the greater the physiological response, the stronger or more extreme the attitude is presumed to be. There are problems, however, in inferring the nature or direction of attitude from a physiological response. Most measures of physiological reaction give direct indication only of the extent of arousal; they do not reveal whether the corresponding emotion is pleasurable or unpleasurable. There would seem to be two approaches to this difficulty. First, if a bi-directional indicator of autonomic neural activity were available, it would provide a basis for inferences about the direction of attitude. Recent work with pupillary constriction and dilation offers some hope of developing such an indicator. Second, if, through conditioning, a differential physiological response (present vs. absent) to stimuli differing in evaluative meaning could be developed, this might open the way to studies of attitude utilizing the phenomenon of semantic generalization.

Outline

- A. Pupillary Change
- B. Semantic generalization of Conditioned Autonomic Responses

A. Pupillary Change

a. Background

Hess (1965) states that stimuli which arouse a feeling of pleasantness and liking result in pupillary dilation while stimulation accompanied by a feeling of unpleasantness and disliking results in constriction of the pupil. If Hess is correct, then the pupillary reaction might well be useful in the measurement of social attitudes. Because of its bi-directional character it would have a great advantage over phenomena like the GSR and heart rate which respond unidirectionally to both pleasant and unpleasant stimuli.

However, according to Loewenfeld (1965), it is the intensity and felt suddenness of the emotion and the general state of nervous system arousal which determine the extent of pupil size change and not the content of the emotion. In her critique of Hess' work with visual stimuli Loewenfeld suggested that the differences in pupil reaction, particularly those involving constriction, which Hess interprets as affect-related, may instead have been the result of light reflexive effects.

b. Purpose

In general the purpose of our work in this area is to follow up the leads which the work of Hess has provided. The most critical objective, of course, is to determine whether his bi-directional findings can be replicated. If so, we wish to determine whether the unpleasant affect presumably associated with those stimuli which arouses derogatory attitudes will produce pupillary constriction rather than the dilation which ophthalmologists believe to be associated with all types of affective arousal. We would have little interest in pupillary change if the claim for its bi-directional character is not substantiated. If Loewenfeld is correct in insisting that the pupil always dilates in response to emotional stimuli there would be no advantage to working with pupillary change rather than with other physiological indicators. In fact, such a choice would incur disadvantages, since the technical problems associated with the latter are much better known than is the case with pupillary change.

c. Pilot Study A

In this first pilot study our aim was to develop familiarity with pupil photography and to explore the possibility of detecting attitudinal differences through the phenomena of pupillary change. We felt it wise to use the apparatus Hess had developed. Moreover, it seemed sensible to use stimuli which should arouse strong emotion and two groups of subjects with strongly contrasting attitudes.

Apparatus. The basic recording device was a photo-pupillograph constructed in our laboratory. It is essentially identical to Hess' pupillograph (see illustration in Hess, 1965, p. 48). The frame is a light-tight box 55 cm. high, 45 cm. wide and 80 cm. long. A subject faces into a rubber-lined opening on one end and peers through a 40 x 40 cm. opening at the opposite end. A front surface mirror is mounted directly in front of and 12 degrees below the subject's left eye. It reflects the image of the eye to a 16 mm. Bolex reflex motion picture camera mounted on the outside of the box 90 degrees to the subject's line of sight. The camera records two frames per second at an exposure speed of 0.18 seconds. A 25 watt decorative red bulb in a brushed aluminum reflector is positioned 20 cm. in front of and below the face piece in order to illuminate the eye and provide a light source for the high speed infra-red 16 mm. recording film (Kodak HIR 430).

The pupillograph is positioned on a 30" high table and may be adjusted vertically to the eye level of the seated subject. The subject's end of the box is indented so that he may fold his arms and support his body comfortably while looking into the apparatus.

An experimenter has access to camera focusing and lens aperture adjustments through a hinged lid on the apparatus. On the camera side of the pupillograph are silent, lever-action switches to control the synchronous camera drive motor, the auxiliary focusing light, the infra-red light source, and a 10 sec. synchronous timer which activates the slide-changing mechanism in the 35 mm. stimulus projector. When the apparatus is running, a low level hum and slightly audible clicking sound may be heard from the camera drive assembly.

A 35 mm. Bell and Howell 935 slide projector is positioned on the tape and to the rear of the pupillograph. It projects forward (i.e., in the direction of the subject's line of sight) to a white matt screen 3.6 meters from the subject's face. The projector was modified by placing an opaque plastic washer in front of the magnifying lens. The washer has a $\frac{1}{4}$ " hole. This modification considerably reduced the overall intensity of the projected image. Projected in a dark room, a blank slide (maximum illumination) reflected 15.8 units of light as measured on a Honeywell Pentax spot photometer positioned in the face piece of the pupillograph where the subject's left eye would be.

Pictorial Stimuli. The attitude-related stimuli were 16 photographs made into 35 mm. slides. In addition, a non-attitudinal "control" slide was used. This latter picture was intended to provide a relatively neutral, uninteresting control level of stimulation.

The slides were processed in such a way as to make them nearly equivalent in over-all light intensity. Further, each slide met Hess' standard tolerance for bright-dark light contrasts (see Study B, to follow).

Except for one posed scene, the pictures were all taken from Ebony, a popular Negro weekly magazine. The pictures showed Negroes and whites in various social, work, and leisure situations, e.g., an interracial group of civil rights marchers, a Negro man showing his son a baseball, an older white man being cared for by a female Negro physician, a Negro boy and white girl talking on campus, a white girl and a Negro girl eating dinner together, a white woman seated and a very dark Negro man behind her with his hand on her shoulder. These 16 pictures were among a group of 40 photographs which earlier had been shown to two anti-Negro persons and two equalitarians. The 16 pictures chosen were ones which evoked the greatest difference in degree of dislike from the anti-Negro and equalitarian persons.

Data Collection. Nineteen subjects were tested. Twelve were known to have essentially equalitarian attitudes toward Negroes. Of the twelve, two were Negroes, six had at some time been identified with the civil rights movement (two of the six had been jailed for these activities) and four were known by the investigator to hold equalitarian views. Of the twelve, half were males. Seven subjects were known to have strong anti-Negro attitudes. Of these, three were male and four female. They were chosen on the basis of their scores on a self-report attitude inventory (Multifactor Racial Attitude Inventory).

Hess' (1965) technique was followed. The subject looked through the pupillographic apparatus at a rear projection screen on which the stimulus pictures were presented. A control picture was presented first, followed by a Negro content picture. Each picture was projected for ten seconds. Meanwhile a motion picture camera recorded pupillary changes of the left eye at a rate of two frames per second.

A month later the subjects were contacted again and asked to return for retesting. Of the 19 subjects, 17 were retested. One subject had left the country, another would not return. The retest procedure was the same as that used initially.

Data Analysis and Results. The pupillographic film record was projected and scored in a special apparatus. The pupil image was measured and magnified about 20 times its actual size. The scorer chose a convenient diameter and measured each frame with a millimeter rule. For purposes of analysis the average pupil diameter during the presentation of a Negro content slide was compared with the control slide period preceding it.

Of major interest is the difference between the anti-Negro and equalitarian subjects on mean per cent of pupil change over the 16 attitude-related stimuli. With rare exceptions the pupil diameter was larger for critical than for neutral stimuli. Moreover, the two groups did not differ either on the first or the second testing.

A comparison of the first and second testing provided stability data. The reliability of the mean per cent of pupil change was 0.59 (N=15). Within-subject test-retest reliabilities were also computed. They ranged from -0.38 to 0.74 across the 16 stimuli. The average intra-subject reliability over the 16 stimuli was 0.30.

d. Methodological Problems

In the course of Pilot Study A a number of methodological problems became apparent. Since an attempt was made to take account of these in subsequent research, they are described here. Woodmansee (1966) has published a description of these problems under the title, "Methodological Problems in Pupillo-graphic Experiments."

Light Reflexive Effects. In Hess' (1965) experiments with visual stimuli an emotionally neutral control picture was shown before each test picture. The pupil response (PR) was the change in pupil diameter from the presentation of the control picture to the presentation of the succeeding test picture, expressed as a percentage of pupil diameter during the control period. Control of the light reflex was as follows: (a) the control and test pictures were equated for overall brightness; (b) by a special photographic technique the brightness contrasts in the test pictures were reduced to a minimal level without the loss of important details. In this way the constriction effect of looking from a dark to a relatively brighter area in a test picture was minimized, but as Loewenfeld (1966) suggested the effect is still a significant influence. In one study using photographic stimuli, it was found that the pupil constricted 1%-5% when S's gaze was shifted from a relatively dark to a brighter area of a test stimulus prepared according to Hess' illuminance standards. The potential influence of the light reflex is sizable considering that reflex dilation responses to emotion-arousing stimuli generally average less than 5% of pupil diameter (e.g., Hess, p. 49). The problem is alleviated if it can be assumed that (a) individual differences in the extent of the light reflex (which are great) are randomly distributed in test groups and (b) an S's light-sensory experience is not systematically related to his psychological reaction to the stimuli. In the latter case an S might constrict to a test picture he did not like simply because he looked at an area of the picture that was brighter than the control stimulus.

An obvious solution is not to use visual stimuli; but if they are necessary, a short visual-effects test is suggested. In our laboratory a checkerboardlike picture was prepared so that each of the gray and white squares was an area about the size of the largest gray or white areas of the test pictures. Further, the squares were in illuminance as dark or bright as the darkest and brightest areas of the test pictures. This stimulus was presented to each S eight times with counterbalanced instructions to look either at a specified gray or white square. The average constriction from looking from gray to white squares was computed for each S, and test-group means were then compared to check for random distribution of individual responses.

To check on the possibility that Ss in any test group had, on the average, larger or smaller pupils simply because they looked at dark or bright areas in the test pictures, Ss were asked to identify what they looked at during the course of the experiment. Later, with the pictures projected as Ss had viewed them, spot-photometer illuminance readings were taken from the areas mentioned. The test groups were then compared with these data to determine whether they differed in their self-reported average light-sensory experience.

Arousal Decrement Effect. The pupillary muscles are under the influence of autonomic innervation wherein sympathetic, parasympathetic, and supranuclear mechanisms are simultaneously active to varying degrees. Specific reflexes are superimposed on this constantly shifting basic equilibrium (Loewenfeld, 1958). If the general level of autonomic activity increases by sensory or emotional stimulation, or by spontaneous thoughts, the pupil widens. Pupil size decreases with decreasing arousal accompanying loss of interest, boredom, or falling asleep.

In experiments wherein several control-test stimulus pairs are presented, and the basic datum is the relative change in pupil size from control periods to test periods, it cannot be assumed that basal pupil size reflected in control-period reactions remains constant throughout the experiment. Typically, control-period pupil size increases rapidly when the first few control-test pairs are presented, then decreases somewhat less rapidly as S adapts to or becomes less interested in the experiment itself. It has been found that this transiency in basal pupil size due to arousal changes can easily account for a 27-37 dilation or constriction (actually dedilation) when comparing pupil diameter during a control period and its subsequent test period.

As a general rule alert Ss demonstrate rapid decrease in arousal after about 100 sec. of exposure to stimuli, so lengthy trials should be avoided. Tired Ss show this arousal decrement even sooner. The order of presentation of the stimuli should be varied within test groups to randomize arousal increment

and decrement effects across stimuli. Finally, if the PR for each test stimulus is based on the pupil size during the control periods both before and after the test stimulus the comparison of control and critical PR is thereby corrected for basal changes.

Effect of the Near-vision Reflex. With light stimulation constant there is a constriction of the pupil which coincides with convergence of the eyes and accommodation of the lens upon viewing a near object. Individuals vary greatly in terms of how close the near focusing must occur before the constriction effect begins to operate. In general, however, the older the person, the more pronounced the effect at a given distance. The extent of this problem was noted in the responses of a 50 year old male S to stimuli presented at a distance of about 80 cm. from the eye. The S was shown several pairs of control-test pictures. His PR to the test stimuli early in the series was the typical dilation response as he retained a focus on both control and test pictures. After several pairs he focused only on the test pictures and allowed his vision to blur on the controls (i.e., focusing nearer than the plane of projection), and this resulted in constriction responses of 10%-30%.

This problem may be minimized by using only Ss less than 30 years old, and by presenting the stimuli at a distance from the eye such that an S has no difficulty retaining his focus for the required period (3-4 m. is generally sufficient).

Problem of High Pupillary Variability. In diffuse light the pupil is in a constant state of "unrest." Pupillary diameter can be expected to change at least 1% from second to second and often as much as 10%-20% over a period of several seconds. For an S exposed to a control picture, these irregular and uncontrollable oscillations are generally as variable or more variable than during test-stimuli periods. The high degree of variability in the pupil reaction makes reliable measurement very difficult. Test-retest reliability is generally about .30 in single-trial designs used in studying psychosensory phenomena. With reliability this low, the need for caution in interpretation of findings is obvious.

Hakerem and Sutton (1964) in their study of psychosensory phenomena used a repeated measures design to deal with pupil variability. Woodmansee (1965) using an eight-trial design found that odd-even trial reliability was .43. There is evidence, however, that averaging the pupil response across repeated trials, while increasing reliability, may be inappropriate in the sense that it may mask changes in response during the course of the experiment.

Other Problems. In addition to methodological problems discussed above, there are other technical matters to be considered

in the design, execution and interpretation of pupillographic experiments. For example, the location of the mirror reflecting the image of the eye to the camera is of considerable importance in preventing distortion of the image. Since the work of Hess and his associates has created considerable interest in pupillographic work, a review article is being prepared (by Woodmansee) to serve as a guide to others who are planning studies. Topics to be covered by the article are as follows: historical perspective on pupillary research, neurological and ophthalmological considerations, apparatus design, preparation and presentation of stimuli, control of extraneous stimuli, scoring problems, significant subject variables, and suggestions regarding the solution of methodological problems.

e. Study B

As reported on Pilot Study A we found nothing in our exploratory work to encourage us to continue. On the other hand, as is made clear from the description of methodological problems encountered, it seemed possible that our lack of positive findings had been due to methodological difficulties. In addition, Hess reported that constriction to unpleasant stimuli occurred only after three to five 10-second presentations of the aversive stimulus. On the earlier presentations dilation had been observed.

For these reasons we decided to carry out a second study. A major change from the earlier study was to repeat the stimuli enough times to provide an opportunity for constriction to occur later in the presentation sequence. We chose eight presentations to be sure to cover the period of transition to which Hess had called attention. Some modifications in technique were made; these will be described below. Otherwise the study was basically similar to Pilot Study A in that equalitarian and anti-Negro subjects were shown pictorial stimuli expected to arouse unpleasant affect in the anti-Negro subjects.

Apparatus. The apparatus was essentially similar to that described in Pilot Study A. One major change was made. The translucent screen was removed from the back of the pupillograph box, allowing the subject to look through the box at a screen in the distance. A paper screen was positioned 3.6 meters from the subject's eyes and the pictorial stimuli were projected on this screen. This change was made to take account of the danger, mentioned in the methodological discussion above, that constriction would take place as a result of refocusing the eyes on a near object following blurring or loss of focus while a control slide was being shown.

Development of Pictorial Stimuli. Six black and white slides were used to project the pictorial stimuli. One of

these was the "control" picture used by Hess. It had a plain white background with the numbers one through four in the corners and five in the center. Four of the pictures were related to racial attitude. Two of these had been rated as disliked by a group of 23 introductory psychology students selected at random. One of these pictured an extremely slovenly Negro man. The other pictured an interracial couple - a Negro man seated with a white woman standing behind him. She had her arms around him while they looked at some papers. Two of the pictures containing Negroes had been rated as liked by this same group of students. One of these showed a young white and a young Negro boy playing together. The other showed a Negro performer together with a group of other well-known entertainers, some white, some Negro; all are laughing. The sixth picture was meant to arouse strong negative feeling in all of the subjects. This picture was of a filthy toilet in a broken down wash room.

All slides were prepared according to Hess' technique and following his illumination standards. The overall brightness of all slides was kept at the level he uses. This level was set with the same light meter he employs, the Gossen Lunasix Meter. Moreover, in terms of his standards the six slides did not vary from one another in overall brightness by more than .5 units as measured by this meter. Hess' control standards for stimuli also call for control of dark-light contrast within each slide. His standard here is that the lightest point in a slide should vary no more than .5 units from the darkest-- as measured by a Pentax spot photometer.

Data Collection. The subjects were 22 white female undergraduates. Eleven subjects had, in previous testings, expressed strong anti-Negro sentiment on a self-report attitude inventory (the Multifactor Racial Attitude Inventory). The scores for the anti-Negro subjects fall in the most anti-Negro quartile of attitude scores from 536 students tested in 1963-64 at the University of Colorado and Colorado Women's College. The other 11 subjects were persons who had been identified with pro-civil rights activities (e.g., membership in CORE, participation in civil rights protests, volunteer work in biracial projects, and marriage to a Negro).

Subjects were given a visual acuity test to provide assurance that they were able to see the stimuli clearly. They were also given tests to determine the extent of their light reflexive pupil changes in response to variations in brightness in the slides used. These tests were made with two special checkerboard slides made up of light and dark squares. The overall brightness of one of these slides was somewhat greater than the other; the difference between the two equaled the difference between the least bright and most bright slides of the six used in the experiment. Within each of the two slides the difference between the light and dark squares equaled the difference

between the lightest and darkest areas in the pictures in the critical slides. Using these slides it was possible to show that the light reflexive reactions of the two groups of subjects did not differ for the range of brightness used in the critical slides. Individuals, of course, do differ in this respect from each other.

Each subject was shown the four Negro-content pictures, the toilet picture and the control slide. Each content slide was preceded by the control slide. The order of presentation varied from subject to subject and within subjects from presentation to presentation. After all five of the content pictures had been seen at least once, the subject made ratings on interest and affect for each picture including the control. When the ratings were completed the subject returned to the pupillograph for the remaining seven presentations. At the end of the stimulus presentations the subject rated the stimuli a second time on the affect and interest value scales. When the subject had completed these ratings she was asked to recall what parts of each picture were looked at most. As noted in the methodological section above, it could happen that subjects who dislike a picture might look at lighter portions of it and for this reason show constriction (or less dilation) than subjects looking at darker portions of the same picture. Fortunately, the two groups of subjects being compared in this study were quite similar to each other in their reports of the parts of pictures at which they looked most. When the brightness level of these areas was averaged for the two subject groups no difference was found.

Data Analysis and Results. When the two attitudinal subgroups are compared in terms of their pupil change from control to content picture, using data from all eight presentations of the slides, no differences are found. This is true of the individual Negro-content pictures as well as for any combination of them. Average changes to all content slides are characteristically in the dilation direction. This is also true of the pupil change in response to the toilet scene, although the eleven anti-Negro students taken as a group respond to this scene with an average change of 2% in the negative direction.

If one limits himself only to the data from the first presentation the outcome is somewhat different. Here when the four Negro-content stimuli are treated together there is a significant difference ($p < .01$) between the two subgroups, with the equalitarian subjects showing the greater dilation, 2.65% against -0.10% for the anti-Negro subjects. Also, if one combines only the three Negro-content stimuli to which the equalitarian subjects had given a higher rating for "liking" than had the anti-Negro subjects, the difference between subgroups becomes even greater, 3.37% for the equalitarians vs. 0.37% for anti-Negro subjects ($p < .01$).

In the methodological discussion above it was pointed out that the pupil diameter becomes gradually less over a period of time in a test situation. For this reason it seems best to compare the pupil diameter for an experimental slide with the average pupil diameter for two control slides, one before and one after the experimental slide in question. When this procedure is used to reanalyze the data, the differences reported above all disappear.

It might be true, of course, that different subjects even within the same subgroup react with different degrees of negative affect to different stimulus pictures. An aspect of the experimental procedure called for the subjects to make ratings of the degree to which they liked or disliked each of the five pictures. The pupillary change scores may be correlated with these ratings. When this is done, using the data from all eight presentations, the correlation is .01. When the data from the first presentation only are used the correlation is .24. In neither case is the relationship high enough to be encouraging. An article describing these results is being prepared by Woodmansee for publication in Science.

f. Study C

In view of the potential importance to our attitude research program of the work reported in Study B we decided to repeat this study, with some modifications, on southern college students. This was done at Wake Forest College in North Carolina.

Apparatus. The apparatus used was identical to that described in Study B.

Development of Material. Pictures similar to those in Study B were used. There were four attitude-related pictures. One was an intimate picture of an interracial couple, a Negro man and a white woman, cheek-to-cheek and smiling. A second picture was of two slovenly Negroes, one man and one woman, both apparently drunk. A third was of a young Negro boy and a young white boy lying peacefully together on the floor of a living room. The fourth picture was of a well-dressed Negro man sitting quietly at a table on which there was a bottle of liquor.

Two other pictures were included to provide a basis for comparison with the attitude-related pictures. These pictures were selected to be pleasant and unexciting. One was of a seascape with gulls flying over the seashore. Another pictured a cat and dog sitting together. The final slide was the Hess control slide already described. All slides were made according to the brightness and contrast standards recommended by Hess and described in earlier studies.

Data Collection. The subjects were 20 Wake Forest College students, half of whom were male and half female. Ten of the students were selected from the upper quintile of a distribution of Wake Forest students on a self-report attitude inventory (Multifactor Racial Attitude Inventory) and were clearly equalitarian. Ten were selected from the lower quintile and were clearly anti-Negro. All subjects were shown each slide 15 times with rest periods between each series of presentations. A content slide was preceded and followed by the Hess control slide. Only presentations 1, 2, 5, 10, 14 and 15 were photographed; however, the subjects did not know this. The basis for using this lengthened series of presentations was an observation made in Study B. The data of that study suggested a movement in the direction of constriction on the latter two of the eight presentations used.

After the 15 presentations were concluded subjects rated all pictures for the amount of affect they had experienced when shown the picture. As expected, anti-Negro subjects gave clearly stronger ratings of dislike to three of the Negro-content pictures than did the equalitarian subjects. On the fourth picture, that of the two slovenly Negroes, the dislike ratings were equivalent for the two subgroups.

Analysis of Data and Results. Again no evidence of pupillary constriction was found. Nor did the two subject groups differ in their reactions to the Negro-content pictures.

Data were analyzed separately for each of the six presentations photographed. Both subject groups showed dilation responses to the attitude-related Negro pictures. The order of magnitude was 6% to 7% on the average for the early presentations and 3% to 6% for the later presentations. (See discussion of arousal decrement in the methodological section above). Dilation responses were still occurring for both anti-Negro and equalitarian subjects on the 14th and 15th trials. No difference between subgroups was found on any trial. Nor were there any observable trends in this direction. The results were similar for all pictures considered individually.

Reactions to the non-Negro slides were also analyzed. The results were similar to those above. The only difference was that the degree of dilation to the non-Negro slides seemed somewhat less although not markedly so.

8. Study D

The purpose of this study was to attempt another test of the hypothesis that persons react to negative emotional states with pupillary constriction. In view of our failure to demonstrate this with pictorial material related to racial attitudes we decided to choose other material where we could be more

certain of the emotional impact.. A gruesome murder of a college girl occurring in the early summer of 1966 on the campus of the University of Colorado provided an opportunity for such a study.

Apparatus. The apparatus described in earlier studies was used in this study.

Development of Materials. It was possible to obtain a photograph of the room in which the murder took place. The photograph had been taken at a point in which the room was still in the condition of disarray in which it had been found following the murder. Since the local newspapers had carried full details for a considerable period of time we had every reason to think that with the picture we could reinstate, particularly in female subjects, the feeling of horror experienced by persons who were in Boulder at the time. Some preliminary exploration substantiated the fact that the picture served to bring back the strong feelings occurring at the time of the murder.

The picture was made into a slide with the usual considerations for overall brightness and contrast between light and dark areas which have been described in Pilot Study A, Study B and in the discussion of methodological problems. A control slide was made from a picture of another room, furnished in a commonplace and uninteresting manner.

Data Collection. Fourteen subjects were selected from among the group of female college students who were present in Boulder when the murder occurred. The critical picture was shown to the subjects nine times. Each showing was preceded and followed by the control picture of the second room. The nine repetitions were arranged in sets of three each. Following each set of three showings the subjects were allowed to examine the pictures at their leisure. In this manner we hoped to facilitate the transition, which Hess describes, from a state of arousal (producing dilation) to a state of aversion (producing constriction).

Following the experiment the subjects were asked to describe their feelings when viewing the photograph of the murder room. Eight clearly reported a revival of their emotional disturbance. Six were less clear, reporting also boredom, lack of interest, etc. The two subgroups were treated separately in the analysis.

Data Analysis and Results. Again no constriction was found. Nor were there any differences in degree of dilation between the two subgroups differing in degree of reported rearousal of emotional feelings.

The degree of dilation to the first presentation of the murder room picture was significantly different from zero in each of the three sets of three presentations each. The order of magnitude

was 1% to 2% dilation. The degree of dilation was not significantly different from zero on the third presentation in each set. Occasionally, the difference was significant on the second presentation.

h. Study E

Our inability to find evidence of constriction using attitude-related visual stimuli led us to consider the possibility of using auditory stimuli instead. As we have indicated in the discussion of earlier studies the use of visual stimuli presents difficult technical problems. There are many sources of potential influence upon pupil size in a situation in which the nature of visual stimulation is changing. The use of an unchanging and homogeneous visual field should minimize, if not eliminate, many of these technical difficulties.

Although Hess has not reported evidence of constriction with auditory stimuli he has described work in which the pupil dilation to visual stimuli was changed by verbal material. The pictures he used were of presidents and presidential candidates. He photographed the pupil reaction of three groups of people to five different photographs of President Johnson and five of Goldwater along with a single photograph of former Presidents Kennedy and Eisenhower. One group then read anti-Johnson material, another read anti-Goldwater material and the third read from excerpts from a psychology journal that had no political content. Then each group was retested. The people who read anti-Johnson material showed a slightly smaller response than before to Johnson and a slightly larger response than before to Goldwater. Extremely anti-Goldwater material had a different kind of effect. While it caused the expected decrease in response to Goldwater, it also caused a large drop in response to Johnson and even Eisenhower. The only person unaffected was Kennedy. Hess concludes that this may indicate that bitter campaign propaganda can lower a person's attitude toward politicians in general. He believes that Kennedy was spared for obvious reasons.

There would seem to be no objection to using auditory stimuli to produce the emotional reaction presumably responsible for pupillary change. The arousal of both positive and negative emotions through the use of words is familiar in everyday experience.

Given these considerations, we decided to carry out our next study with verbal stimuli presented orally to the subject.

Apparatus. The apparatus used was similar in most respects to that described in Study B. It consisted of the Hess pupillograph with the translucent screen removed from the back in order to permit the subject to look through at a paper screen approximately nine feet away. In the center of the screen was a geometrical design drawn with thin lines to provide the subject

something upon which to focus. The overall brightness of the area at which the subject looked was kept equivalent to that used in the visual stimuli prepared by Hess and duplicated in our laboratory in previous studies. The verbal stimuli (two-word phrases to be described below) were presented by tape recorder. This recorder was wired to a small bulb on the recording camera. When a phrase was sounded on the tape recorder this bulb flashed momentarily providing light through an aperture in the camera sufficient to expose one frame on the roll of film. This enabled scorers to separate the 18-20 frames associated with one stimulus from the following 18-20 associated with the next.

Development of Verbal Stimuli. It seemed desirable to have the verbal stimuli roughly comparable in the speed with which their meaning was conveyed to the subject. This would make the photographs taken in a 10-second period following stimulus presentation comparable in the sense that they follow by a roughly equal amount of time the onset of the different stimuli.

We chose two-word phrases as the best compromise between meeting this requirement and providing enough words to convey a range of emotional meaning. Seventy-five such phrases were composed. The intent was to make 25 of them as pleasant as possible, 25 as neutral as possible and 25 as unpleasant as possible. A rating study with college girls as subjects was carried out. Twelve phrases resulted from this study. The modal rating for four of these was the most positive rating possible on a 13-point rating scale. These four were moonlit beach, loving father, warm embrace and devoted husband. Four were given modal ratings of seven, the mid-point of the rating scale. These were plastic cup, white string, yellow pencil and paper bag. Four were given modal ratings of one, the extreme negative end of the rating scale. These were strangled child, burned flesh, bloody rape and rotting corpse. These phrases were read into a tape recorder at 10-second intervals with a standard intonation. Each affective phrase (positively or negatively) was preceded and followed by one of the neutral phrases. An order of positive and negative stimuli was arranged that made it difficult to predict which type of phrase would appear next. There were six repetitions of the affective phrases. A rest period was allowed following the series of phrases making up each of the six presentations. An adaptation period, incorporating several neutral phrases, preceded the beginning of each presentation of critical phrases. In order to increase the probability that each subject had similar associations to the phrases used, a series of descriptive paragraphs were prepared; each attempted to give a graphic description of the phrase in question. The phrase describing rotting corpse reads as follows:

"Pieces of rotting skin fell to the ground as the attendant sank his fingers into the crumbling flesh and lifted the body onto the stretcher. A teeming clump of white worms marked the place the body had lain."

These paragraphs occurred at the beginning of the tape. The subject's pupils were photographed while the paragraphs were being read.

Data Collection. Nineteen female college students were used as subjects. These were persons similar to those who participated in the rating experiment on the basis of which the two-word phrases had been chosen. Each subject was photographed while listening to the tape described above.

Following the experiment each subject rated the 12 phrases on a seven-point scale ranging from very unpleasant to very pleasant. Mixed in with the experimental phrases were 12 new phrases which had been given roughly equivalent ratings in the original rating study. The purpose of this final rating was to determine whether phrases which had been repeated six times in the course of the experiment would continue to be reported as comparable in affect to 12 similar phrases which were being heard for the first time. The results of these post-experimental ratings showed that the experimental phrases continued to be and did not differ in rated affect from the 12 phrases which had not been used in the experiment.

Data Analysis and Results. A score for each presentation of each of the eight positive and negative phrases was derived by dividing the diameter of the pupil by the average diameter of the pupil in response to the neutral phrase preceding and the neutral phrase following the affective phrase in question. The result was expressed in terms of the usual per cent increase or decrease of the pupil size to the critical stimulus over the pupil size to the neutral stimuli. Means for the positive phrases and for the negative phrases for each subject and over all 19 subjects were computed for each presentation.

None of these means is significantly different from zero. The means for 19 subjects for all six presentations are positive (showing dilation) for positive phrases. The mean per cent of change was .93. The comparable figure for all negative phrases was .39. This latter mean also reflects an average dilation rather than the anticipated constriction. When we looked at results for individual subjects we found that for 14 of the 19 subjects, the mean dilation to positive phrases was higher than the mean dilation to negative phrases. A sign test showed this difference to be significant at the .03 level.

After finishing the first 10 subjects we looked at the results in terms of the means for the first three presentations against the means for the last three presentations. A small trend was observed in the direction expected from Hess' report of constriction to aversive stimuli on later presentations. On the first three presentations the

mean response to positive phrases is almost identical to the mean response to negative phrases, both representing a dilation of approximately three-fourths of one per cent. However, if one examines the comparable means for the last three presentations the mean for positive phrases is .94%, while that for negative phrases is -.19%.

When scoring of the records of the last nine subjects was complete, the above analysis was repeated. No evidence of the trend for greater differences in the last three presentations was found. Nor did a trend remain evident when the data for all 19 subjects were compared.

1. Work Proposed

The overall impression created by our studies of pupillary change is that it is highly unlikely that this phenomenon will represent a reliable physiological indicator of attitude. We have found it impossible to produce responses which can be interpreted as constriction. Moreover, we can detect no differences in degree of dilation to attitude-related stimuli on the part of subject groups known to contrast sharply in racial attitude. Unless we receive some encouragement from the follow-up work on Study E above, it would seem unprofitable to continue research along this line. As noted in the introductory discussion of pupillary change the advantage of this phenomenon as a physiological indicator rests entirely upon the possibility that it is bi-directional in character. Should this prove not to be the case it would be wiser to use physiological indicators such as GSR, heart rate and vasoconstriction which are more feasible to measure reliably in the average laboratory.

B. Semantic Generalization of Conditioned Autonomic Responses

a. Background

Much work has been done in the field of learning on stimulus generalization utilizing conditioned responses. In the area of attitude, Volkova (1953) has reported that a subject who has been conditioned to salivate in response to "good", will salivate in response to statements that seem to him to represent something good but not in response to statements suggesting something bad, even though the words "good" and "bad" are not used in the statements. The intensity of the response is taken as an indication of the extent to which a subject considers the statement good.

b. Purpose

The purpose of our work on semantic generalization of conditioned autonomic responses is to adapt what is known about semantic generalization to the study of attitude towards social groups. The autonomic responses we use are the galvanic skin reflex, vascular constriction as measured by the plethysmograph, and respiration. The unconditioned stimulus is electric shock. Stimuli to be used in establishing a conditioned evaluative response will be sentences which can be categorized readily as good or bad. Once a differential conditioned response has been established to the two types of sentences, race-related test sentences will be introduced. The sentences are such that if anti-Negro persons classify them as good, they will be classified as bad by persons favorable to Negroes - and vice versa. If, as anticipated, semantic generalization to such race-related sentences occurs, conditioned responses should be given to different sentences for subgroups of persons differing in racial attitude.

c. Pilot Study A

Materials and Apparatus. In this first pilot study our aim has been to develop experimental materials, apparatus, and conditioning procedures.

Galvanic skin responses are picked up by electrodes attached to two fingers of the left hand. A finger plethysmograph to measure vascular constriction was attached to the same hand. A strain gage to measure respiration was placed around the chest. All signals were amplified and recorded on a Grass polygraph.

A pool of sentences readily classifiable as good or bad was prepared and pretested for clarity and lack of ambiguity. An example of a "bad" sentence is, "The old Irishman poisoned the little boy's dog." An example of a "good" sentence is, "The young Japanese boy helped the old woman up when she fell on the ice."

A pool of race-related sentences was also developed. An example is as follows. "The real estate agent showed the Negro buyer houses only in Negro neighborhoods." Evidence is available from other studies that such a sentence is reacted to favorably by anti-Negro persons and unfavorably by equalitarians. The assumption is that the former would categorize the statement as good and the latter as bad.

Procedure. After GSR electrodes, the finger plethysmograph and the respiration strain gage are attached, the research subject is asked to classify as good or bad the sentences to be used in the experiment. This makes possible an individualized check of the assumption that sentences are indeed viewed as good or bad by the particular research subject. In the event he classifies a sentence in ways other than had been intended by the experimenter an alternate "good" or "bad" sentence is substituted.

A pretest of the 10 critical race-related sentences is carried out. The 10 are presented with 20 non-race-related sentences, half good and half bad. The 30 sentences are intermixed. At intervals during their presentation four electric shocks are administered. The purpose of these shocks is to give the subject the impression that he may be shocked at any time. This makes the general arousal level of the pretest more similar to that of the posttest than would otherwise be the case. The shocks are not related in time to any particular type of sentence in the series.

After responses are recorded to this series of pretest sentences the conditioning series begins. "Bad" sentences are shocked and "good" sentences are not. The first five bad sentences are shocked consistently. After this point bad sentences are shocked intermittently, approximately two-thirds of the time. A criterion of conditioned response to three unshocked "bad" sentences in sequence and lack of response to two "good" sentences in sequence was adopted. The experimenter determined the occurrence of responses by visual examination of the polygraph recording.

Once a subject reaches the conditioning criterion the posttest begins. This involves readministration in a different order of the 30 sentences, including the 10 critical race-relations sentences, used in the pretest. During the posttest, in order to maintain the strength of the conditioned response, 60% of the "bad" non-race-related sentences are shocked.

Results. In this pilot study a number of things were learned about our experimental procedure. The first had to do with the use of shock as an unconditioned stimulus. Based upon experience gleaned from other investigators the shock level for individual subjects was set at a point where they described it as "definitely painful". After working with a number of subjects who failed to show conditioned responses we suspected that the shock level might be too

low. We began to set the level at a point which the subject defined as "High as I can take." When this change was made the proportion of subjects who showed a conditioned response to "bad" sentences rose dramatically. In the most recent series ten subjects in sequence have conditioned.

A second development had to do with the procedure for gradual adjustment of the shock level to keep it subjectively the same. We learned that subjects were adapting to the initial level of the shock to such an extent that it lost its force as an unconditioned stimulus. Eventually we learned to correct this by watching the magnitude of two responses: that of the muscle reaction in the shocked finger and that of the GSR. As the magnitude of these responses dropped the experimenter gradually increased the shock to keep these responses near their initial level.

A third development had to do with the effort to establish conditioned responses to "good" sentences as well as "bad." For some time it seemed that we were successful in obtaining conditioning only to the "bad" sentences. There are several possible explanations for this: one is that our "good" sentences were not unambiguously "good." A second was that there is some kind of psychological incongruity in being punished when responding with an evaluative reaction of "good". We will return eventually to a further study of this problem.

It may be pointed out that, while this difficulty in establishing a conditioned response to "good" is puzzling, interpretation of our data is not confused by it. We depend upon observing a different response to race-related sentences in the post-test than in the pre-test and, in addition, require an increased (conditioned) reaction to some sentences for anti-Negro subjects and to other sentences for subjects more favorable to Negroes.

d. Work Proposed

At the present writing it appears that problems associated with the establishment and maintenance of a stable, conditioned, autonomic response appear to have been solved. Among the steps in our procedure which, in retrospect, seem important to this outcome are the use of a very painful shock level and an emphasis upon insuring that sentences used for each individual in the conditioning trials were categorized unambiguously by him as "good" or "bad." The last ten subjects who were conditioned with the current conditioning procedure have each formed a conditioned response. Eight of these were conditioned GSRs and two were conditioned disturbances of the normal respiratory pattern. Three subjects with known attitudes have been studied under the current conditioning routine. Each of these has shown semantic generalization in the expected direction when race-related sentences were presented as test stimuli. One of these was an anti-Negro subject and two were equalitarian.

Before continuing with an extensive study of subjects who differ in racial attitudes one further change in the experimental materials will be made. We have found that subjects notice a difference between the race-related and other sentences. This difference is that while the non-racial sentences are almost uniformly seen as good or bad by everyone the race-related sentences are recognized as two-sided. It is possible that this difference hinders semantic generalization. We consider it likely that if the evaluative concept "bad" to which the conditioned response is established, is based partly on two sided controversial sentences it will take on more of the character of a personalized concept, i.e., "I think this sentence is bad." Since this is probably the way the subjects react to the two-sided race-related sentences we hope that with this change semantic generalization to the racial sentences will be more likely.

At present we plan on making one-fourth of the training sentences of the two-sided controversial type. These sentences will be selected individually for each subject. This will be accomplished by having him classify all sentences as good or bad before his set of positive and negative sentences are made up for the experiment.

Once these changes have been made a second pilot experiment will be carried out on 20 subjects, 10 strongly anti-Negro and 10 equalitarian. Should semantic generalization of the predicted type occur among these subjects the study will be extended to include subjects from a more finely graduated set of attitudinal subgroups.

8. Measures Based on Verbal Self-Reports

Most investigators infer social attitudes from introspective self-descriptions provided by the S. Whether the S presents his views in response to open-ended interview questions or in structured questionnaires, little doubt exists that he can present an inaccurate view of himself; this may be in response either to his expectations of what other people feel to be desirable, or to his own values with respect to what is just and proper. The major focus in this research program is directed at finding a variety of indicators of social attitude less subject to influences of the sort to which self-report measures are susceptible. Nevertheless there are several reasons for continuing to work with such measures as an aspect of the program.

Outline

- A. Multifactor Racial Attitude Inventory
- B. Susceptibility of Multifactor Racial Attitude Inventory to Faking
- C. Empathic Reactions
- D. Reactions to Discriminatory Practices
- E. Derogatory Beliefs
- F. Pro-Negro Generalizations
- G. Interviews
- H. Differential Social Distance
- I. Forced-Choice Inventory

A. Multifactor Racial Attitude Inventory

a. Background

For some years it has been customary for psychologists to describe an attitude toward a social group as composed of three aspects or components--cognitive, affective, conative (policy orientation) (e.g. Smith, 1947; Kramer, 1949). This way of looking at the attitude construct has become so common as to find its way into general psychology textbooks (e.g. Kimble & Garnezy, 1963).

Efforts to measure attitude, on the other hand, have not been influenced by the three-component analysis of the construct. In his chapter, Attitude Measurement, in the Handbook of Social Psychology, Revised Edition, Scott (in press) does not mention it. Hence, the three-component orientation to attitude, although widely accepted, remains, from the point of view of measurement, a matter of speculation.

A first step toward bringing theory and measurement together was taken by Collins and Haupt. Conventional Negro content items were compiled and sorted on an a priori basis into three categories. Statements of belief about Negroes were considered cognitive items, statements of feelings about Negroes and willingness to participate with Negroes (social distance items) were designated as affective items, and statements of policy toward Negroes as a group (items with a "should" or "ought" verb form) were called conative items. Within each category an attempt was made to cover a broad range of content. However, when the items were factor analyzed little support emerged for the three-component idea. Instead four content-defined factors were found. One factor has to do with policy toward integration of the races, another with racial equality and two others with the nature of social relationships into which the respondent is willing to accept Negroes.

b. Purpose

With the Collins-Haupt work as a beginning, we have conducted three extensive studies of the organization of verbally-expressed racial attitudes. These studies, conducted in sequence over a period of three years, had two objectives. The first was to extend the search for components of racial attitude. The second was to prepare satisfactory subscales for the measurement of each such component. The methods by which we proceeded are described below, study by study. The results of the studies will be presented in a single discussion.

c. Study A

The first objective of Study A was to replicate the Collins-Haupt analysis. The second was to extend an inquiry begun in that study into a subscale which might serve to detect those individuals who respond falsely in the unprejudiced direction, i.e. who represent themselves as having more favorable attitudes than is in fact

the case. In addition to 60 attitudinal items, the Collins-Haupt inventory contained 40 statements intended to contribute to this subscale. In their factor analysis Collins and Haupt differentiated two types of items among these 40 statements. They identify one type as involving the denial of ambivalence or self-consciousness in situations which typically make whites feel uncomfortable, regardless of their attitude toward Negroes, e.g., "I probably would feel somewhat self-conscious dancing with a Negro in a public place." The second type assigns to Negroes as a group certain personal attributes which would make them superior to whites, e.g., "The Negro must possess deeper moral strength than the white man since he has come as far as he has in the face of far greater obstacles." As it turned out most of the items in this second, or "overfavorableness", category are keyed such that an "agree" response increases the respondent's "overfavorableness" score. Of the several factors which Collins and Haupt described, only "overfavorableness" showed this potential confounding with acquiescence response set. We undertook to eliminate this difficulty by adding 20 statements of the "overfavorable" type in which a "disagree" rather than an "agree" response would be the overfavorable choice.

Procedure and Subjects. The revised 120 item inventory was administered following several indirect measures of attitude toward Negroes (see Selltitz, Edrich & Cook, 1965). The subjects were paid for their participation. They were 593 white college students of U.S. citizenship from three geographical areas; Northeast, Midwest, and border South. They were selected so as to represent a wide range of racial attitudes. 159 came from pro-integration organizations while 192 belonged to anti-Negro groups: right wing political clubs or racially exclusive fraternities or sororities. Another 242 were recruited through classes, through advertisements in college newspapers and through announcements in college dormitories. Subjects were informed that their personal opinions were to be assessed as part of an extensive program of research on opinion measurement techniques.

Analysis. Following the strategy of the Collins-Haupt study we factor analyzed the 120 item inventory. To be consistent with that study, a principal axes solution was used in factoring the correlation matrix with unities in the diagonal, and the first seven factors were rotated to a varimax solution.

d. Study B

The objectives of Study B were two-fold. The first was to test, through a second factor analysis, our interpretation of the meaning of the factors identified in Study A. Based on the Study A results we first chose 51 of the items from the 120-item inventory. Of the deleted items, most proved to be redundant in content and their contribution to the variance could be taken care of by the items retained. A few other items had low loadings on all of the

Study A factors and were dropped for this reason. Together these omissions made way for 42 new items. In choosing new items, our intention was to have as broad a sample of item content as possible. Accordingly, the literature on verbal measures of attitude was reviewed for useful items (e.g. Hinckley, 1932; Kramer, 1949; Fishbein, 1961; Triandis, 1964).

The second objective of Study B was to broaden our work to include examination of the factor structure of another group of attitude measures--those produced by Harding and Schuman. The work of these investigators represents a major attack on the components of attitudes toward minority groups and, hence, it seemed highly desirable to integrate our work with theirs.

Schuman and Harding (1963; 1964) hypothesized three attitudinal components: sympathetic identification with the underdog, justice, and rationality. Sympathetic Identification with the Underdog, as embodied in their Reactions test, is assessed by estimates of reactions of minority group members who have been subjected to derogatory treatment. One of several alternatives portrays the minority group member as hurt or angry; this is scored as a sympathetic or empathic answer. Justice, measured by their Social Problems test, consists of descriptions of discriminatory acts. The respondent records his reaction to these acts in terms of both social policy and personal practice. Rationality is tapped by the Paired Generalizations test; in each item the respondent must choose between a pair of statements. In some pairs one alternative allows him to be irrationally unfavorable to members of a given minority group ("generalizations anti"). In others, one alternative allows him to be irrationally favorable ("generalizations pro").

The Harding-Schuman version of these measures contained items applying to a number of minority groups. Since we were working with Negro items only we changed some items so that they referred to Negroes rather than to the group about which they had been originally written.

Procedure and Subjects. The revised inventory plus the three modified Harding-Schuman measures were administered as part of a battery of measures of "opinions and attitudes on a variety of social issues." The subjects were 609 white college students of U.S. citizenship from two geographical regions, the midwest and the border South. Most were tested in or recruited through large introductory college courses such as engineering orientation, English and psychology. A representation of anti-Negro opinion was assured by recruiting through two Southern fraternities which had openly opposed integration. Some subjects were tested in class and others were paid for participation in two one-hour testing sessions outside of class.

Analysis. Two analyses were carried out using Tryon's multivariate analysis computer program, BCTRY (Tryon & Bailey, 1966).

First, the inventory items alone were analyzed; and second, the inventory and Harding-Schuman items together were analyzed. In both cases a principal axes solution with a varimax rotation was carried out. Instead of confining the factor structure to seven dimensions as in Study A, the number of dimensions was limited by the communality exhaustion criterion of .95. In the diagonal of the correlation matrix were the highest absolute correlations of each item with all other items. For the second analysis, that encompassing the total set of inventory and Harding-Schuman items, the factor analysis was supplemented by a cluster analysis.

e. Study C

The first objective of Study C was to continue our investigation of the components thus far identified and to explore other leads which grew out of Study B. A second objective was to determine the reliability and validity of each component.

In the Collins-Haupt work and in Studies A and B several factors had consistently emerged. In the present study the item content which best defined these factors was included in another revision of the inventory. As in Study B our goal was to further verify and, where necessary, extend the length of the various item clusters in order to have available homogeneous subscales of about 10 items each. Accordingly, new items were composed. Some of these were suggested by the content of Harding-Schuman items which in Study B had had strong loadings on factors which had remained stable throughout our work.

In addition to those items where there was a clear factorial overlap between our inventory and the Harding-Schuman measures, there were three distinct subsets of items unique to the latter. One of these sets was a subgroup of items referring to the issue of private rights in integration situations; such items were found in the Social Problems measure, but not in our inventory. All these items were rewritten in the format of the inventory. A second set of items representing empathic reactions to mistreatment of Negroes, as measured by the Reactions test, were not assimilated into the inventory because the items can not be adapted to the agree-disagree format. Instead the original Reactions format was retained and additional items were written to extend this questionnaire to 13 items. A third set of items was found in the Paired Generalizations measure. These items are among those which Harding (1962) calls "pro-Negro generalizations". We did not attempt to assimilate these items into the inventory because, like the Collins-Haupt "overfavorableness" factor, they have been shown to have little value as a measure of attitude toward Negroes (see details in Woodmansee & Cook, 1965).

Several respondents to the inventory suggested that we had overlooked an important aspect of attitude toward Negroes, namely, whether the process of desegregation should be carried out rapidly

or gradually. This led us to hypothesize a "gradualism" factor and to include items reflecting this issue in the revised inventory. The final form of this revision included 145 items.

Subjects. The subjects were 630 white college students of U.S. citizenship from schools in two border south cities and two western states. Of the 630 subjects, 313 were chosen for their participation in groups which might be expected to have a majority of members holding a specified attitude toward Negroes. We regarded these subjects as criterion groups against which to assess the validity of our attitude dimensions. The groups and the assumptions about their members' attitudes are listed below:

- Group I: Subjects assumed to have strongly equalitarian attitudes and to be actively concerned with race relations (e.g. CORE, NAACP, race relations councils).
- Group II: Subjects assumed to have equalitarian attitudes but not the active concern of Group I. Students who voluntarily expose themselves to attitude-related issues in elective race relations classes fit this description.
- Group III: Subjects assumed to have somewhat anti-Negro attitudes but not to be actively concerned with questions of race relations. Groups having a high proportion of members of this type are hard to identify. An earlier study by Selltitz and Cook found a higher proportion of moderately or extremely anti-Negro subjects in right-wing political organizations than in other student groups; therefore, subjects for Group III were recruited from these organizations (e.g. Young Americans for Freedom).
- Group IV: Subjects assumed to be anti-Negro and to be actively concerned with race relations. Social fraternity groups which had recently gone on record on their campuses as being opposed to inclusion of Negroes in their membership were solicited as respondents in this study.

All of these subjects were paid for their participation in the study.

The remaining 317 subjects were persons whose attitude toward Negroes was unknown. Of these 107 were from a school in a southern city and were solicited by means of newspaper ads for subjects offering money for participation in two hours of "opinion testing." The remaining 210 subjects were unpaid volunteers from Introductory Psychology at the University of Colorado. All 630 subjects completed the revised inventory, but only the non-criterion group subjects completed the Reactions test.

Analysis. Tryon's cumulative communality key cluster analysis (CC5 portion of the BCTRY computer system) was used to explore the

structure of the 145 items in the revised inventory and the 13 items in the Reactions test. Since BCTRY is limited to 120 variables in a single run, two runs with overlapping items were required. After comparing the results of runs 1 and 2, a third run was made in which only those items were used which appeared to define the various factors in runs 1 and 2.

As the first step in assessing the validity of the item subgroups or "clusters" as potential scales of attitude toward Negroes we cluster-scored the responses of the 317 criterion group subjects. Cluster scores were based on those ten items (five "+" keyed, five "-" keyed) which best defined each of the 10 dimensions in the inventory. By items "best defining" a cluster, we mean those items which either have consistently clustered with the same items in previous analyses, or in the case of new items, have clearly shown that they are useful representatives of the stable factors in the present analysis. The cluster scoring was done in a simple additive manner, with the cluster score being increased by one point for each item which elicited a pro-Negro or equalitarian response from the subject. The range of scores on each cluster thus was 0-10. For each cluster an analysis of variance was done across criterion group levels. In order to compare the relative usefulness of the ten clusters as scales of prejudice, two relatively simple indices of cluster discrimination were employed. One index is the ranking of the correlation ratio, *eta*, the magnitude of which we estimated from the F ratio. *Eta* indexes the subscales' ability to predict the criterion of attitude group membership. This ranking was done for each geographic region separately since it was expected that the discriminatory ability of the scales might be region-specific. While the ranking of *eta*'s provides a way of judging how the subscales compare with each other as measures of prejudice, it does not show the magnitude of intra-scale differences between the scores of anti-Negro subjects and equalitarian subjects. To show this we computed the difference between the largest and the smallest mean.

Using the responses of the 317 criterion group subjects, the internal consistency of each item cluster was also computed.

f. Results

The results of the series of studies described above make it possible to identify ten distinct content dimensions within the various revisions of the inventory. Five dimensions, first isolated in the Collins-Haupt study, have appeared in each of our subsequent analyses. These are listed below with an illustrative item:

Integration-Segregation Policy, i.e., the respondent's position on the propriety of racial segregation and integration. "The Negro should be afforded equal rights through integration." Collins and Haupt labeled this dimension Militant Integration.

Acceptance in Close Personal Relationships, i.e., personal willingness to recognize, live near, or be associated with Negroes.

"I would not take a Negro to eat with me in a restaurant where I was well known." This is the dimension which Collins and Haupt called Residential-Personal Social Distance.

Negro Inferiority, i.e., assertions which imply or directly state that Negroes are inferior to whites in terms of motivation, character, personal goals, and social traits. "Many Negroes should receive a better education than they are now getting, but the emphasis should be on training them for jobs rather than preparing them for college."

Negro Superiority, i.e., attributing to Negroes personal characteristics which make them superior to whites. "I think that the Negroes have a kind of quiet courage which few whites have." Collins and Haupt called this Overfavorableness.

Ease in Interracial Contacts, i.e., social ease in interracial situations in which a majority of whites probably would feel self-conscious or uncomfortable. "I would probably feel somewhat self-conscious dancing with a Negro in a public place." The Collins-Haupt label for such items was Denial of Ambivalence.

A dimension that we call Subtle Derogatory Beliefs was uncovered in Study A and has reappeared in our subsequent studies. The items reflecting this dimension are of two types. One says that Negroes are backward in a social, moral or educational sense, e.g., "Although social equality of the races may be the democratic way, a good many Negroes are not yet ready to practice the self-control that goes with it." The other disapproves Negro social behavior in relation to whites, e.g., "Some Negroes are so touchy about getting their rights that it is difficult to get along with them." Both types of items characterize at least some Negroes as being prone to a variety of relatively minor shortcomings. The items, for the most part, are essentially true and reasonable statements of everyday fact, but in tone they may be taken as subtly degrading and derogatory judgments against Negroes in general.

In Study B three additional dimensions emerged and were replicated in Study C. One dimension we call Local Autonomy vs. Federal Authority in Desegregation because the items defining it pit the policy-making prerogatives of local collectives against the prerogatives of those outside the collective to guarantee the Negro's civil rights, e.g., "Even though we all adopt racial integration sooner or later, the people of each community should be allowed to decide when they are ready for it."

In Study B a second new dimension was found in Harding and Schuman's Social Problems scale, and has been termed Private Rights vs. Minority Rights. This has to do with the individual rights of businessmen, club members, landlords, etc. who oppose integration on the basis of their individual rights of free association or choice of clients, e.g., "A hotel owner ought to have the right to decide for himself whether he is going to rent rooms to Negro guests."

The third dimension found in Study B concerns the respondent's acceptance of Negroes in positions where they are in authority or are socially superior to whites; thus the designation Acceptance of Negroes in Status-Superior Relationships. An example is: "If I were being interviewed for a job, I would not mind at all being evaluated by a Negro personnel director."

The tenth dimension found in this series of studies refers to how rapidly the process of integration should take place. The dimension was first studied in Study C and has been labeled Gradualism. An illustrative item is "Gradual desegregation is a mistake because it just gives people a chance to cause further delay."

g. Validity and Homogeneity of the Subscales

Table 1 gives the analyses of variance of subscale scores of criterion groups within each geographical region. F ratios are significant beyond the .01 level in all cases. Due to the heterogeneity of variance among the criterion groups the accuracy of the determination of probability levels is questionable. However, the size of mean differences and the regular progression, in most cases, of mean scores from the most equalitarian to the most anti-Negro group adds confidence to the conclusion that the differences are significant.

Also provided in Table 1 is Cronbach's (1951) coefficient alpha, an index of subscale homogeneity. As may be seen, the subscales have adequate internal consistency although Negro Superiority, Negro Inferiority, Derogatory Beliefs, and Ease in Interracial Situations are somewhat less homogeneous than the others.

Table 2 shows the relative discriminatory power of the subscales as measures of attitude toward Negroes. They are ranked in terms of the size of eta for each region.

h. Study D

In the course of related research efforts, two additional possibilities for components of attitudes toward Negroes were uncovered. First, Kinney compared the responses of parents and their college-age children who were asked to rate the plausibility of arguments dealing with racial intermarriage. The wide variation obtained indicated that this content area might comprise a significant component of attitude toward Negroes.

Second, during a study on conflict resolution, Summers developed a scale contrasting two general ideals, ~~ies~~ about the best means of achieving racial equality for the Negro. One position holds that assurances of social, political and economic opportunity are of primary importance in the achievement of minority equality. Without these assurances, it can be argued, measures such as education and self-improvement programs are of limited value.

The second position would be that education and other types of self-improvement programs are the most important factor. This position maintains that, if a minority group member takes advantages of educational opportunity, he can achieve equal status without additional constitutional assurances.

In very general terms, the first approach can be viewed as attempts to "improve society" through legislation so that Negroes will be able to achieve true equality, while the second approach is directed toward "improving the Negro" through educational programs and the like so that he will be prepared to take advantage of the already-existing opportunities for equality.

It is obvious that most persons interested in the progress of the Negro to true equality would support both general approaches, i.e., legislation and education. But if one is forced to choose between the two alternative approaches, attitude toward Negroes might play a significant part. While the first approach implies some imperfections in society, the second approach implies some deficits (not necessarily inherent) in the Negro himself. Thus it can be hypothesized that persons with anti-Negro attitudes will, in a forced-choice situation, choose the second alternative, i.e., self-improvement of the Negro. Persons with attitudes favorable to Negroes, on the other hand, could be expected to choose this alternative less frequently, although the widespread emphasis on education in our present-day society might mean that the education alternative would still be chosen with greater frequency than the legislation alternative for some items.

Questionnaire items concerning this area were therefore developed; subjects were told to check the "agree" or "disagree" category as to whether educational, self-help programs are more (or less) important for the Negro's progress than are efforts toward political activism, improved legislation, etc. For half of the items, the directionality was reversed.

Pilot work indicated that responses to items of this type did seem to bear some relationship to overall attitude toward Negroes. Hence, it seemed possible that these "Negro Self-Improvement" items might serve as the indicators of an additional component of attitude toward Negroes.

Cluster Analysis.

Twenty items concerning racial intermarriage and twenty items dealing with Negro self-improvement vs. changes in society were constructed. Those items which, during pilot work, failed to elicit a sufficient range of responses were omitted and new items were developed. Many of the racial intermarriage items were similar to those used in Kinney's study of the plausibility of arguments about intermarriage.

These forty items were then randomly interspersed among the 100-item version of the Multifactor Racial Attitude Inventory, creating a new 140-item version.

Subjects. A total of 760 subjects were tested. This testing was carried out over a six-month period in three geographical areas of the U. S.

Four hundred seventy-five subjects were tested at a Rocky Mountain area university. Some of the testing was done in conjunction with the administration of other attitude measures, while in other cases subjects were given only the MRAI.

College students who were members of attitudinally-relevant criterion groups were tested at two Southwestern universities. One hundred thirty-three subjects came from this area.

The remaining 152 subjects were students at a Border South college. They were given the MRAI after having completed two disguised attitude measures. For the purpose of the analyses to follow, all 760 subjects were treated as a single sample.

Analyses. Prior to the cluster analyses, an item-by-item response frequency analysis was carried out. The response distributions for specific items were used as an aid in the interpretation of the cluster analytic results.

A Cumulative Commuality Key Cluster Analysis and Cluster Structure Analysis (CC5 and CSA portion of Tryon's BC TRY computer program) was employed to explore the structure of MRAI items. The highest correlation within each column was inserted in the diagonal of the correlation matrix. Four runs of the BC TRY program were made.

The first BC TRY run was devoted to finding whether the ten factors isolated by Woodmansee and Cook were replicable on another sample. Hence, the 100 MRAI items isolated by these researchers were analyzed. A second BC TRY run was carried out on these same 100 items, wherein the option of presetting the key cluster variables was used. It was hoped that the cluster structure would be somewhat purified by the use of this option.

The forty items concerning racial intermarriage and Negro progress were subjected to cluster analysis on the third BC TRY run. The results of this analysis, to be described below, led to the selection of ten racial intermarriage items and ten Negro self-improvement items.

The final BC TRY run included 120 items: the original 100 items isolated by Woodmansee and Cook, and the twenty new items, ten concerning racial intermarriage and ten concerning Negro self-improvement.

Results

Replicability of the Ten Original Dimensions. Nine of the ten clusters found by Woodmansee and Cook were also clearly identified in the first two BC TRY runs in the present study. The 90 items in these nine clusters loaded highly on the cluster to which they were expected (on the basis of the Woodmansee-Cook findings) to belong. The tenth group of items, Negro Inferiority items, failed to appear as a discrete cluster on either BC TRY run, although these items did show a unique pattern of rotated oblique factor coefficients.

Racial Intermarriage and Negro Self-Improvement Items. Cluster analysis of these forty items by themselves produced eight clusters; four contained Racial Intermarriage items and four consisted of Negro self-improvement items. No Racial Intermarriage items appeared in the same cluster with Negro Self-Improvement items.

Selection of the ten final items concerning racial intermarriage and the ten concerning Negro self-improvement was carried out on the basis of the rotated oblique factor coefficients and the intercluster correlations. All of the Racial Intermarriage clusters correlated highly with each other ($r = .50$ to $.81$), and items from all four of the clusters were included in the final ten items.

The first Negro self-improvement cluster was not strongly related to the other three Negro self-improvement clusters (r 's = $.35$, $.35$, and $.51$). Since inspection of the raw correlation matrix showed very low correlations between items in that cluster and items comprising the other three Negro Self-Improvement clusters, no items from this "atypical" cluster were included among the final ten Negro Self-Improvement items. Correlations between the four Racial Intermarriage and the three Negro Self-Improvement clusters which supplied items for the final analysis ranged from $.13$ to $.48$.

The final BC TRY cluster analysis included the 100 Woodmansee-Cook items, plus the two groups of ten items each selected to represent the Racial Intermarriage and Negro Self-Improvement dimensions. Nine of the ten Woodmansee-Cook clusters again appeared, as the Negro Inferiority items again failed to define a specific cluster. The existence of Racial Intermarriage and Negro Self-Improvement items as separate clusters was supported with each hypothesized dimension appearing as a new cluster.

Correlations provided by the BC TRY program between the other ten oblique cluster domains ranged from $.12$ to $.70$, with the mean correlation in the matrix having a value of $.37$. This is somewhat lower than the mean correlation between cluster scores of $.54$ found in the studies leading to the identification of the original ten dimensions. The Racial Intermarriage cluster correlated $.25$ with the Negro Self-Improvement cluster.

Validation Study

The ability of the two new item clusters to differentiate attitudinal criterion groups was examined in a study conducted at two Southwestern universities. There were fifty subjects in the most favorable group (Group I), thirty-four in the second most favorable (Group II) and forty-nine in the least favorable (Group III) The composition of the three groups was as follows:

Group I, the most favorable group, contains subjects who are assumed to have strongly equalitarian attitudes and active concern with race relations. White students active in civil rights groups or having participated in pro-integration activities comprise this group.

Students taking an elective course in minority group problems make up Group II. It is assumed that most of these students will have equalitarian attitudes, but not active concern with racial matters. Such students have voluntarily exposed themselves to information about minority groups which is typically presented with an equalitarian view, but are not participating actively in efforts to change race relations.

Group III, subjects presumed to have anti-Negro attitudes, is made up of students belonging to radical, right-wing political organizations or to fraternities which were known to have strong, definite policies against the admission of Negroes.

The two new dimensions, Racial Intermarriage and Negro Self-Improvement, differentiate effectively between the three attitudinal criterion groups. Analyses of variance for each subscale over criterion groups yielded F ratios which were significant at well beyond the .001 level.

Correlation ratios (η) were also derived from the F ratios between criterion group membership and subscale score. The values of η are .51 for the Racial Intermarriage scale and .57 for the Negro Self-Improvement scale. These η values are similar to those reported by Woodmansee and Cook for their Western and Border South criterion group subjects on the ten original dimensions.

1. Work Proposed

A 120-item form of the Multifactor Racial Attitude Inventory has been made available for general use in attitude assessment and attitude change studies. Ten items from each of the 12 subscales identified are incorporated in the inventory.

Expansion of the inventory to include other (perhaps newly developing) relevant dimensions of attitude toward Negroes will be attempted if and when such dimensions appear conceptually salient. At present, no new revisions of the MRAI are contemplated.

Table 1

Homogeneity of Subscales and Analyses of Variance of
Subscale Scores of Criterion Group Subjects, by Region

Subscale	Homogeneity	Criterion Level	Western ^a		Border South ^b	
			\bar{X}^c	s.d.	\bar{X}	s.d.
Integration- Segregation Policy	.92	I	9.82	0.39	9.80	0.72
		II	9.49	1.46	7.92	2.84
		III	6.46	3.60	4.00	2.94
		IV	7.41	2.79	5.11	3.40
			F=17.85**		F=33.72**	
Acceptance in Close Personal Relationships	.93	I	9.73	0.46	9.49	1.09
		II	8.37	2.85	5.00	3.82
		III	6.49	3.71	3.26	2.88
		IV	6.15	2.87	2.39	2.76
			F=11.19**		F=49.98**	
Negro Inferiority	.79	I	9.18	1.01	8.97	1.15
		II	8.47	1.48	7.56	2.12
		III	6.83	2.67	5.66	2.17
		IV	6.76	2.12	5.02	2.82
			F=14.07**		F=24.90**	
Negro Superiority	.77	I	3.00	2.35	3.29	3.27
		II	1.60	2.12	2.88	2.88
		III	1.29	1.30	1.53	1.70
		IV	2.11	1.72	1.16	1.55

Table I (con't)

8-15

Subscale	Homogeneity	Criterion Level	Western ^a		Border South	
			\bar{X}^c	s.d.	\bar{X}	s.d.
			F=4.35*		F=6.89**	
Ease in		I	7.18	1.92	4.91	2.64
Interracial		II	2.54	2.20	1.76	2.09
Contacts	.80	III	1.77	1.50	1.29	1.31
		IV	1.43	1.15	1.23	1.67
			F=56.67**		F=29.41**	
Derogatory		I	7.18	1.37	7.03	1.84
Beliefs		II	5.41	2.30	4.28	2.09
	.78	III	3.00	2.00	1.66	1.66
		IV	2.89	1.83	2.18	1.54
			F=33.75**		F=70.85**	
Local Autonomy		I	9.32	0.84	8.89	1.64
		II	7.04	3.09	6.08	3.59
	.90	III	2.89	2.88	2.42	1.97
		IV	4.89	2.90	2.43	2.38
			F=30.12		F=63.34	
Private Rights		I	8.68	0.99	7.97	1.85
		II	5.99	3.52	4.12	3.24
	.92	III	0.83	1.36	1.63	2.14
		IV	3.17	3.00	1.05	1.71
			F=45.17**		F=76.63**	

Table 1 (con't)

8-16

Subscale	Homogeneity	Criterion Level	Western ^a		Border South	
			\bar{X}^c	s.d.	\bar{X}	s.d.
Acceptance in		I	9.96	0.21	9.80	0.53
Status-Superior		II	9.15	1.66	7.96	2.49
Relationships	.90	III	7.60	3.26	5.63	3.20
		IV	7.63	2.52	5.09	3.41
			F=9.25**		F=23.40**	
Gradualism		I	7.45	2.86	7.00	2.62
		II	4.32	3.38	3.36	3.53
	.90	III	1.00	1.46	1.18	1.72
		IV	2.39	2.41	1.00	1.48
			F=29.13**		F=53.90**	

^a N for each criterion level: I=22, II=68, III=35, IV=46; and
df = 3 X 167 for all Western region analyses.

^b N for each criterion level: I=35, II=25, III=38, IV=44; and
df = 3 X 138 for all border South analyses.

^c The greater the mean score the more equalitarian the attitude.

* Significant at .01 level.

** Significant at .001 level.

Table 2

Discriminating Effectiveness of the Various Subscales as Indicated
by Eta and the Maximum Difference between Criterion Group Means

Rank (eta)	Subscale	Western		Border South		
		Eta ^a	Max. Diff. in Means	Subscale	Eta	Max. Diff. in Means
1	Ease in Interracial Contacts	.71	5.8	Private Rights	.79	6.9
2	Private Rights	.67	7.9	Derogatory Beliefs	.78	5.4
3	Derogatory Beliefs	.61	4.3	Local Autonomy	.76	6.5
4	Local Autonomy	.59	6.5	Gradualism	.74	6.0
5	Gradualism	.58	6.4	Acceptance in Close Personal Relationships	.72	7.1
6	Integration- Segregation Policy	.49	3.4	Integration- Segregation Policy	.65	5.8
7	Negro Inferiority	.45	2.4	Ease in Interracial Contacts	.62	3.7

Table 2 (con't)

Rank (eta)	Western			Border South		
	Subscale	Eta ^a	Max. Diff. in Means	Subscale	Eta	Max. Diff. in Means
8	Acceptance in Close Personal Relationships	.41	3.6	Negro Inferiority	.59	4.0
9	Acceptance in Status-Superior Relationships	.38	2.4	Acceptance in Status-Superior Relationships	.58	4.7
10	Negro Superiority	.27	1.7	Negro Superiority	.36	2.1

^a Estimated from the F ratio

B. Susceptibility of Racial Attitude Inventory and Racial Attitude Interviews to Faking

a. Background

We assume that two classes of variables, in addition to an individual's attitudinal disposition toward a given object or class of objects, influence his behavior in situations involving the object or symbols of the object (including the behavior constituting his responses to instruments designed to measure attitude toward the object):

(a) other characteristics of the individual, including his dispositions toward other objects represented in the situation, values he holds that are engaged by the situation, his motivational state, his expressive style, and so on; (b) other characteristics of the situation, including its prescriptions as to appropriate behavior, the expectations of others in the situation with respect to the individual's behavior, the possible or probable consequences of various acts on his part, and so on.

Social scientists have long recognized that factors other than an individual's attitude toward an object may influence both his responses to instruments designed to measure the attitude and his behavior toward the object in everyday life. Much recent work in the field of both personality and attitude measurement has been concerned with identifying the effects of such "extraneous" variables as the tendency to agree (or to disagree) with statements regardless of their content (e.g., Bass, 1955; Cronbach, 1946, 1950) or the wish to give a socially acceptable picture of oneself (e.g., Edwards, 1953, 1957; Taylor, 1961).

We assume that with respect to many attitudes the settings in which tests are usually administered tend to exert pressures in a constant direction. It seems reasonable to suppose that most respondents, presented with tests in an academic setting or under the auspices of some other "respectable" organization, will assume that the responses which will place them in the most favorable light are those which represent them as well adjusted, unprejudiced, rational, open minded, and democratic.

b. Purpose

The possibility that test and interview responses are typically distorted in the unprejudiced direction depends upon two assumptions. The first of these is that persons who hold opinions of one type are in fact able to accurately give opinions representing positions other than their own. The second is that people agree on the opinions which are expected and approved in situations in which tests and interviews are usually administered.

The purpose of this study was to check these two assumptions. A test of the first assumption can be made by asking very unprejudiced persons to answer as though they were prejudiced and very prejudiced persons as though they were unprejudiced. A test of the second assumption

is to describe a familiar situation and ask individuals to answer in ways they believe would be approved in that setting. Since no directions are given as to what the experimenter believes these expectations to be, it is possible to check the actual answers given and match them against responses given when persons have been asked to answer as they believe either prejudiced or unprejudiced persons would answer.

c. Study A

Faking of Racial Attitude Inventory. From a large pool of college students to whom a racial attitude inventory had been administered, ten research subjects have been selected. Five of these have equalitarian scores, one sigma or more above the mean score of University of Colorado students. Five have anti-Negro scores, one sigma or more below the mean score.

Three subjects are then asked to answer the questions in the inventory a second time. The anti-Negro subjects are given the following directions:

This questionnaire contains questions about a number of different aspects of race relations. Normally, when we ask subjects to answer the questions, we of course expect them to give their honest opinions. In this study, however, we are doing something different. Instead of answering with your own beliefs and feelings, we would like you to ~~take~~ take the part of a person who has rather extreme political and social views, and to answer the questions as you think he would answer them. For example, we would like you to pretend for the purposes of the questionnaire that you are very radical - that you are a member of the Civil Liberties Union, the National Association for the Advancement of Colored People, and are active in civil rights activities.

This may be rather difficult to do, so be sure and remind yourself from time to time of the person that you are pretending to be.

Now, before you begin the questionnaire, I want you to take 10 minutes or so to think about how a very radical person would feel about issues like state's rights, close personal relations with Negroes, integration and segregation, etc.

The equalitarian subjects are given the same instructions as above except that they are told to pretend when answering that they are very conservative, and are members of the John Birch Society and the White Citizen's Council.

To date, we have studied all five of the equalitarian subjects and four of the anti-Negro subjects. Of the former (who faked conservative answers) four gave a faked score that was 2.3 or more sigmas below the mean. The fifth gave a faked score that was within .6 sigma of his original score, declaring "I'm a conservative - you don't have to be prejudiced to be conservative."

Of the four anti-Negro subjects (who faked equalitarian answers) three gave faked scores that were 1.3 or more sigmas above the mean. The other gave a faked score that was within .5 sigma of her original score.

d. Study B

Effect of Social Desirability Set on the Racial Attitude Inventory.

From the same pool of students, ten more research subjects have been chosen. Five of these had scores of one sigma or more above the mean score of University of Colorado students, and five had scores of one sigma or more below that mean. These subjects are all given the same instructions:

This questionnaire contains questions about a number of different aspects of race relations. Normally, when we ask subjects to answer the questions, we of course expect them to give their honest opinions. In this study, however, we are doing something different. I don't want you to answer with your own beliefs and feelings. Instead, I want you to suppose that one of your professors has asked you to be a subject in a study of his on student opinions about race relations. You know that he is very interested in race relations, partly from things that he has said in class, and partly from the very fact that he is doing research on the subject. He asks you to answer this questionnaire. Now, I want you to answer the items the way that you think he would hope or like you to answer them - that is, the way that you think he would feel is proper, or the way that you think would please him the most.

The issue is not whether you would do what I am asking you to do in a similar situation, but whether you could do it. In other words, I am interested in your perception of his expectations, not in your true attitudes (although they may coincide).

Now, before you begin the questionnaire, I want you to take 10 minutes or so to think about how a professor such as I have described would like or hope his students to respond on issues like state's rights, close personal relations with Negroes, integration and segregation, etc. Any questions?

To date, three equalitarian subjects and four anti-Negro subjects have faked the racial attitude inventory under these directions. Of these seven subjects, six gave faked scores that ranged from .7 sigma above the mean to 2.2 sigmas above the mean. All of these faked scores were within 1.5 sigmas of each other. The seventh faked score, given by an equalitarian subject, was just about at the mean for University of Colorado students, and about 1.2 sigmas below his original score.

e. Study C

Faking of the Interview. Ten subjects have been chosen, as in Study A. So far eight have been interviewed. Each was interviewed twice, once by each of two different interviewers. No special instructions were given for the first interview, except that the subjects were told not to let the interviewer know that they were to be interviewed again. Before the second interview, the experimenter gave the anti-Negro subjects the following directions:

We have already interviewed you about your beliefs and feelings with regard to certain significant social and political issues. We would now like to interview you again about the same issues. This time, however, instead of answering the questions with your own beliefs and attitudes, we would like you to take the part of a person who has rather extreme social and political views, and to answer the questions as you think he would answer them. For example, we would like you to pretend for the purposes of the interview that you are very radical - that you are a member of the Civil Liberties Union, the National Association for the Advancement of Colored People, and are active in anti-war activities.

The interviewer does not know that you will be taking the part of a person different from yourself, and we would like you to present as convincing a picture to him as you can. This may be a bit difficult to do, so you should remind yourself from time to time of who you are pretending to be.

Now, before the interview starts, I want you to take 10 minutes or so to think about how a very radical person would talk if he were asked about issues like foreign policy, government control, poverty, race relations, Communism, etc.

The equalitarian subjects were given the same instructions, except that they were asked to play the part of a very conservative person.

Some of the subjects who were selected on the basis of their anti-Negro racial attitude inventory score did not give anti-Negro interview scores on their first interview. These subjects will be discarded from the analysis and more subjects will be selected and interviewed, until five are accumulated who do give anti-Negro scores on their first interview.

All of the subjects who were selected on the basis of their equalitarian scores on the racial attitude inventory also gave equalitarian scores on their first interview.

As in Study A, we will be able to determine from these data whether or not the subjects can accurately represent opinions other than their own. As yet, these data have not been analyzed.

f. Study D

Effect of Social Desirability Set on the Interview. This study has not yet been initiated. As in Study C, students will be screened on the basis of their racial attitude inventory scores, and retained if their first interview scores are in the desired range. The interviewers will not know that their subjects are to be interviewed twice. All subjects will be given the following instructions prior to the second interview:

We have already interviewed you about your beliefs and feelings with regard to certain significant social and political issues. We would now like to interview you again about the same issues. This time, however, instead of answering the questions with your own beliefs and attitudes, we would like you to suppose that a professor of yours has asked you to be a subject in a study of his on student opinions about current social and political issues. You know that he is particularly interested in one of these issues - race relations - from things that he has said in class. You haven't heard him say much about other issues. He asks you to be interviewed. Now, I want you to answer the questions the way that you think he would hope or like you to answer them - that is, the way that you think he would feel is proper, or the way that you think would please him the most.

The issue is not whether you would do what we are asking you to do in a similar situation, but whether you could do it. In other words, we are interested in your perception of his expectations, not in your true attitudes (although they may coincide).

Now, before you begin the interview, I want you to take 10 minutes or so to think about how a professor such as I have described would like or hope his students to respond on issues like foreign policy, government control, poverty, race relations, Communism, etc.

As in Study B, these data will give us information as to whether or not different subjects share a common expectation of what is socially desirable in a familiar setting.

C. Empathic Reactions

a. Background

The recent work of Harding & Schuman presents a theoretical conceptualization of the nature of prejudice. According to these investigators prejudice is conceived as a failure on the part of an individual to achieve norms of justice, sympathetic identification with the underdog, and rationality. Justice is conceived as having concern for the rights of all people in society. Sympathetic identification with the underdog is conceived as concern for the feelings of others or of having empathy for them. Rationality is conceived as recognizing the validity of arguments relatively unaffected by one's own feelings.

Harding and Schuman have prepared measures of each of their proposed dimensions, incorporating items having to do with a variety of ethnic groups.

b. Purpose

The Harding and Schuman work constitutes the major contemporary empirical investigation of the components of social attitudes other than the program of the present investigator. Hence, as noted in the discussion of the MRAI above, it seemed highly desirable to examine the relationship between the measures growing out of their program and the self-report measures originating in this program. For this reason we have included their most promising instruments in a test battery used with a very large number of Ss in three regions of the country. As already noted, this has permitted both a study of the factors or components involved in the instruments and an exploration of their validity against criterion groups differing in racial attitudes.

c. Study A

Development of Materials. In order to develop a form of the test dealing only with racial attitudes, we took from the larger inventory which Harding & Schuman call "Reactions" only those items having to do with sympathetic identification with Negroes. There were ten such items in multiple choice form. Each item presents a situation that confronts a Negro and S indicates what the feelings of the Negro in the situation is likely to be. Example: A Negro is called "boy" or "Black Sambo" by his superintendent. Answers that S can choose range from non-committal types of responses such as, "the story doesn't give enough information," through indifferent types of responses as, "he is likely to have become used to it," through responses that the Negro is pleased with his lot as in "he may well regard it as a friendly, informal way of speaking

to him," to sympathetic identification with the Negro in a response such as, "he probably resents it."

Data Collection. In the first part of the study aimed at collection of material for factor and cluster analyses, the Empathic Reactions test was administered along with the Multifactor Racial Attitude Inventory and other Harding-Schuman instruments to 609 Ss in the Rocky Mountain area and the border South. (See Study B under section on the Multifactor Racial Attitude Inventory). In the second part of the study it was administered to 534 Ss in criterion groups in three regions of the country--241 in the Northeast, 199 in the Rocky Mountain area and 94 in the border South.

Data Analysis. Both factor and cluster analyses show the empathic reaction items to form a distinguishable subscale. Seven items show satisfactory factor and cluster loadings. While the factor represented by these items is intercorrelated with other factors, the correlations are relatively low.

The study of the relationship between empathic reactions and attitude as indicated by membership in criterion groups, gave quite encouraging findings. The relationship was highly significant in all three regions, .45 in the Northeast, .38 in the Rocky Mountain area and .73 in the border South (eta coefficients). While except for the border South these relationships are not particularly high, it will be recalled that these items are not highly correlated with other self-report attitude items. This fact opens up the possibility that they might serve as efficient components of a prediction battery.

d. Study B

A 13 item version of the Harding and Schuman Reactions Test (limited to Negro items) measuring sympathetic identification with the underdog was included in a second study. (See Study C under the section on Multifactor Racial Attitude Inventory). It was administered to 317 subjects and included in an item cluster analysis with 145 items of the type used in the Multifactor Racial Attitude Inventory. This analysis confirmed the fact that these items represent a distinguishable cluster or factor. This finding plus the validity data available from Study A has led us to recommend the use of the modified version of the test in conjunction with the Multifactor Racial Attitude Inventory when self-report attitude measures are desired. We have made this modified version of the Reactions Test available along with the Multifactor Racial Attitude Inventory and the accompanying Test Manual.

e. Work Proposed

No further work is contemplated on this instrument in the immediate future. A satisfactory set of items is now available and will be used in the future only when we are investigating the interrelationships of indicators shown to be related to attitude as indicated by criterion group membership. Also, in the event that further analysis of the factor structure of self-report measures of attitude is undertaken, this scale will be included.

D. Reactions to Discriminatory Practices

a. Background

This study is based on the work of Harding and Schuman, discussed in this report under the Multifactor Racial Attitude Inventory and under Empathic Reactions, and represents their "justice" dimension. Their name for the test involved is Social Problems.

b. Purpose

Our purpose in using the Harding-Schuman measures has been given in the earlier discussions.

c. Study A

Development of Materials. This instrument, as Harding and Schuman used it, covered a variety of minority groups. We selected only the five items referring to Negroes. Each presents a social situation involving Negroes and whites. To each of these situations three responses are required. Example: A Negro enters a barbershop, is refused service and told to go to the barbershop that serves Negroes. The three questions asked of S are (1) "Should the head barber have been willing to give the Negro a haircut?," (2) "Is it all right for some barbershops to refuse to serve Negroes?," and, (3) "Would you mind going to a barbershop that refused to serve Negroes?" As in this example, each item raises the integration-segregation policy issue in the abstract and asks the S what action he would take in the situation as well as what he thinks of the behavior of the persons described as participating in the discriminatory action.

Data Collection. The data collection for these items is identical with that already described for the Empathic Reactions items (see Study A under section on Empathic Reactions).

Data Analysis. The factor and cluster analyses show that a number of the items in this set are quite similar to those in the Multifactor Racial Attitude Inventory which define the integration-segregation factor. Items from the Harding-Schuman group having to do with integration of schools and other public facilities form a cluster with similar items from the Multifactor Inventory.

Another group of items from the Reactions to Discriminatory Practices form a cluster of their own. The characteristic of this set of items is that it appears to pit private rights against the values of integration. A typical item is as follows: "Is it all right for a private tennis club to refuse to admit Negroes?" To make clear the difference

between this group of items and the integration-segregation factor above, note that an item which appears there is "Is it a good idea to have separate tennis clubs, bowling leagues, and so on for whites and Negroes?" In the latter case, the integration question is raised in isolation from the rights of a private social club.

study of the relationship of the Harding-Schuman Social Problems items and racial attitude as indicated by membership in criterion groups gave highly significant results. Correlations were high in all three regions, .64 in the Northeast, .53 in the Rocky Mountain area, and .86 in the border South (eta coefficients).

d. Work Proposed

It proved to be possible to convert items from the Social Problems test to the agree-disagree form of the Multifactor Racial Attitude Inventory. This conversion was undertaken with some of the integration-segregation policy items in order to broaden the integration-segregation factor in that Inventory.

In addition, the items which contrasted private rights of persons with the values of integration were also converted. As might be predicted from this study, they formed a new item cluster in the cluster and factor analyses conducted later and are now part of the current version of the MRAI.

Since our work on self report attitude items has already profited fully from the Reactions to Discriminatory Practice test we plan no further work with it.

K. Derogatory Beliefs

a. Background

This is one of two parts of a Harding and Schuman measure which they called Paired Judgments. Together with the test described in Section F below, it attempts to measure their rationality dimension. Their general conceptual scheme has been described in the section above on Empathic Reactions.

b. Purpose

Our purpose in using the Harding-Schuman measures has been given in the discussion of the Empathic Reactions items.

c. Study A

Development of Materials. The Harding-Schuman instrument covered a variety of minority groups. We limited ourselves to the racial items. This gave us eight pairs of statements to which S responds by choosing the "more correct" of the two. S then indicates whether he is not very, moderately, or very sure of his choice. Example: Statement A - "In general, Negroes who have openly opposed segregation in the South have shown unusual self-restraint and courage." Statement B - "It takes no special virtue for Negroes to oppose segregation openly in the South." In this case the choice of Statement B contributes to the anti-Negro generalizations score; the amount of the contribution depends upon the certainty with which S indicates he is sure of his choice.

Data Collection. The data collection for these items is identical with that already described for the Empathic Reactions items (See Study A in the section on Empathic Reactions).

Data Analysis. The factor and cluster analyses show that these items are most similar to the Negro inferiority items of the Multifactor Racial Attitude Inventory. However, the factor loadings are not high. Some of the items are found with other factors; this apparently is a consequence of the nature of the item content.

The study of the relationship between this part of Harding and Schuman's Paired Judgments Scale and attitude as indicated by membership in criterion groups showed clear and significant results. The correlation was substantial in all three regions, .41 in the Northeast, .52 in the Rocky Mountain area and .76 in the border South (eta coefficients). As

noted above, these items are not homogeneous and if used further in a prediction battery should probably be incorporated as components of other subscales.

d. Work Proposed

No further work is contemplated on these items in the immediate future.

F. Pro-Negro Generalizations

a. Background

These items constitute the second part of the Harding-Schuman Paired Judgments test. They differ from the items discussed above in that one of the statements of the pair is intended to represent an unrealistically favorable generalization about Negroes.

b. Purpose

Our purpose in using the Harding-Schuman measures has been given in the discussion of the Empathic Reactions items (See Section C above).

c. Study A

Development of Materials. From the larger Harding-Schuman test covering a variety of minority groups, we selected the seven item-pairs which deal with Negroes. S responds by choosing the "more correct" statement of the two in the pair. S then indicates whether he is not very, moderately, or very sure of his choice. Example: Statement A - "The percentage of children born to unmarried mothers is higher among Negroes than among white people." Statement B - "The percentage of children born to unmarried mothers among Negroes is about the same as among white people." The choice of statement B in this item represents an unrealistically favorable generalization; the size of the score received by S depends upon the certainty with which he indicates he has made his choice.

Data Collection. The data collection for these items is identical with that already described for the Empathic Reactions items (See Study A in the section on Empathic Relations).

Data Analysis: When factor analyzed together with MRAI items most of the items from the favorable generalizations section of the Paired Judgments test form a distinguishable subgroup of their own. These items have the characteristic that they assert equivalence of Negro behavior to white behavior in areas where the facts are clear to the contrary (the Negro's less adequate performance presumably being due to the influence of low socio-economic status). Examples are the assertions that the proportionate frequency of illegitimacy and murder is no higher among Negroes than among whites. These items differ from the Negro Superiority subscale of the Multifactor Racial Attitude Inventory in that the latter asserts the superiority of Negroes as a group.

The study of the relationship between this part of the Paired Judgments scale and attitude as indicated by membership in criterion groups gave statistically significant findings, but of lower magnitude than is true of the other tests in the Harding-Schuman group. The eta coefficients obtained in the three regions are as follows: .35 in the Northeast, .18 in the Rocky Mountain area, and .60 in the border South. In this respect these items behave in a similar fashion to the Negro Superiority items of the Multifactor Racial Attitude Inventory where the correlations with attitude as indicated by criterion group membership were also low.

d. Work Proposed

We hope to go ahead with an exploration of a "correction" subscale to correct self-report attitude scores for distortion due to considerations of social desirability. It appears that the type of items represented by the Harding-Schuman pro-Negro generalizations might be a candidate for inclusion in such a correction score. As yet we have devised no approach to the validation of a correction score in which we have confidence.

G. Interviews

a. Background

Work on interviewing has established the fact that respondents' answers may differ according to the interviewer's characteristics and behavior. It seems likely that in the area of social attitudes many respondents will assume that the interviewer approves of unprejudiced views and the respondents may therefore try to appear unprejudiced.

b. Purpose

We started from two assumptions: (1) that one of the major probable extraneous influences on responses to interview questions is the individual's wish to present a certain picture of himself, either to impress the interviewer favorably or to protect his own self-image; and (2) that when the interviewing is done under academic or other "respectable" auspices, most subjects will assume that the responses which will present them in the most favorable light are those which represent them as well-adjusted, tolerant, rational, open-minded, democratic. Thus we are working with interviewing techniques designed to make it easier for the individual to reveal himself as not well-adjusted, not tolerant, etc., or to make it harder for him to portray himself, falsely, as well-adjusted, tolerant, etc.

Specifically, with respect to attitudes toward social groups (racial, religious, or national), we planned two approaches: one in which it is emphasized that experts differ in their views on the questions being asked, and one in which the questions assume that the respondent holds certain negative views toward the object. In the first approach, for example, when the attitudinal object is Negroes, the introductory statement to one section of the interview might run:

"The Southern Regional Council, a bi-racial organization interested in improving Negro-white relations in the South, found in November, 1958, that the main barrier to Negro voting was not intimidation, but apathy. However, another recent study reports, "Violence, terror and intimidation have been, and still are, effectively used to disfranchise Negroes in the South."

The thought here is that such a statement carries the implication that there are well informed and respectable people who hold negative views about Negroes (in this case), and thus makes it easier for the respondent to express any such views that he may hold.

In the second approach, a typical question might read: "What would be your objections to being treated by a Negro doctor?" This, of course, is similar to Kinsey's approach of asking, not "Have you ever . . .?," but "When did you first . . .?" or "How often do you . . . ?" The question tacitly assumes that people hold certain negative views and thus presumably makes their expression easier. The respondent

who does not hold these views can reject the question. Early exploratory work suggested that this second approach offered more promise and led to the studies reported in the pages to follow.

c. Pilot Study A

Development of Materials. Questions were worded in such a way as to make the interviewer sound anti-Negro. The purpose of this, as noted, above, was to make it easier for the subject to reveal such anti-Negro views as he might have. This was accomplished in two ways. One of these was to have the interviewer precede the question by stating an anti-Negro premise. The second was to have an interviewer ask a leading question which presumed an anti-Negro answer. An illustration of both of these procedures is given below.

The civil rights movement has caused quite a lot of disfavor, particularly the pickets and demonstrations. A lot of times the demonstrations don't have any actual connection with the situation--for example, take the sit-ins at the White House and other federal building around the country over things that are happening in the South. Don't you think that things like that do more harm than good to the cause of the Negro?

The interview was presented to the research subjects as a public opinion survey of college students. Of the 32 questions in the interview 15 dealt with race relations. The remainder were questions about high interest topics such as the war in Viet Nam, capital punishment, communism, etc. The 15 questions related to race relations were spaced throughout the interview. Considerable attention was given to developing "question contexts" such as urban housing. Within such a question context questions unrelated to race relations were asked first after which came the questions involving race. The latter appeared to flow naturally from the over-all context.

The sub-areas of race relations from which questions were chosen were determined in large part by the factor studies of attitude items carried out in connection with development of the Multifactor Racial Attitude Inventory.

Interviewers were trained to use this type of question and preliminary work was carried out to determine whether or not the technique could be used in a standardized manner. Experience indicated that it could.

After a number of interviews had been administered and tape recorded, an attempt was made to develop scoring categories for each question on a five-point dimension ranging from very unfavorable to very favorable toward Negroes. This effort made it clear that some of the questions needed revision and that most of them needed additional standard probes to clarify types of answers which otherwise would be uncodable.

Data Collection. This first pilot study concentrated on subjects whose attitudes were in the "middle range." It made the assumption that such persons, by contrast with those with extreme attitudes, are more influenced in their responses to questions by their expectations of what might be approved by other persons (such as interviewers).

The question raised in the study was whether respondents would give more anti-Negro answers to the slanted interview questions than would comparable persons answering unslanted questions. In order to make this comparison it was necessary to prepare a "straight" form of the interview using unslanted questions dealing with identical topics.

Subjects were chosen for the study on the basis of their scores on a self-report attitude inventory (the Multifactor Racial Attitude Inventory). Only those subjects were used who fell between plus or minus one sigma of the mean of University of Colorado students on this inventory. Students within five points of each other in score were constituted as pairs, one being interviewed with the slanted interview and one with the straight interview. Members of a pair were of the same sex and were interviewed by the same interviewer. Nine pairs of subjects were interviewed. All interviews were tape recorded.

Data Analysis. Each interview was coded by two judges. Because of the pilot character of the study no attempt was made to obtain coders who were naive with respect to the question being asked in the experiment. The coders were trained to anticipate the "halo" effect of answers given on earlier questions on the perception of answers given to later questions. Intercoder reliability was high.

Results. The interview results were analyzed question by question. Of the 15 questions related to race relations nine gave more anti-Negro answers on the slanted interview than on the straight interview. On the remaining questions little or no difference between the two interviews was obtained. In a number of cases the lack of difference was due to the fact that all subjects gave equalitarian answers regardless of the interview form. We concluded that the slanted interview showed enough of a tendency to produce the predicted results to make it worthwhile to conduct a second study.

d. Study B

The purpose of this study was to carry further the development of the "slanted" interview on which exploratory work was done in Pilot Study A. One objective was to determine the degree to which subjects were consciously aware of the deliberately biased character of the interview. A second was to improve the interview by eliminating questions which had not differentiated between the "slanted" and "straight" forms of the interview in the pilot study. A third was to make both a broader and more intensive study of the impact of the slanted questions upon subjects' responses than had been possible in the pilot study. Specifically, in this study, the comparison of slanted and straight interviews was broadened beyond students with middle-range

attitudes to those with strong equalitarian and strong anti-Negro attitudes as well.

Subjects' perception of the interview and the interviewer.

The original interview was administered to ten subjects in order to determine the extent to which they might be aware of the biased character of the introductory premises preceding the questions and the questions themselves. Following the interview the subjects were asked for their impression of the interviewer's own position of several of the major issues covered in the interview, including the race relations issue. The subject was also asked about his impressions of the way the questions were worded, "Were they fair and objective or did you think them unclear and perhaps biased in one direction or another?" No subject indicated that he thought the interview to be anti-Negro nor the questions to be biased. If we take this information at face value we may conclude that the subjects were not consciously aware of the nature of the interview. This is a promising finding since it increases the likelihood that any effect of the slanted interview upon the subjects' answers will be outside of awareness -- i.e., not due to a conscious adjustment on his part to the "slant" built into the interview.

Revision of items. Questions which had not contributed to the differences found between the slanted and unslanted interview forms in the pilot study were either revised or eliminated. These questions were of two types. One dealt with topics on which opinion was so uniform and conviction so strong that responses were apparently not influenced by the question form. Such questions were eliminated. Another type involved a "projective" principle; the subject was asked why some specified group of people reacted to Negroes or to Civil Rights legislation in a hostile manner. We had assumed that the slanted interview form might cause subjects to interpret such people as more anti-Negro than did the unslanted form but this turned out not to be the case. In the revision the focus of such questions was changed to apply directly to the subjects' own views.

Development of coding categories and standardization of probes.

After we had arrived at a final form of the interview, coding categories were developed. The answers to each question were arranged on a five-point continuum from most anti-Negro to most equalitarian. The 35 interviews given during the work on question revision were examined for illustrative answers. Additional probes were formulated where necessary to clarify the subject's position when his original answer was ambiguous or off the main point. In addition, the first twenty interviews from the current study were also examined for the purpose of further standardizing the coding categories.

Data collection. As in Pilot Study A, the principal objective of Study B was to compare the responses to unslanted and straight interviews given by matched pairs of subjects. As noted earlier the subjects were to include an anti-Negro group and an equalitarian group as well as a middle-range group. A total of sixty subjects were interviewed, twenty

in each of these three subgroups, Subjects were identified by means of a self-report attitude inventory (Multifactor Racial Attitude Inventory) given by another experimenter in a different setting than the one used for this study. For the equalitarian group, the most favorable students available were used; all were more than one standard deviation above the mean score for University of Colorado students on this inventory. Similarly the most anti-Negro students available were used for the anti-Negro subgroup; each of them was one standard deviation or more below the student mean. The subgroup of students with middle-range scores were within a few points of the mean. Ten pairs of subjects were recruited for each subgroup. Each pair was of the same sex and within five points of one another on the MRAI inventory score.

The subjects were approached with the information that they were part of a randomly selected scientific sample being used in a public opinion survey. The interviewer did not know the attitude subgroup to which the subject belonged nor the identity of his paired counterpart.

Coding. Coding was carried out by two trained coders. Neither knew the purpose of the study. They knew nothing about the subjects whose responses they were coding. They were told that the two forms of the questions to which the subjects were responding represented an old and a new form of the interview. The intercoder reliability was .97 (Pearson r of total scores on thirty pairs of cases).

Results. Non-parametric tests (Friedman two-way analysis; Wilcoxon matched pairs signed ranks) of the significance of differences between scores obtained with the two forms of the interview were carried out. For all pairs the interview scores were significantly more anti-Negro on the slanted interview (as expected) than on the unslanted (difference significant at $p < .10$ on the Friedman; at $p < .03$ on the Wilcoxon). When the above analysis was repeated by attitudinal subgroups it developed that the effect is found among the more anti-Negro subjects and among the subjects with middle range attitude scores ($p < .05$ or better) but not among the more equalitarian subjects.

The failure to find an effect of interview form among the equalitarian subjects as compared to the success in demonstrating it among anti-Negro subjects may be accounted for by the relative extremity of attitude among the two groups. The equalitarian subgroup represents a rather narrow range of strongly convinced equalitarians. In the slanted interview they consistently reject the anti-Negro introductory premise and the implied expectation in the slanted question. Students in the anti-Negro subgroup on the other hand are more variable. The score range in this subgroup is twice that of the score range in the equalitarian subgroup. Moreover, one does not get the more extreme anti-Negro position well represented among Colorado undergraduates. We may assume that the attitudinal position in the (moderately) anti-Negro subgroup is less firm than in the (strongly) equalitarian subgroup and hence more susceptible to influence by slanted interview questions.

In order to determine whether some items contributed more than others to the over-all difference between the two types of interviews a comparison of results item-by-item was carried out. The distribution of scores obtained with the slanted interview form on a single question was compared for the total group of subjects with the distribution obtained with the unslanted form of the same question (chi square; Wilcoxon matched pairs signed ranks). This analysis showed five of the 16 race relations questions producing significant differences at levels ranging from $p < .01$ to $p < .06$.

e. Study C

On the basis of our findings to date there seems little reason to doubt that interview form does have an effect upon the answers subjects give to race related questions. This effect is minimal or absent in the case of subjects whose degree of certainty about their attitudinal position is quite high. Within sub-groups whose members have less extreme attitudes some individuals show more of the influence of interview form than do others.

We have recognized from the beginning that such a finding would be susceptible to two interpretations. One of these is that under the slanted interview the subject is free of the strong equalitarian expectation created by the university setting and the university-connected interviewers and is thus more free to describe his actual beliefs and feelings. However, the other equally plausible interpretation is that the subjects who receive the slanted interview are influenced by it in such a way as to give more unfavorable responses than are in truth characteristic of them. While we have no definitive way in which to choose between these two possibilities there are two types of studies which might throw some light on the question. One of these is a study in which measures of susceptibility to social influence are administered to the same subjects who receive the slanted interview. This would make it possible to ask whether subjects whose scores on the slanted interview are more anti-Negro than would be expected (from the scores of matched subjects on the unslanted interview) are also more susceptible to social influence as measured by tests of this characteristic. Such a finding would keep open the interpretation that scores on the slanted interview resulted from situational influences which distorted true attitudes rather than revealed them. However, since we must assume that it is equally likely that the socially susceptible person had had his MRAI inventory answers distorted in a favorable direction by the university setting in which he gave them, we cannot take such a finding as unambiguous.

The second type of study would test both the slanted interview and the unslanted interview against a criterion of attitudinal group membership. This would make it possible to determine whether such a criterion could be better predicted by the slanted than by the unslanted interview.

Purpose. The purpose of this study is to test the two types of interviews against the criterion of attitudinal group membership as indicated in the paragraph above. The two types of interview will be administered to members of the same criterion groups. Alternate members will receive the slanted interview form while the remainder receive the unslanted. The criterion groups will be similar to those used in previous studies of this sort. When the interview results are compared it will be possible to determine whether the slanted form provides a better differentiation between the groups than the unslanted.

Revision of Items. The interview closely resembles that used in the previous studies. A total of 28 questions was asked; these dealt with a variety of controversial social issues including such things as war, capital punishment, slum clearance, etc. An effort was made to work the race-relations questions into a set of related questions, e.g., the question about school integration was asked in the context of other questions about educational policy.

We used a total of 12 race-related questions. Six of these were retained from the previous study while six were new. Those eliminated had not contributed to differentiating between attitudinal subgroups in Study B. In general the new items dealt with matters on which the equalitarian position was unlikely to be taken by a majority of the college student population. Among such questions were whether or not the federal government should partially subsidize rental payments for low-income Negroes, whether a Negro should identify himself as Negro in answering an advertisement for an apartment, whether most Negroes would profit more from vocational training than from training in Arts and Sciences, whether Negroes were characterized by unwise spending of their money on luxuries, etc.

Development of Interview Probes. Considerable attention had to be given to the development of interview probes. In order to get reliable scoring of the interview it was necessary to insure that each subject answered the race-related questions on the dimension for which the five-step coding categories had been established. Subjects' first answers often failed to relate to the scoring dimension. A great variety of non-leading interview probes had to be available to the interviewer to make it possible for him to cope with this variability. Pretest interviews were continued until we were satisfied that we had the necessary store of probes to meet any situation.

Research Plan. Fifteen pairs of subjects will be interviewed in each of four criterion groups. As in other studies these criterion groups will differ along a continuum of favorableness to Negroes. The relative success of the two interview forms in differentiating the four groups will be determined.

At this writing we have interviewed approximately 13 pairs of subjects in group 1 (most favorable), seven pairs in group 2 (next most favorable), and nine pairs in group 3 (unfavorable). Subjects from group 1 have been chosen from groups such as the Student Peace Union and Students for a Democratic Society at the University of Colorado and Colorado State University. Subjects in group 2 have come from a race relations class at Denver University. Subjects in group 3 have come from right-wing student groups like the Young Americans for Freedom, conservative clubs, etc., at the University of Colorado and Colorado State University.

H. Differential Social Distance

a. Background

Westie (1953) has developed a social distance questionnaire in which Ss are asked to rate their willingness to accept hypothetical persons described in terms of race and occupational status (e.g., "white janitor," "Negro banker") in various situations or relationships; the score is based on the difference between ratings of Negroes and whites of the same occupation in a given situation or relationship. Westie states that this instrument seems less susceptible than most self-report measures to distortion by the desire to give socially acceptable responses; presumably this is because the length and format of the test make it difficult for S to remember, for example, exactly how willing he indicated he was to accept a "white janitor" as a dinner guest when he comes to the item calling for a parallel rating for "Negro janitor."

b. Purpose

Our basic interest was to discover whether modifications in the test would make it less susceptible to influence by considerations of social desirability. Since the Ss were northern college students, we assumed that any lessening of the influence of social acceptability would lead to freer expression of avoidance of Negroes and thus to higher difference scores on the form of the test that was least susceptible to social acceptability influence.

c. Study A

Development of Materials. We modified the instrument in two ways: (1) by adding the attribute of religion to the hypothetical person; (2) by changing the format to make it harder for S to see the pattern of his ratings. Combinations of these modifications gave four forms of the test.

Data Collection. These tests were administered to 102 northern college students: 46 members of "liberal" organizations; 56 members of "extreme conservative" organizations. Two versions of the test were administered to each S, two weeks apart.

Data Analysis. The primary results were entirely negative. Scores did not vary as a function of the form of the test taken, nor was there any consistent relation between scores on the different forms and scores on several social desirability scales.

8-43

There were a few findings of secondary interest. First, intercorrelations of the forms (tetrachoric r) average .92, suggesting that they might be used as alternative forms should such a need arise. Second, a small number of Ss had sizable negative scores indicating greater acceptance of Negroes than of whites of parallel status. This was one of the observations that gave impetus to our interest in developing a subscale to be used as a correction for scores on self-report measures. Third, such differences as were found between the liberals and conservatives on the total test were due primarily to differences on two of the four subscales. These two contain items referring to residential and personal-social relationships. On the remaining two, dealing with the use of public accommodations and the holding of public positions, no differences were found. The suggestion is that among northern college students the pattern of racial separation (or, at least, of reported separation) is now concentrated on relationships which may be thought of as private or which may carry implications for one's social status.

d. Work Proposed

At the moment we see no advantage in working further with this technique.

I. Forced Choice Inventory

a. Background

Within the past decade, questionnaires requiring a choice between items matched for social acceptability have been used extensively in the measurement of personality (e.g., Edwards, 1957). However, relatively little use has been made of this technique in attempts to measure social attitudes. I have discovered one unpublished scale in which anti-Negro items from the Adorno F-Scale were paired with items derogatory to other minorities. This work was done by Reynolds while a graduate student at Michigan State. No data are given to indicate the extent to which the item pairs were matched for social desirability. Evidence is offered that students at Louisiana State University more frequently choose the anti-Negro statements than do students from Michigan State University.

We have studied intensively the literature reporting and reviewing the use of the forced-choice technique in the personality area. We find that the technique has come under serious attack in recent years, on the following grounds: the difficulty and perhaps impossibility of equating items for social desirability (e.g., Jackson, 1961; Messick, 1960); little difference in the results of forced-choice questionnaires and traditional questionnaires (e.g., Travers, 1951); the frequency of negative and uncooperative reactions of Ss because of the difficulty, incongeniality, and apparent unreasonableness of the task, leading to careless responses and thus to unreliability (e.g., Levenion et al., 1959). The first of these problems (that of devising items that are of equal social acceptability but of different import for attitude) seems especially severe in the case of social attitudes where there are clear norms of social acceptability.

b. Work Proposed

While I am not encouraged by the review of the literature to believe that the forced choice technique is promising in attitude measurement I do feel that it should be explored. To date it has sufficiently low priority that no plan of research has been developed. Exploratory work on the possibility of devising attitudinal items matched by social acceptability will be carried out when time and facilities permit.

REFERENCES

- Bagby, J. W. A cross-cultural study of perceptual predominance in binocular rivalry. Journal of Abnormal and Social Psychology, 1957, 54, 331-334.
- Cook, S. W., & Seltiz, Claire. A multiple-indicator approach to attitude measurement. Psychological Bulletin, 1954, 62, 35-55.
- Cronbach, L. J. Coefficient alpha and the internal consistency of tests. Psychometrika, 1951, 16, 297-334.
- DeFleur, M. L., & Westie, F. R. Verbal attitudes and overt acts: an experiment on the salience of attitudes. American Sociological Review, 1958, 23, 667-673.
- Edrich, H., Seltiz, Claire, & Cook, S. W. The effects of context and of raters' attitudes on judgments of favorableness of statements about a social group. To be published in Journal of Social Psychology, October, 1966.
- Edwards, A. L. The social desirability variable in personality assessment and research. New York: Dryden, 1957.
- Engel, E. The role of content in binocular resolution. American Journal of Psychology, 1956, 69, 87-91.
- Fishbein, M. An investigation of the relationships between beliefs about an object and the attitude toward that object. Technical Report, No. 6, 1961, University of California, Los Angeles, Contract Nonr-233 (54).
- Getzels, J. W. The assessment of personality and prejudice by the method of paired direct and projective questions. Unpublished doctoral dissertation, Harvard University, 1951.
- Getzels, J. W., & Walsh, J. The method of paired direct and projective questionnaires in the study of attitude structure and socialization. Psychological Monographs, 1952, 72, No. 454.
- Hakerem, G., & Sutton, S. Pupillary reactions during observation of near threshold light stimuli. Paper read at American Psychological Association symposium, Los Angeles, September 6, 1964.
- Hammond, K. R. Measuring attitudes by error-choice: an indirect method. Journal of Abnormal and Social Psychology, 1948, 43, 38-48.
- Harding, J. The conceptualization and measurement of prejudice. Paper read at American Psychological Association, St. Louis, September 1962.

- Hess, E. H. Attitude and pupil size. Scientific American, 1965, 212, 46-54.
- Hess, E. H., & Polt, J. M. Pupil size as related to interest value of visual stimuli. Science, 1960, 132, 349-350.
- Hinckley, E. D. The influence of individual opinion on construction of an attitude scale. Journal of Social Psychology, 1932, 3, 283-296.
- Horowitz, E. L., & Horowitz, Ruth E. Development of social attitudes in children. Sociometry, 1938, 1, 301-330.
- Hovland, C. I., Harvey, O. J., & Sherif, M. Assimilation and contrast effects in reactions to communication and attitude change. Journal of Abnormal and Social Psychology, 1957, 55, 244-252.
- Hovland, C. I. & Sherif, M. Judgmental phenomena and scales of attitude measurement: item displacement in Thurstone scales. Journal of Abnormal and Social Psychology, 1952, 47, 822-832.
- Izard, C. E. First impression ratings and stereoscopic selective perception as measures of person-oriented perceptions and feelings. ONR Technical Report No. 11, Vanderbilt University, 1962.
- Jackson, D. N. Assessing conformity with desirability judgments. American Psychological Association paper (mimeo), 1961.
- Jones, E. E., & Kohler, Rika. The effects of plausibility on the learning of controversial statements. Journal of Abnormal and Social Psychology, 1958, 57, 315-320.
- Kimble, G. A., & Garnezy, N. Principles of general psychology, (2nd ed.), New York: Ronald, 1963.
- Kramer, B. M. Dimensions of prejudice. Journal of Psychology, 1949, 27, 389-451.
- LaPiere, R. T. Attitudes vs. actions. Social Forces, 1934, 14, 230-237.
- Levine, J. N., & Murphy, G. The learning and forgetting of controversial material. Journal of Abnormal and Social Psychology, 1943, 38, 507-517.
- Levonian, E., Comrey, A., Levy, W., & Proctor, D. A statistical evaluation of Edwards Personal Preference Schedule. Journal of Applied Psychology, 1959, 43, No. 6, 355-359.
- Loewenfeld, Irene E. Mechanisms of reflex dilatation of the pupil. Historical review and experimental analysis. Documenta Ophthalmologica, 1958, 12, 185-448.

- Loewenfeld, Irene E. (Comment on Hess' findings.) Survey of Ophthalmology, 1965, in press.
- Manis, M. The interpretation of opinion statements as a function of recipient attitude. Journal of Abnormal and Social Psychology, 1960, 60, 340-344.
- Manis, M. The interpretation of opinion statements as a function of message ambiguity and recipient attitude. Journal of Abnormal and Social Psychology, 1961, 63, 76-81.
- Messick, S. Dimensions of social desirability. Journal of Consulting Psychology, 1960, 24, No. 4, 279-287.
- Pettigrew, T. F., Allport, G. W. & Barnett, E. O. Binocular resolution and perception of race in South Africa. British Journal of Psychology, 1958, 49, 265-278.
- Prothro, E. T. The effect of strong negative attitudes on the placement of items in a Thurstone scale. Journal of Social Psychology, 1955, 41, 11-17.
- Prothro, E. T. Personal involvement and item displacement on Thurstone scales. Journal of Social Psychology, 1957, 45, 191-196.
- Purcell, K., & Clifford, E. Motivational percepts of parental identification. Paper read at American Psychological Association, Los Angeles, 1964.
- Rankin, R. E., & Campbell, D. T. Galvanic skin response to Negro and white experimenters. Journal of Abnormal and Social Psychology, 1955, 51, 30-33.
- Riddleberger, Alice B., & Motz, Annabelle B. Prejudice and perception. American Journal of Sociology, 1957, 62, 498-503.
- Rokeach, M., & Mezei, L. Race and shared belief as factors in social choice. Science, 1966, 151, 167-172.
- Schuman, H., & Harding, J. Sympathetic identification with the underdog. Public Opinion Quarterly, 1963, 27, 230-241.
- Schuman, H., & Harding, J. Perjudice and the harm of rationality. Sociometry, 1964, 27, 353-371.
- Scott, W. A. Attitude measurement. In Handbook of Social Psychology, rev. ed. (in press).
- Seeleman, Virginia. The influence of attitude upon the remembering of pictorial material. Archives of Psychology, New York, 1940-41, 36, No. 258.

- Selltiz, Claire, & Cook, S. W. Racial attitude as a determinant of judgments of plausibility. To be published in Journal of Social Psychology, October, 1966.
- Selltiz, Claire, Edrich, H., & Cook, S. W. Ratings of favorableness of statements about a social group as an indicator of attitude toward the group. Journal of Personality and Social Psychology, 1965, 2, 408-415.
- Smith, M. B. The personal setting of public opinions: a study of attitudes toward Russia. Public Opinion Quarterly, 1947, 11, 507-523.
- Tompkins, S. Measurement of affect by responses to the human face. Progress report to National Institute of Mental Health, 1964.
- Travers, R. M. W. A critical review of the validity and rationale of the forced-choice technique. Psychological Bulletin, 1951, 48, 62-70.
- Triandis, H. C. Exploratory factor analyses of the behavioral component of social attitudes. Journal of Abnormal and Social Psychology, 1964, 68, 420-430.
- Tryon, R. C., & Bailey, D. E. The BCTRY computer system of cluster and factor analysis. Multivariate Behavioral Research, 1966, 1, 95-111.
- Upshaw, H. S. Own attitude as an anchor in equal appearing intervals. Journal of Abnormal and Social Psychology, 1962, 64, 85-96.
- Volkova, B. D. Some characteristics of conditioned reflex formation to verbal stimuli in children. Sechenov Physiological Journal of U.S.S.R., 1953, 39, 540-548.
- Waly, Patricia, & Cook, S. W. Attitude as a determinant of learning and memory: a failure to confirm. Journal of Personality and Social Psychology, 1966, 4, 280-288.
- Waly, Patricia, & Cook, S. W. The effect of attitude on judgments of plausibility. Journal of Personality and Social Psychology, 1965, 2, 745-749.
- Weiss, W. The effects on opinions of a change in scale judgments. Journal of Abnormal and Social Psychology, 1959, 58, 329-334.
- Weschler, I. R. An investigation of attitudes toward labor and management by means of the error-choice method. Journal of Social Psychology, 1950, 32, 51-67.
- Westie, F. R. A technique for the measurement of race attitudes. American Sociological Review, 1953, 18, 73-78.

Woodmansee, J. J. An evaluation of the pupil response as a measure of attitude toward Negroes. Unpublished doctoral dissertation, University of Colorado, 1965.

Woodmansee, J. J., & Cook, S. W. Dimensions of verbal racial attitude. Journal of Personality and Social Psychology, submitted August 24, 1966.

Woodmansee, J. J. Methodological problems in pupillographic experiments. Proceedings of the 74th Annual Convention of the American Psychological Association, 1966, Pp. 133-134.

Zavalloni, Marisa, & Cook, S. W. Influences of judges' attitudes on ratings of favorableness of statements about a social group. Journal of Personality and Social Psychology, 1965, 1, 43-54.

Articles Published

- Cook, S. W. & Selltitz, Claire. A multiple-indicator approach to attitude measurement. Psychol. Bull., 1964, 62, 35-55.
- Edrich, H., Selltitz, Claire, & Cook, S. W. The effects of context and of raters' attitudes on judgments of favorableness of statements about a social group. J. soc. Psychol., 1966, 70, 11-22.
- Selltitz, Claire & Cook, S. W. Racial attitude as a determinant of judgments of plausibility. J. soc. Psychol., 1966, 70, 139-147.
- Selltitz, Claire, Edrich, H., & Cook, S. W. Ratings of favorableness of statements about a social group as an indicator of attitude toward the group. J. pers. soc. Psychol., 1965, 2, 408-415.
- Waly, Patricia & Cook, S. W. The effect of attitude on judgments of plausibility. J. pers. soc. Psychol., 1965, 2, 745-749.
- Waly, Patricia & Cook, S. W. Attitude as a determinant of learning and memory: A failure to confirm. J. pers. soc. Psychol., 1966, 4, 280-288.
- Woodmansee, J. J. & Cook, S. W. Dimensions of verbal racial attitudes: Their identification and measurement. J. pers. soc. Psychol., 1967, 7, 240-250.
- Zavalloni, Marisa & Cook, S. W. Influences of judges' attitudes on ratings of favorableness of statements about a social group. J. pers. soc. Psychol., 1965, 1, 43-54.

Articles In Press

- Brigham, J. & Cook, S. W. The influence of attitude on the recall of controversial material: A failure to confirm. Submitted to J. exp. soc. Psychol.

Articles Submitted for Publication

- Brigham, J. & Cook, S. W. Influence of attitude on judgments of plausibility: A replication and extension. Submitted to Sociometry.

Articles In Preparation

- Brawley, Johanna, Havassy, Barbara, & Cook, S. W. The slanted interview as a technique for counteracting social desirability.
- Brigham, J., Woodmansee, J. J. & Cook, S. W. Dimensions of verbal racial attitudes: Racial intermarriage and Negro self-improvement.

- Clifford, E. & Cook, S. W. Social attitude as a function of evaluation of one's parents and perception of their attitudes.
- Clifford, E. & Cook, S. W. Evaluation of other persons as an indicator of attitude.
- Clifford, E., Sadava, S. & Cook, S. W. Informational estimates as an indicator of attitude.
- Egan, T. & Cook, S. W. Pupillary change in response to verbal phrases.
- Selltz, Claire & Cook, S. W. The meaning of third-person sentence completions about social groups.
- Wiser, Patricia & Cook, S. W. Guided conversation as a technique for introducing social influence.
- Woodmansee, J. J. An evaluation of pupil response as a measure of attitude toward Negroes.
- Woodmansee, J. J. & Cook, S. W. Pupillary change in response to emotional stimuli: A methodological critique.

Mimeographed Reports

- Brawley, Johanna. The slanted interview: An attitude assessment technique.
- Brigham, J. The influence of attitude on judgments of plausibility: A replication and extension.
- Brigham, J. The influence of attitude on the recall of controversial material: A failure to confirm.
- Brown, LaRue. Binocular rivalry: An attitude assessment technique.
- Egan, T. Pupillary response to verbal phrases differing in affect.
- Green, J. A. Attitudinal and situational determinants of interval behavior toward Negroes.
- Havassy, Barbara. Attitude assessment by means of the slanted interview.
- Kinney, D. Generational differences in attitudes toward interracial marriage.
- Mach, R. Overt behavior as an indicator of racial attitude.
- Reuterman, N. The influence of racial attitude on percepts formed under conditions of binocular rivalry: Three methodological studies.

- Selltiz, Claire & Cook, S. W. An exploration of the PDPA technique for measuring attitudes.
- Simon, G. & Wiser, Patricia. Using overt behavior to infer attitude.
- Woodmansee, J. J. An evaluation of pupil response as a measure of attitude toward Negroes.
- Woodmansee, J. J. Dimensions of prejudice in verbal measures of attitude toward Negroes Study D: Extension and replication of earlier studies.
- Wrightsmann, L. S. & Cook, S. W. A factor analysis of seventy-three personality attitude and aptitude variables.
- Wrightsmann, L. S. & Cook, S. W. Factor analysis and attitude change.

DOCUMENT CONTROL DATA - R&D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1. ORIGINATING ACTIVITY (Corporate author) University of Colorado Psychology Department Boulder, Colorado 80302		2a. REPORT SECURITY CLASSIFICATION Unclassified
		2b. GROUP
3. REPORT TITLE STUDIES OF ATTITUDE AND ATTITUDE MEASUREMENT		
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Scientific Final		
5. AUTHOR(S) (Last name, first name, initial) Stuart W. Cook		
6. REPORT DATE ██████████ MAR 1 1968	7a. TOTAL NO. OF PAGES approximately 120	7b. NO. OF REFS approximately 50
8a. CONTRACT OR GRANT NO. AF-AFO SR-436-65 AF-AFO SR-436-66	8b. ORIGINATOR'S REPORT NUMBER(S)	
b. PROJECT NO. 9778-02		
c. 61445014	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
d. 681313	AFOSR 68-0255	
10. AVAILABILITY/LIMITATION NOTICES 1. Distribution of this document is unlimited.		
11. SUPPLEMENTARY NOTES TECH, OTHER	12. SPONSORING MILITARY ACTIVITY Air Force Office of Scientific Research 1400 Wilson Boulevard (SRLB) Arlington, Virginia 22209	
13. ABSTRACT The objective of this research has been two-fold: (1) to discover the ways in which strong social attitudes influence human behavior (2) to utilize attitudinally-determined distortions of behavior as indirect indicators or measures of social attitude. As an aid to exploring human responses for evidence of attitudinal influences, eight behavior categories were formulated. Two examples are: (a) evaluative judgment (b) physiological responses. Several experiments have been carried out in each of the eight categories. When indicated by the experimental results, standardized attitude tests have been constructed utilizing the research findings. Among the clear cut successes in the research program is the discovery that unknown to the individual involved, evaluative judgments about policies affecting others are strongly under the influence of attitude. Attitude measuring instruments built on this principle are now available for general use. Other discoveries have also led to the development of new measuring devices. On the other hand there have been notable failures to confirm earlier expectations. For example, hopes that the dilation and constriction of the pupil of the eye would serve as a bi-directional attitude indicator have not been supported.		

KEY WORDS

Attitude
 Social attitude
 Racial attitude
 Attitude measurement
 Indirect attitude measurement

LINK A		LINK B		LINK C	
ROLE	WT	ROLE	WT	ROLE	WT

INSTRUCTIONS

1. **ORIGINATING ACTIVITY:** Enter the name and address of the contractor, subcontractor, grantee, Department of Defense activity or other organization (*corporate author*) issuing the report.
- 2a. **REPORT SECURITY CLASSIFICATION:** Enter the overall security classification of the report. Indicate whether "Restricted Data" is included. Marking is to be in accordance with appropriate security regulations.
- 2b. **GROUP:** Automatic downgrading is specified in DoD Directive 5200.10 and Armed Forces Industrial Manual. Enter the group number. Also, when applicable, show that optional markings have been used for Group 3 and Group 4 as authorized.
3. **REPORT TITLE:** Enter the complete report title in all capital letters. Titles in all cases should be unclassified. If a meaningful title cannot be selected without classification, show title classification in all capitals in parenthesis immediately following the title.
4. **DESCRIPTIVE NOTES:** If appropriate, enter the type of report, e.g., interim, progress, summary, annual, or final. Give the inclusive dates when a specific reporting period is covered.
5. **AUTHOR(S):** Enter the name(s) of author(s) as shown on or in the report. Enter last name, first name, middle initial. If military, show rank and branch of service. The name of the principal author is an absolute minimum requirement.
6. **REPORT DATE:** Enter the date of the report as day, month, year; or month, year. If more than one date appears on the report, use date of publication.
- 7a. **TOTAL NUMBER OF PAGES:** The total page count should follow normal pagination procedures, i.e., enter the number of pages containing information.
- 7b. **NUMBER OF REFERENCES:** Enter the total number of references cited in the report.
- 8a. **CONTRACT OR GRANT NUMBER:** If appropriate, enter the applicable number of the contract or grant under which the report was written.
- 8b, 8c, & 8d. **PROJECT NUMBER:** Enter the appropriate military department identification, such as project number, subproject number, system numbers, task number, etc.
- 9a. **ORIGINATOR'S REPORT NUMBER(S):** Enter the official report number by which the document will be identified and controlled by the originating activity. This number must be unique to this report.
- 9b. **OTHER REPORT NUMBER(S):** If the report has been assigned any other report numbers (*either by the originator or by the sponsor*), also enter this number(s).
10. **AVAILABILITY/LIMITATION NOTICES:** Enter any limitations on further dissemination of the report, other than those

imposed by security classification, using standard statements such as:

- (1) "Qualified requesters may obtain copies of this report from DDC."
- (2) "Foreign announcement and dissemination of this report by DDC is not authorized."
- (3) "U. S. Government agencies may obtain copies of this report directly from DDC. Other qualified DDC users shall request through _____."
- (4) "U. S. military agencies may obtain copies of this report directly from DDC. Other qualified users shall request through _____."
- (5) "All distribution of this report is controlled. Qualified DDC users shall request through _____."

If the report has been furnished to the Office of Technical Services, Department of Commerce, for sale to the public, indicate this fact and enter the price, if known.

11. **SUPPLEMENTARY NOTES:** Use for additional explanatory notes.
12. **SPONSORING MILITARY ACTIVITY:** Enter the name of the departmental project office or laboratory sponsoring (*paying for*) the research and development. Include address.
13. **ABSTRACT:** Enter an abstract giving a brief and factual summary of the document indicative of the report, even though it may also appear elsewhere in the body of the technical report. If additional space is required, a continuation sheet shall be attached.
 It is highly desirable that the abstract of classified reports be unclassified. Each paragraph of the abstract shall end with an indication of the military security classification of the information in the paragraph, represented as (TS), (S), (C), or (U).
 There is no limitation on the length of the abstract. However, the suggested length is from 150 to 225 words.
14. **KEY WORDS:** Key words are technically meaningful terms or short phrases that characterize a report and may be used as index entries for cataloging the report. Key words must be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location, may be used as key words but will be followed by an indication of technical context. The assignment of links, rules, and weights is option 1.