Final Report

A STUDY OF SOME CONDITIONS AFFECTING PRODUCTIVITY AND COHESIVENESS IN CULTURALLY HETEROGENEOUS GROUPS

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INTRODUCTION

Contract N00014-67-A-0181-0004 started September 1, 1966 at The University of Michigan and ended October 31, 1967. It provided for the continuation of research by the principal investigator that had been conducted at New York University since February 1, 1955 under Contract Nonr-285(24). This final report on work carried out at The University of Michigan is also a review of the entire program of research, covering the period 1955-1967. An earlier "Final Report" on research done at New York University (dated September 1, 1966) contained only a brief resume of that work.

The studies fall mainly into four categories, representing an evolution in the interests of the principal investigator. The earliest investigations had to do with task performance and social interaction in face-to-face biracial work teams. Northern male college students were used as subjects. These studies indicated that Negro men, but not white men, were inhibited both in social behavior and intellectual performance by the presence of peers of the other race.

Another group of studies used Negro subjects only and focused on cognitive performance in different types of biracial environment. Negro students were made to (a) compete against either white or Negro standards, and/or (b) anticipate evaluation by either white or Negro examiners. Other situational variables included the presence or absence of stress, the probability of success, the evaluative significance of the task, and approval or disapproval from the examiner. In conjunction with the last a personality variable, need for approval, was also used.

A third type of study dealt with white attitudes and perceptions about Negroes, in an attempt to explain how white racial reactions both influence, and are influenced by, Negro performance.

Finally, research was done on the socialization of academic motivation in Negro children of elementary school age. Specifically, a technique was developed for studying children's covert self-evaluations of their own performance, as well as measuring the emotional consequences of positive and negative self-evaluations.

At a northern university, various cognitive and motor tasks were assigned to teams composed of two male Negro students and two male white students. Initially total strangers, the men worked together in several sessions for a total of about 12 hours, each team experiencing a particular combination of reward (group bonus or individual bonus) and prestige (high prestige or neutral prestige) conditions.

Over all conditions, it was found that Negroes displayed marked social inhibition and subordination to white partners. When teams were engaged in cooperative problem solving, Negro subjects made fewer proposals than did whites, and tended to accept the latter's contributions uncritically. On all tasks combined Negroes made fewer remarks than whites, and spoke more to whites, proportionately, than to the Negro men. Group reward, as compared with individual reward, tended to reduce the racial differences in behavior, while high prestige, as compared with neutral prestige, tended to increase these racial differences.


This experiment was a modified replication of the first. The main procedural changes were: in half of the groups both white subjects had high F-scale scores and in the other half both white subjects had low F-scale scores. Negro and white partners were matched on intelligence and were made to display equal ability on certain group tasks (by means of secret experimental manipulation of the tasks) and the induction of high group prestige was made more salient than in the earlier experiment.

For all groups racial differences in behavior were essentially the same as in the previous experiment. Moreover, on a terminal questionnaire Negroes ranked whites higher on intellectual performance (including performance on the very tasks that had been rigged), preferred one another as future work companions, and expressed less satisfaction with the group experience than did whites. These results were taken to indicate that even when Negroes are given objective evidence of equal mental ability in a relatively brief interracial contact they tend to feel inadequate and to orient compliently toward whites.
Other findings were that authoritarian whites were more cooperative with Negroes than were nonauthoritarian whites, and rated them more favorably on intelligence, maturity, and dominance at the end of the experiment. These results were interpreted as due to the authoritarian's fear of revealing anti-Negro attitudes in a potentially punitive environment. Negroes who worked with authoritarians tended to be more assertive and cooperative than Negroes who worked with nonauthoritarians.


This experiment attempted to modify Negro behavior toward white teammates in the direction of greater assertiveness and autonomy, by forcing them to display intellectual competence in a group task. Biracial dyads, composed of Negro and white northern male college students, engaged in cooperative problem solving. Unknown to them, subjects received different information, so that only one partner could solve any given problem. Each subject had the soluble version half the time. Correct solutions were announced after each team decision. Under assertion training, the partner with the easy version could propose the correct answer (indeed, was forced to propose the correct answer) with high expressed confidence. Under no training, the person having the easy version was not forced to propose the correct solution. Pre- and post-measures of social influence were obtained on another task, involving perceptual judgments.

The findings with respect to problem solving behavior in the no training condition were that Negroes tended to accept passively the suggestions of their white companions even when they held the easy version of a problem and the teammate had to be in error. Regarding intellectual efficiency, the private responses of Negroes, which they wrote down before each discussion began, showed more errors than were made on the same problems at an earlier, individual testing session. White subjects, on the other hand, made fewer private errors than they had made previously. As a consequence of the problem solving experience in the no training condition, Negroes showed increased social compliance on the perceptual judgments.

In the assertion training condition, the adequacy of subjects' cognitive performance was not measured, since responses to the problems were rigged. The main finding was as predicted: Negroes who were forced to assert intellectual competence in the problem solving situation later showed increased influence over their white partners on perceptual judgments. Further, Negro subjects were now inclined to accept the other person's influence only to the extent that he had displayed superior accuracy on previous pictures.

Thus, unless forced to express opinions at variance with those of a white peer, Negro students tended to suppress their own ideas in deference to the
other person, and to show increased compliance on another task. But when they were forced to act independently on one task, they achieved greater autonomy in the second situation. The responses of white subjects on a post-experimental questionnaire indicate there may have been some hostility aroused against Negro partners who displayed intellectual competence. After working in the assertion training condition, whites tended to downgrade the Negro's performance and to accept him less as a future co-worker. However, since there were no all-white control groups, it is not known whether these reactions of white subjects were specifically interracial.


This study examined more directly the influence of threat on Negro verbal performance by systematically varying the level of threat in different racial environments. Individual male Negro students at a predominantly Negro college in the South were given a digit-symbol substitution task in the presence of two strangers who were both either white or Negro—an adult administrator and a confederate who pretended to be another student working on the same task. In order to minimize the amount of uncontrolled threat implicit in the white condition, there was no social interaction between the Negro subject and his white peer, and the task was described as a research instrument of no evaluative significance.

The threat variable consisted of an announcement that severe electric shock (high-threat condition) or mild electric shock (low-threat condition) would be administered to the subject and the co-worker at random times during the task. No shocks were actually delivered.

The results indicated that Negro students' scores on the digit-symbol task depended upon the particular combination of stress and racial-environment conditions under which they worked. When only mild shock was threatened they performed better in the presence of whites than of other Negroes. But when told to expect strong shock their efficiency in the Negro condition improved, while in the white condition it went down. Apparently, the prospect of successful competition against a white peer, and of approval from a white authority figure, had greater incentive strength than the corresponding prospect in the all-Negro situation. But vulnerability to the debilitating effect of strong threat was greater in the white environment.

The effects on Negro digit-symbol performance of three factors were investigated: the race of the task administrator, the difficulty of the task, and the evaluative significance of the task. All subjects were male students at a southern Negro college. Half of them were tested individually by a Negro adult and the other half were tested by a white adult. In addition, one third of the total sample worked on a relatively easy digit-symbol code, one third were given a code of medium difficulty, and one third had to do a relatively hard code. In order to attach a relatively nonthreatening significance to the situation, the task was described as a research instrument for studying eye-hand coordination, a nonintellectual characteristic. Unlike the Katz and Greenbaum experiment, there was no experimental confederate who posed as a second subject. The findings were consistent with results obtained in the low-threat condition of the earlier study—Negro subjects worked more efficiently when tested by a white adult than when tested by a Negro adult. However, the favorable influence of the white administrator was apparent only on the most difficult of the three tasks. On the two easier codes there were no statistically reliable differences in achievement associated with the skin color of the experimenters. Apparently the easier tasks were too simple to reflect the differences in motivation.

Then two additional groups of Negro students were tested by the same Negro and white administrators on the most difficult task only. But instead of being told that the task measured eye-hand coordination, it was presented to these subjects as a test of intelligence. Now the subjects did not attain higher scores in the presence of a white experimenter; rather, the effect of the I.Q. instructions was to elevate slightly performance with a Negro tester and to lower scores markedly in the white-tester group, so that the means for both testers were at about the same level. Thus in this experiment, making the most difficult task relevant to intellectual ability had effects not unlike those of strong shock threat in the previous study (by Katz and Greenbaum).


Investigated were the effects on Negro students' digit-symbol performance of being told that they would be compared intellectually with other Negro students, or with white students. Hard and easy versions of the digit-symbol task were administered to different groups of male students at a southern Negro college under three different instructions: no test, scholastic aptitude test with own college norms, and scholastic aptitude test with national (i.e., predominantly white) college norms. Scores in all three conditions were reliably different from one another, with highest achievement occurring in the Negro norms condition, intermediate achievement in the white norms condition, and lowest achievement when no comparison was expected. These differences tended to be larger on the hard task than on the easy one.
White students from a nearby state university were tested under comparable instructions on the hard task only. It was found that scores of the two norms groups—i.e., own college and national—did not differ, and both groups were more efficient than subjects in the no-comparison condition.


To investigate further the influence of the race of the experimenter on cognitive performance, southern Negro male college students were given a digit-symbol task by either a white or Negro tester, with either "intelligence test" or "no test" instructions. In contrast to earlier studies, reviewed above, neither instructions nor race of tester affected performance. The inconsistency with the Katz, Roberts, and Robinson study, in which the race of the examiner and the type of instructions had an interaction effect on performance, may have been due to a difference in the difficulty of the digit-symbol tasks that were used. The earlier study used a more difficult version. However, the results are also inconsistent with those of Katz, Epps, and Axelsson, who used the same task and obtained better performance with "test" than with "no-test" instructions.

Subjects with working mothers initially were more responsive to "test" instructions than subjects with nonworking mothers, while showing no difference in performance under "no-test" instructions. In accordance with this evidence of higher achievement motivation in sons of working mothers, these subjects also had higher grade point averages than sons of nonworking mothers.


Katz, Roberts, and Robinson (reviewed above) found that when digit-symbol substitution was presented as a test of eye-hand coordination, Negro subjects scored higher with a white administrator than they did with a Negro administrator. But when the same task was described as an intelligence test, there was marked impairment of performance with the white tester, while subjects who were tested by the Negro experimenter showed a slight improvement. The present study dealt with the effect of these experimental conditions upon the arousal and expression of hostility.

It was hypothesized that when a white authority figure makes Negro students take an intelligence test, hostile impulses are aroused, but suppressed.

Negro male students at a segregated high school in the South were given a verbal test of aggression disguised as a concept formation test. Two
equivalent forms of the test were administered on successive days. On the first day it was given informally to all subjects by a Negro teacher. The following day the entire sample was divided into four groups, each of which was tested by either a white or a Negro adult stranger, with instructions that described the task as either an intelligence test or a research instrument.

The results show that when neutral instructions were used on the second day, average scores in both the white-tester and Negro-tester groups were the same as on the pretest. But in the intelligence test condition, hostility scores increased over the previous day when the experimenter was a Negro, and they decreased when the experimenter was white. The authors' interpretation was that both administrators instigated hostile impulses in the subjects when they announced that the task would be used to evaluate intelligence; when the adult authority was a Negro person, students revealed their annoyance by responding to the aggressive connotations of ambiguous words, but when the adult was a white person the need to deny hostile feelings resulted in avoidance of aggressive word meanings. (The "denial" interpretation is of course inferential, since the results merely show that hostility scores in the white adult-I.Q. test condition went down; there was no direct evidence of increased emotional conflict in this condition.)

Assuming that these findings actually reflect variations in ability to express hostile impulses under different testing conditions, they furnish an interesting clue as to the nature of emotional processes attendant upon the disruption of Negro students' performance in the white adult-I.Q. test condition of the experiment by Katz, Roberts, and Robinson.


This review focused on the problem of identifying the important situational determinants of Negro performance in the racially mixed classroom. Included in the evidence surveyed were the following: reports on the academic progress of Negro children attending integrated schools, evidence on aspects of the minority child's experience in desegregation that presumably affect his motivation to learn, relevant research on the behavioral effects of psychological stress, and finally, the author's ONR-supported experiments on Negro productivity in biracial settings.

It was concluded that in biracial achievement situations there appear to be a variety of favorable and detrimental influences on Negro performance.

Low probability of success—where there is marked discrepancy in the educational standards of Negro and white schools, or where feelings of inferiority are acquired by Negro children outside the school, minority group newcomers in integrated classrooms are likely to have a low expectancy of academic success; consequently, their achievement motivation should be low. Social threat—given the prestige and power of the white majority group, rejection of
Negro students by white classmates or teachers should tend to elicit emotional responses (fear, anger, and humiliation) that are detrimental to intellectual functioning. Failure threat—when academic failure entails disapproval by significant others (parents, teachers, and perhaps also classmates), low expectancy of success should elicit emotional responses that are detrimental to performance.

On the other hand, acceptance of Negroes by white peers and adults should have a social facilitation effect upon their ability to learn, by motivating them to adhere to white standards of academic performance; anticipation that high performance will win white approval should endow scholastic success with high incentive value.

This paper examined the problem of low Negro academic achievement from the standpoint of some general concepts of motivational processes underlying the development of academic competence. Discussed were Atkinson's model of achievement motivation, Crandall's distinctions between external and internal sources of achievement standards and achievement value, and Rotter's notion of the sense of fate control. It was suggested how these formulations can be integrated to account for many of the known facts about the performance of minority group students, and to point out fruitful directions for future research.

Among the broad research topics mentioned were (a) class and race differences in the process whereby early social reinforcement of verbal-symbolic behavior becomes internalized, (b) race and class differences in external and internal dependency as related to academic motivation, and (c) the role of expectancy of success and value of success on academic motivation. All of these factors, it was shown, need to be considered in the context of uniracial and biracial performance situations.


Northern Negro boys of elementary school age were first administered a social desirability questionnaire, and then a verbal learning task, by white and Negro male experimenters. Half of the sample received approval and the other half received disapproval on the learning task, regardless of performance.

Learning was better with Negro testers, and when approval was given. Also, there was an interaction effect of race of tester, type of feedback, and need for approval (as measured by the social desirability questionnaire). These results point up the need to take account of experimenter characteristics in future research on race and class differences in the motivation of children.

A review of current assumptions regarding the low academic motivation of Negro children, revealed that the main emphases are on (a) various types of personality and cognitive deficits associated with the notion of cultural deprivation, (b) the discontinuity of home and school competency training, and (c) the failure of predominantly Negro schools to provide the same quality of instruction that is provided in white middle class schools. These assumptions have generated a heavy flow of speculative writing, but little in the way of research—a condition due mainly to a lack of suitable investigative techniques.

The position advanced here was that effective scholastic motivation is largely reducible to self-control—an outcome of a socialization process involving the internalization of standards of excellence and of affect-mediating evaluative responses to one's own performance. Presumably, these behavioral mechanisms both guide and energize performance whenever either immediate or delayed social evaluation is anticipated.

The author described exploratory research that used a new procedure for studying certain postulated internal mechanisms of behavioral self-regulation in academic achievement situations. The mechanisms, viewed as products of socialization, were presumed to consist of favorable and unfavorable self-evaluative cognitions which mediate positive and negative affect. The research procedure was intended, first, to externalize the self-evaluative cognitions as overt labeling responses under conditions of apparent privacy, and second, to determine the affective consequences of the evaluative cognitions by assessing the acquired reinforcement value of stimuli that were associated with favorable and unfavorable labels.

In a task situation of subjective privacy Negro boys who were academically successful or unsuccessful displayed sharply different patterns of covert reaction to their own performances, even when the latter did not differ in objective quality. Poor pupils were more self-critical than good pupils. Moreover, poor pupils seemed to develop an avoidance reaction to stimuli that were experimentally associated with experiences of self-criticism. The fact that boys' self-evaluations were related not only to academic status, but also to anxiety level, and to perceptions of parental reinforcement behaviors, provided further grounds for thinking that the new research method taps a basic self-regulatory process underlying academic striving.

UNPUBLISHED RESEARCH


Male freshmen at a southern Negro college were first administered, en masse, digit-symbol and arithmetic tasks by a Negro experimenter, with neutral
instructions. A few days later subjects were again tested, this time in small
groups. The tester was now either white or Negro. Subjects were informed
that the earlier session had really been a practice tryout for the scholastic
aptitude test which they were about to take, and that test norms were avail-
able. In a white-norms condition they were told that their scores would be
compared with the average scores of freshmen in all the colleges of the state
(a predominantly white population), and for the Negro-norms condition the
story was that they would be compared with the freshman average at their own
college. To manipulate probability of success, each subject received private
information ostensibly revealing, on the basis of his practice scores, his
chances of achieving at or above the average level of his age group. The
stated probabilities, each randomly assigned to one-third of the total sample,
were 10 percent, 60 percent, and 90 percent. Finally, the cognitive tasks were
readministered.

Only the findings on digit-symbol, which was always the first task to be
presented, will be summarized here. First, there was a main effect of the
probability-of-success variable, with 60 percent feedback occasioning better
performance than either 10 percent or 90 percent feedback. Thus intermediate
probability of success was optimal for performance, regardless of the racial
structure of the achievement situation. Second, there was an interaction ef-
effect of race of tester and race of norms: when the tester was white, Negro
norms were more favorable for performance than white norms, but when the
tester was Negro, white norms were more favorable than Negro norms. An inter-
pretation of this finding was based on two assumptions, both supported by
questionnaire data: (a) that success against white norms was seen by subjects
as both riskier and more attractive than success against Negro norms, and (b)
that the white examiner was perceived as a more potent evaluator than the
Negro examiner, so that his approval of success and disapproval of failure
had, respectively, more positive and negative incentive value.

Benjamin, L., "Authoritarianism and the expression of overt hostility in
a biracial situation," unpublished doctoral dissertation, New York Univer-
sity, 1964.

Katz and Benjamin had found in an earlier study (described above) that
authoritarian whites behaved more favorably toward Negro work partners than
did nonauthoritarians. In the present study it was assumed that two critical
determinants of hostile expression were (a) the external restraints operating
in the situation, and (b) the degree of instigation of hostile impulses. It
was predicted that authoritarians would express more hostility against Negroes
than would nonauthoritarians when their behavior was not monitored. When
behavior was monitored, high F-scale scorers were supposed to be no more overtly
hostile than low F-scale scorers.

High-F and low-F white northern college students were given the task of
administering seemingly painful electric shock to Negro and white confederates,
in a situation that was described to subjects as an experiment on the effects
of punishment on learning. Each subject administered the shocks under one of
three conditions: low concealment, high concealment, and high concealment with hostility induction.

Contrary to the prediction, high-F subjects did not administer more electric shock than low-F subjects to either white or Negro targets in any experimental condition. One finding suggests that authoritarians experienced more conflict than did nonauthoritarians: the former, but not the latter, depressed a neutral ("no-shock") key longer when reacting to the Negro confederate than when reacting to the white confederate. This was interpreted as a possible displacement of the hostile (i.e., "electric shock" key) response.


This study tried to examine further the finding of Katz and Cohen (reviewed above) that white subjects responded less positively towards a Negro co-worker who performed well on a task of intellectual ability than towards a Negro co-worker who performed poorly. Northern white male college students administered, at individual sessions, a cognitive test to either a Negro or a white confederate, and then scored the confederate's responses. The main dependent variable was the subject's scoring of ambiguous responses. Two experimental variables (in addition to the race of the confederate) were (a) the level of achievement of the confederate's unambiguous responses (high, medium, or low), and (b) whether the subject anticipated having the confederate's score on the experimental test compared with his own score on a similar test.

Considering only the results that showed race-of-confederate effects, Negroes were scored more leniently than whites, but were more likely to be seen as having cheated, especially when the subject anticipated being compared intellectually with the confederate.


The relative contributions of conformity, externalization, and utilitarian factors to anti-Negro prejudice were investigated with a 90-item questionnaire in samples of white college students. Over 250 males and females were tested at three southern campuses and two northern campuses.

Among the hypotheses tested were the following: (1) externalization is more closely related to racism in the North than in the South; (2) conformity to social influence is more closely related to racism in the South than in the North; (3) utilitarian interests are more strongly related to discrimination than to prejudice; and (4) utilitarian interests are more closely related to discrimination in males than in females.
The results provide some support for all of the hypotheses, though for the first three hypotheses important sex differences must be taken into account.


Katz, Henchy, and Allen's experiment (reviewed above) was replicated with modifications. The main modifications were use of female instead of male experimenters, and elimination of evaluative feedback by the experimenter. Negro boy pupils in an elementary school were individually given a paired associates learning task by either a white or Negro female adult. There were two testers of each race.

Unlike the findings of the earlier study, there was a significant tester effect, indicating that the four adults differed as individuals in their influence on children's learning of the verbal task, but there was no racial difference in the effectiveness of the experimenters. The greater importance for young boys of individual characteristics of female adults, as compared with male adults, is consistent with research done by other investigators.
SUMMARY OF PUBLICATIONS SUPPORTED BY ONR CONTRACTS*


*In addition to this list of publications, it is anticipated that several of the unpublished studies reviewed earlier in this report will be submitted to journals during 1969.


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<tbody>
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<td>Lawrence Benjamin</td>
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<td>Judith Goldston</td>
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<td>Reuben Baron</td>
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The total body of work supported by ONR is reviewed. The research mainly deals with factors that influence Negro cognitive performance in biracial situations. Twelve reports have been published and additional reports are in preparation. All of the studies that were carried out are briefly summarized.
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