THE EFFECT OF INDUCED MOTIVATION
ON THE I.Q. SCORES OF
NEGRO CHILDREN

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NEGRO CHILDREN

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By

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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>LIST OF TABLES</th>
<th>iv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapter</td>
<td></td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Description of Measuring Instruments</td>
<td></td>
</tr>
<tr>
<td>II. METHOD</td>
<td>12</td>
</tr>
<tr>
<td>Subjects</td>
<td></td>
</tr>
<tr>
<td>Apparatus</td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td></td>
</tr>
<tr>
<td>Procedure</td>
<td></td>
</tr>
<tr>
<td>III. RESULTS</td>
<td>16</td>
</tr>
<tr>
<td>IV. DISCUSSION</td>
<td>19</td>
</tr>
<tr>
<td>V. SUMMARY AND RECOMMENDATIONS</td>
<td>23</td>
</tr>
<tr>
<td>Summary</td>
<td></td>
</tr>
<tr>
<td>Recommendations</td>
<td></td>
</tr>
</tbody>
</table>

BIBLIOGRAPHY 25
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Summary of the Pre-Test and Post-Test Means and Standard Deviations of the Control Group</td>
<td>16</td>
</tr>
<tr>
<td>II. Summary of the Pre-Test and Post-Test Means and Standard Deviations of the Experimental Group</td>
<td>17</td>
</tr>
<tr>
<td>III. Summary of the t Test for the Difference of the Difference Between the Mean IQ Scores of the Experiment and Control Groups</td>
<td>18</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

During the past several decades there has been considerable controversy concerning the intellectual functioning of Negroes and the measurement of this behavior. Innumerable studies have been conducted which have involved a comparison of Negro and Caucasian intellects. Carlson (3) reported that Negro subjects did significantly more poorly than white subjects on the Bender-Gestalt test and concluded that cultural factors may influence Bender-Gestalt performance. Formal education was not a factor in the results.

In a study conducted by Tehan (15), researchers sought to determine whether or not a significant difference existed in school performance between Negroes and whites in the New London school system. It was hypothesized that if such a difference did exist, it would involve higher scores for whites and that the difference would not appear immediately (first grade). Using a sample of seventy-three pairs of children matched for sex and IQ, these hypotheses were confirmed, a significant difference being found at the seventh and eighth grades only. Milgram and Ozer (11)
administered the Peabody Picture Vocabulary Test, the Stanford-Binet Intelligence Scale, and other linguistic and perceptual - motor measures to two groups of preschool Negro children. Since the Peabody Picture Vocabulary Test score was lower, it was discussed in terms of the subjects' failure to maintain the correct mental set required in the multiple choice format of this test.

The effect of segregation on the aspirations of Negro youth was studied by St. John (13). A middle-sized New England city was chosen to test the hypothesis that there is a negative relationship between degree of segregation and the aspirational level of Negro high school students. When the data failed to support this hypothesis, it was suggested that this relationship is more complex than is generally assumed. In a study by Katz, Henchy, and Allen (8), 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 examiners. Every student received either approval or disapproval on the learning task. Performance was better with Negro testers, and when approval was given by Negro testers. Also, there was an interaction of the two variables with need for approval, as measured by the social desirability questionnaire. The race-of-examiner effects were predicted from an assumption that subjects would perceive Negro adults as more nurturant than white adults.
Stabler and Perry (14) used Caucasian and Negro university students in comparing learning and retention as a function of race. Subjects were matched on sex, age, IQ, and pretest scores. Post-test scores were reliably higher for Caucasian subjects taught by a programed text. Racial differences on the post-test were attributed to past and present environmental differences between segregated schools. A retention test showed no differential loss in retention.

In a study conducted by Weaver and Weaver (17) using the Illinois Test of Psycholinguistic Abilities, profiles of three groups of culturally deprived Negro children were examined for (a) similarity to profiles from groups of educable and trainable children previously studied, and (b) differences between the experimental and control groups. As predicted, a distinctive profile similar to that found with educables and trainables was found. This profile showed these children to have significantly greater difficulties in the utilization of auditory and vocal channels of communication as compared to their use of visual and motor channels. It was also found that the mean language age of all groups was significantly lower than the mean mental age.

Vosk (16) conducted a study of Negro children with learning difficulties at the outset of their school careers. This study revealed that these "slow learners" came to school with particular vulnerability to failure. Fearful and discouraged, they were unable to surmount the difficulties that the average
child must surmount in the learning situation. She contended that before they can learn tool subjects they must be helped to a sense of their own worth and constructive capabilities through appropriate school activities.

Harris and Lovinger (6) utilized complete records of group intelligence tests given at the first, third, sixth, and eighth grades to eighty disadvantaged Negro youth. Subjects were given the Wechsler Intelligence Scale for children in the seventh and ninth grades and the Cattell Culture Fair test in the eighth grade. Mean IQs and standard deviations for all tests were reported. It was concluded that the data did not support the alleged decline in IQ of the disadvantaged.

Research concerning the self-concept of Negro and white children is reported by Gibby and Gabler (5). Fifty-six Negro and fifty-nine white sixth grade students were administered the California Test of Mental Maturity and the Gibby Intelligence Rating Schedule (IRS). On the IRS each subject made judgments on how intelligent he believed himself to be, how intelligent his mother, father, teachers, and friends believed him to be, and how intelligent he would like to be. The results support the hypothesis that Negro and white children differ significantly in self-concept as measured by self-ratings of intelligence. Results indicated that Negro children achieved significantly greater discrepancies between their actual IQ scores and their ratings on the Self scale
than the white children. Magnitude and direction of the differences between Negro and white subjects seemed to be dependent on the sex and IQ level of the children.

Kennedy and Vega (9) studied Negro children's performance on a discrimination task as influenced by verbal incentive and race of the examiner. The investigators attempted to determine the differential effect of Negro and white examiners on the performance of 324 rural Negro school children on an oddity discrimination task under the variables of grade level (2, 6, 10), intelligence level (high, medium, low), and experimental incentive condition (praise, blame, control). Results indicated significant effects from examiner race, experimental incentive, and the interaction between the two, as well as their combined interaction with grade level. It was the Negro subjects' reaction to blame under Negro examiners which differentiated their performance from that of white subjects under white examiners.

In a reading achievement comparison study of white and Negro pupils, Cooper (4) used certain public schools in Georgia. The results of the reading section of California Achievement Test Battery (Forms: W, X, and Y) administered to more than 30,000 pupils in grades 4-12 was analyzed. Results indicated that at no grade level did the Negro pupils achieve the midyear point of reference in reading comprehension.
The author also noted that there was an increasing lag between reading achievement and expected achievement with each succeeding grade level for Negro pupils.

One important variable which many of the past studies fail to enumerate is motivation. It is held by many social scientists that the apparent difference in Negro and white intelligence scores may evolve partly from the lack of emphasis which the Negro culture places on "paper and pencil" tests. Parental and familial influences have possibly placed more stress on some of the more practical aspects of daily interaction. This could feasibly have profound implications in view of the two basic assumptions of psychometric testing. The first and perhaps more important of the assumptions is that the youngster being tested is motivated to the same degree as the group on which the test was standardized. According to Wechsler (18), no Negro children were included in the standardization population for the Wechsler Intelligence Scale for Children (WISC). Thus it is quite possible that the level of motivation differs markedly between a given standardizing group and the individual Negro testee.

The other assumption of psychometric testing is that the individual being tested had the same opportunity to learn as the standardizing group. This generally accepted assumption of testing has been the basis for many attempts to refute reported racial intellectual differences. For the purposes
of this study, however, the area of motivation in taking tests will be investigated.

Katz (7) investigated motivational determinants of racial differences in intellectual achievement. The study attempted to clarify the achievement gap existing between white and Negro children. Mackie, Maxwell, and Rafferty (10) investigated the relative merits of various psychological tests in assessing development among inner city Negro children over a fifteen month period. The results indicated that the developmental level of both boys and girls appeared to be more strongly influenced by certain characteristics of their families than by the character of their formal school experiences. Similarly, Bronfenbrenner (1) reported that a review of research indicated that the inadequacies experienced in school by Negro boys have their origins primarily in father absence, impoverished home environment, and dysfunctional patterns of child rearing.

Minigione (12) conducted a study which compared the scores of Negro and white children on the need for achievement, defined as degree of concern with achieving high standards of excellence. In this study, fifth and seventh graders wrote stories in response to six line drawings of people. White subjects scored significantly higher than Negro subjects on this need for achievement scale.

A comparison of the vocational aspirations of paired sixth-grade white and Negro children was investigated by
Brown (2). The research population consisted of two groups of sixth-grade students who had similar economic status, regional environment, and intelligence quotients, but who had different racial backgrounds. These students also attended segregated schools. The questionnaire embedded on a single question concerning the student's vocational ambition. By applying the Warner-Meeker-Eells Scale for Rating Occupational Status, it was found that the choices of the Negro children ranked lower than those of the white children.

The purpose of the present study was to further investigate the effects of motivation on the intellectual attainment of Negro children. In view of previous research and realizing the importance of related study on incentive and achievement, the following hypothesis was proposed:

Inducement of motivation between pre-and post-administrations of Form A of the Peabody Picture Vocabulary Test would result in significantly greater magnitude of change in scores for the experimental group of Negro children than for the control group.

Description of Measuring Instruments

The Peabody Picture Vocabulary Test is an individual test of linguistic ability which can be administered in ten to fifteen minutes. The test consists of a series of plates, each containing four pictures, and a series of stimulus words. Each stimulus word corresponds to one of the four pictures
on a plate. The subject views only one plate at a time. Upon hearing the stimulus word, the subject points to the picture which best depicts the meaning of the word. Testing is terminated when the subject makes six errors in any eight consecutive presentations.


17. Weaver, S., and A. Weaver, "Psycholinguistic Abilities of Culturally Deprived Negro Children," American Journal of Mental Deficiency, LXXII (February, 1967), 190-197.

CHAPTER II

METHOD

Subjects

The subjects of the present study consisted of thirty-four second grade Negro children enrolled at Fred Moore Elementary School in Denton, Texas. The group was the total population of the two second grade classes.

Apparatus

The equipment employed in this study consisted of Form A of the Peabody Picture Vocabulary Test and seventeen half-pints of vanilla ice-cream.

Design

A two group design was utilized. Each subject was assigned a number before testing began. A table of random numbers (2) was then used to assign the subjects to groups. After the subjects were assigned to groups a coin was flipped to determine which group was to be the experimental and which the control group. The experimental group was instructed that they would receive a reward for maximum effort on the post-test, while the control group was not offered a reward.
Procedure

In order to fulfill pre-test requirements, both the experimental and control groups were administered Form A of the Peabody Picture Vocabulary Test, a multiple choice measure of linguistic ability. Because of the nature of the task, subjects were tested individually before their scores were later grouped for computations. The control group of subjects was tested first because of the necessity of this order on the post-test examinations. Individual tests were administered over a period of four days, approximately two days allotted to each of the two groups. All subjects were tested in the same room during the morning hours. Instructions were identical for both groups on the pre-test measure. These instructions consisted of the standardized instructions of the Peabody Picture Vocabulary Test. Not a single student inquired concerning the reason for withdrawal from class; therefore, no explanation was offered. Approximately fifteen minutes were required for each examination, thus virtually eliminating the possibility of fatigue on the part of the subjects. As previously stated, Form A of the Peabody was used, principally because of its test-retest reliability coefficient of .91(1).

After a passage of two weeks, chosen arbitrarily to insure maximum reliability of the post-test examination, the second portion of the research experiment began. The members of the control group were presented the task in
exactly the same manner as previously. It was at this point that the independent variable was introduced to the experimental group. For purposes of this study, it was assumed that most Negro children liked ice cream, and that it served as a motivating force in eliciting maximum performance on the post-test examination. The induced motivation was presented to each individual in the experimental group directly prior to administration of the post-test. Each subject was told that if he did the very best that he could on this test, he would be given free ice cream during the noon hour. Directly following these instructions, the test was administered. Following completion of all tests, ice cream was given to all members of the experimental group. Students in both groups were assured that the results of these tests would have absolutely no bearing on their classroom grades. Scores on all tests, in this case the dependent variable, were computed in terms of resultant intelligence quotient scores. These results were then subjected to a t test to measure significance of change in magnitude of difference between the two groups. In other words, the difference of the difference between pre-test means and post-test means was measured for significance.
CHAPTER BIBLIOGRAPHY


CHAPTER III

RESULTS

A summary of the pre-and post-test means of the control group is represented in Table I.

<table>
<thead>
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<th>Table I</th>
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<td>SUMMARY OF THE PRE-TEST AND POST-TEST</td>
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<td>MEANS AND STANDARD DEVIATIONS</td>
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<tr>
<td>OF THE CONTROL GROUP</td>
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</table>

<table>
<thead>
<tr>
<th>Pre - Test</th>
<th>Post - Test</th>
<th>X Diff.</th>
</tr>
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<tbody>
<tr>
<td>X</td>
<td>S.D.</td>
<td>X</td>
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<tr>
<td>88.235</td>
<td>8.888</td>
<td>89.529</td>
</tr>
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</table>

Table II summarizes the pre-test and post-test means for the experimental group. This table also indicates the introduction of motivation as an experimental variable, as can be seen by the noted increase in scores.
TABLE II
SUMMARY OF THE PRE-TEST AND POST-TEST MEANS AND STANDARD DEVIATIONS OF THE EXPERIMENTAL GROUP

<table>
<thead>
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<th>Pre - Test</th>
<th>Post - Test</th>
<th>X Diff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>S.D.</td>
<td>X</td>
</tr>
<tr>
<td>94.588</td>
<td>14.250</td>
<td>120.058</td>
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A t test for randomized groups was used to test the significance of the difference of the difference between the pre-test means and the post-test means. The resulting t was 5.683 (P<0.01). Since the 0.05 level of significance was used, this t value was significant. It is therefore possible to reject the null hypothesis. As a result, the empirical hypothesis is accepted. Table III represents a summary of the t test for randomized groups. The data presented here represent the difference of the difference between the pre-test means and post-test means.
<table>
<thead>
<tr>
<th>$\bar{X}_C$</th>
<th>S.D.</th>
<th>$\bar{X}_E$</th>
<th>S.D.</th>
<th>$t$</th>
<th>$P$</th>
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<tbody>
<tr>
<td>-1.294</td>
<td>10.150</td>
<td>-25.470</td>
<td>13.655</td>
<td>5.683</td>
<td>0.01</td>
</tr>
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CHAPTER IV

DISCUSSION

The results in Table III, as presented in Chapter III, reveal a significant difference in the change in magnitude of IQ scores between the experimental and control groups. Therefore, the results do support the empirical hypothesis. Pertaining to the results, it is interesting to note that on the post-test examination of the Peabody Picture Vocabulary Test (Form A), not a single member of the experimental group failed to raise his previous score. In fact, the smallest increase amounted to five intelligence quotient points. Within the control group, however, fifty-three percent of the subjects showed an increase on their post-test scores, while forty-seven percent of the subjects showed a decrease.

On the basis of the aforementioned results, it is reasonably safe to assume that induced motivation was the decisive variable in the present study. This assumption, of course, is based on the assurance that all other variables were held constant. Due to the statistical technique employed
in this study, such factors as sex, socio-economic background, and previous intellectual development balanced themselves. This technique was valuable in producing a more valid assessment of the effect of motivation on IQ scores.

It might be advantageous at this point to enumerate certain overt behavioral observations pertinent to the results of this study. When members of the experimental group were told that maximum effort would result in their being given ice cream, definite changes were evident in their behavior. An immediate increase in level of interest seemed evident. Chairs were pulled closer to the desk in order to afford the testee a better view of the examination. Most members of the experimental group greeted news of a possible reward with an anticipatory smile or verbalization. Answers given by the experimental group became more definite and were offered with less hesitation than answers by the control group. There seemed to prevail within the testing session of experimental subjects an intangible air of excited anticipation. It seemed as if these students finally had a reason to exhibit maximum performance on a given task. Furthermore, they seemed pleased with the opportunity.

Minigione (3) has demonstrated the underdeveloped need for achievement in Negro children. The author defined need for achievement as concern with achieving high standards of excellence. The sample population for her study was drawn from rural, central North Carolina and consisted of fifth and seventh-graders.
Kennedy and Vega (1) studied the performance of 324 rural Negro school children on a discrimination task. Results indicated significant effects from the introduction of an experimental incentive. For the purpose of the present study, it was assumed that ice cream would serve as an experimental incentive, or motivating factor. The results confirmed this assumption by supporting the empirical hypothesis.

Results of the current study apparently support the theory of Mackie, Maxwell, and Rafferty (2). They advanced the idea that the intellectual developmental level of Negro children appear to be more strongly influenced by factors other than formal school experience. Familial influences and individual level of motivation preportedly strongly aid in shaping psychological development of Negro children.

Results of the current study could safely be generalized to at least the population of Negro children of elementary school age, regardless of sex. Generalization to the population of Caucasian school children should be reserved until further studies deem it to be a valid generalization.
CHAPTER BIBLIOGRAPHY


CHAPTER V

SUMMARY AND RECOMMENDATIONS

Summary

Thirty-four Negro, second-grade children were used as subjects in the present study. This study investigated the effects of induced motivation on the intelligence quotient scores of Negro children.

The following hypothesis was tested: Inducement of motivation between pre- and post-administrations of Form A of the Peabody Picture Vocabulary Test will result in significantly greater magnitude of change in intelligence quotient scores for the experimental group of Negro children than for the control group. Statistical results confirmed this hypothesis.

All subjects were given two administrations of the Peabody Picture Vocabulary Test, Form A. The standardized instructions were used to introduce the examination. Directly prior to the post-test examination, members of the experimental group were promised to be given ice cream as a reward for maximum effort. Resultant intelligence quotient scores on
all examinations were subjected to a t test to measure significance of the magnitude of change in scores.

Computations indicated that the increase in scores for the experimental group of subjects was significant at the .01 level of confidence. It was concluded that the experimental procedure produced an increase in motivation for the experimental group, thereby increasing the resulting test scores for the experimental group. On the basis of these results, the empirical hypothesis was confirmed.

Recommendations

On the basis of the results and conclusions of this investigation, a modification of the experimental design might be advantageous. It is suggested that an integrated group of subjects would serve to further enumerate the effects of motivation on intellectual achievement. Future studies might also investigate the difference in levels of motivation necessary to produce change on test scores for Negro and Caucasian students. Implications of such studies could be profound in view of the contemporary emphasis placed on the intangible variable commonly referred to as intelligence.
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Books


Articles


