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AN OBSERVATION ABOUT HAWTHORNE EFFECT IN AN EXPERIMENT IN THE TEACHING OF READING IN FIRST GRADE--A HYPOTHESIS.

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THE PURPOSE OF THIS STUDY WAS TO DETERMINE IF A HAWTHORNE EFFECT WERE PRESENT IN A 3-YEAR LONGITUDINAL STUDY WHICH COMPARED TWO METHODS OF TEACHING READING IN FIRST GRADE. THE INITIAL SUBJECTS WERE TWO TEACHERS AND FIVE FIRST-GRADE CLASSES OF RANDOMLY ASSIGNED STUDENTS WHO COMPOSED ONE EXPERIMENTAL, ONE CONTROL, AND THREE SUBCONTROL GROUPS. BEGINNING STUDENTS WERE TESTED AT THE END OF EACH OF THE 3 YEARS, AND AN ANALYSIS OF VARIANCE AND T-TEST WERE USED TO COMPARE PERFORMANCES. RESULTS INDICATED THAT AT THE END OF THE FIRST YEAR, BOTH THE EXPERIMENTAL AND CONTROL CLASSES WERE SIGNIFICANTLY BETTER THAN THE SUBCONTROL GROUPS. THE THIRD YEAR EXPERIMENTAL GROUP WAS SIGNIFICANTLY POORER THAN THE FIRST YEAR EXPERIMENTAL GROUP, BUT WAS SIGNIFICANTLY BETTER THAN THE FIRST-YEAR SUBCONTROL GROUP. THE SECOND- AND THIRD-YEAR CONTROL GROUPS WERE SIGNIFICANTLY BETTER THAN THE FIRST-YEAR CONTROL AND SUBCONTROL GROUPS. IT WAS CONCLUDED THAT TWO TYPES OF HAWTHORNE EFFECTS--A NEGATIVE AND A POSITIVE--MAY HAVE BEEN OPERATING. THE EXPERIMENTAL TEACHER'S PERFORMANCE WAS POSSIBLY HEIGHTENED BY THE NEW METHOD AND ACCOMPANYING ACCOLADES. THE CONTROL TEACHER'S PERFORMANCE WAS DEPRESSED BY THE APPEARANCE OF SUCCESS IN THE EXPERIMENTAL CLASS. PERHAPS A HAWTHORNE EFFECT DID NOT OPERATE FOR HER UNTIL THE SECOND AND THIRD YEARS. REFERENCES ARE INCLUDED. THIS PAPER WAS PRESENTED AT THE INTERNATIONAL READING ASSOCIATION CONFERENCE (BOSTON, APRIL 24-27, 1968). (BS)

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AN OBSERVATION ABOUT HAWTHORNE EFFECT IN AN EXPERIMENT IN THE TEACHING OF READING IN FIRST GRADE: A HYPOTHESIS

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PURPOSE: The purpose of this study was to observe if a Hawthorne effect were present in a controlled experiment comparing two methods of teaching reading in first grade.

METHOD: This experiment was appended to a three-year longitudinal study (1), (2), (3) comparing the achievement of children taught under an experimental method and children taught under a method traditional to the school system. In the longitudinal study there were three groups. Sixty-one entering first grade pupils in one elementary school building were assigned randomly to either the experimental group or to the control group.

Three additional first grade classes were chosen randomly from the remaining ten first grades in the district as a sub-control group.

Each child in the control and experimental groups was tested individually nine times during the first-grade year and twice by group tests. Each pupil was the subject of a full school day time study. The teachers did not know when the time study would be conducted until the morning of the observation. This meant that each class had planned interruptions for testing at least thirty days during the year and unannounced observations at least eighteen times during the year. Seventeen different adults took part in these observations and testings. Both the children and the teachers, therefore, were subject to conditions which might produce a Hawthorne effect.

The experiment apparently ended for the control and the experimental teachers when their classes had been promoted to second grade. However, both the control and the experimental teachers continued to teach the following two years using the experimental and control methods. They routinely tested their pupils at the conclusion of first grade when the tests were made available.

LIMITATION OF THE STUDY: The subjects of this observation were the two first grade teachers. The word observation is used instead of experiment because an N of two may seriously limit any experiment. A second serious limitation is the non-random assignment of pupils to the two first grade classes during the second and third year. Pupils were assigned routinely by the school principal. There may have been selective factors operating since he felt that the experimental program was superior to the control program.

THE TESTS: The Stanford Achievement Tests, Primary I, Form W, 1964 edition, were administered at the end of each first grade year. All six tests of the primary battery, word reading, paragraph meaning, vocabulary, spelling, word study skills, and arithmetic, were administered the first and second years. The arithmetic test was not administered at the end of the third year because the teachers decided not to give it. The classroom teachers administered and scored the tests. The tests were rescored independently by two other people. The teachers had the test results of their own scoring only for the second and third years. The test results of all the tests of the first year were reported to them officially during the summer following the first year. Test results were withheld during the first school year.

STATISTICS: An analysis of variance and t-test were used to compare performances.

RESULTS: The median scores for the SAT are in Table I.

TABLE I

MEDIAN SCORES OF THE STANFORD ACHIEVEMENT TESTS, PRIMARY I

GROUP	FIRST YEAR	SECOND YEAR	THIRD YEAR
Experimental	1.95	1.85	1.8
Control	2.00	2.25	2.4
Sub-control	1.70	not tested	not tested

1. At the end of first grade both the experimental and control classes were significantly better than the sub-control ($p<0.01$).

2. The third year experimental group was significantly poorer ($p<0.01$) than the first year experimental group.

3. The second and third year control group were significantly better ($p<0.01$) than the first year control group.

4. The second and third year control groups were significantly better ($p<0.01$) than the first year sub-control group.

5. The second and third year experimental groups were not significantly better ($p>0.05$) than the first year sub-control groups.

The control teacher during the first year was visibly bothered by the apparent greater success of the experimental class. The experimental class was featured in a newspaper editorial. The school received many requests from other districts for permission to visit the experimental class. These were denied, as planned, except for one or two visitations. Most of the parents of the children in the experimental class visited and were enthusiastic. Few visited the control class. The control teacher spoke of her lack of success, and at the end of the first year disappointedly said she would change to the new method next year. She elatedly changed her mind when the official report was given stating that there were essentially no significant differences between the methods except in the single area of pronouncing words in isolation. There were approximately twenty tests showing no significant difference. She announced further that she would "show them next year." Limited observation during the second and third years of the main experiment indicated she maintained this attitude.

DISCUSSION: The evidence suggests that two kinds of Hawthorne effects may have been operating. One, the experimental teacher's performance may have been heightened by the new method and the accompanying accolades from parents, school administration, and press. Two, the control teacher's performance was depressed by the appearance of success in the experimental class and by having to defend the old method.

It is possible that a Hawthorne effect did not operate on the control teacher until the second or third years. This observation was not designed to check this. There is a need for research to check this hypothesis of positive and negative Hawthorne effect.

There are several implications for educational research if there is both a positive and negative Hawthorne effect:

1. Research studies need to be cognizant of Hawthorne effect, realizing that controls for Hawthorne effect such as seminars, visitations, etc., may not create the same kind of effect on both the control and experimental groups. Studies which have controlled for Hawthorne effect by providing stimulating experiences for the control class teachers may have depressed the control teacher's performance and insured that the results of the experimental teaching would be superior.

2. We need measures of teachers under normal conditions before they enter into experimentation. It would have been desirable to have the SAT test scores for these two teachers for the year preceding the first year of this experiment. This would have delayed the main experiment a year while secretly collecting the base data for this experiment.

3. We may need to view with apprehension the value of longitudinal studies of children from experimental groups. Their being identified as experimental students may cause a positive Hawthorne effect on teacher or pupil performance in second, third, fourth grade, etc.

4. We may need longitudinal studies of teachers, not of pupils. It may be that some teachers respond positively to experimentation and some negatively regardless of their assignment to experimental or control class.

5. Research designed to check the efficacy of teaching methods should pit only new designs against new designs. If a new method is

significantly superior to another new method, it may then be superior. A researcher who wishes to check if current method B is as good as new method A must test this in a school district using current method K, using three groups, an experimental group using current method B, an experimental group using new method A, and a control group using current method K. The control group may not be necessary except that some teachers might become suspicious and treat one of the two experimental groups as a control because they know that there has to be a control group.

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