Column Editor: James Raths

# Implications of Overt Manifestations of Expectancy Bias

JOHN F. FANNING

IN the May 1967 issue of *Educational Leadership*, C. Mitchell Dayton discussed a phenomenon called "experimenter bias." By citing selected research efforts, Dr. Dayton suggested that ". . . . the phenomenon of experimenter bias must be taken largely at face value; that is, the experimenter's preconceived notions concerning the outcomes of the experiment operate to bias the experiment in an expected direction." Dr. Dayton went on to say "that experimenter bias is a phenomenon which may be exercising an adverse effect on the validity of a great deal of research in education."

Dr. Dayton's position in questioning the validity of much of the research in the behavioral sciences, after analyzing the evidence concerning the phenomenon of experimenter bias, is undoubtedly well taken. However, might it not be wise to transform a possibly difficult problem area for researchers into an opportunity area worthy of extensive research activity?

## Experimenter Bias and Teacher Expectancy—Equivalent Terms?

If, in fact, an experimenter's preconceived notion of the probable outcome of an experiment has a predictable relationship to the actual outcome, should we not be capitalizing on this phenomenon? If, for instance, the experimenter were the classroom teacher and the preconceived notion dealt with the successful performance of selected students and indeed the students did succeed, would we not infer a relationship between the phenomenon of experimenter bias and teacher expectancy?

### *Research Example*

Rosenthal, in a study designed to extend the generality of the findings regarding the significance of experimenter expectancies, administered a nonverbal intelligence test, under the guise of "a test designed to predict academic 'blooming' or 'intellectual' gain," to all of the children in an elementary school.

In each of eighteen classes, three per grade level 1-6, an average of 20 percent of the children were selected at random and assigned to the experimental condition. The experimental condition consisted of telling the teachers of the children, who had, in fact, been selected at random, that they, the children, would show unusual intellectual gains during the academic year.

Eight months after the study was initiated, all of the children were retested on the previously utilized nonverbal intelligence test and change scores were computed for each of the children. The following table from Rosenthal's study indicates the mean gain in IQ points among control and experimental children in each of the six grades.

Although the effects of teachers' expectancies were not consistent across the six grade levels, the children who were initially selected at random and whose teachers were led to expect greater intellectual gain showed a significantly greater gain in IQ score than did the control children.

It appears that the phenomenon of experimenter bias and what Rosenthal has referred to in the previously cited study as teacher expectancy may be one and the same. If, in fact, teacher expectancy and experimenter bias are one and the same, possibly a more advantageous position than questioning the validity of much of the behavioral research would be a concerted research effort to identify overt manifestations of teacher expectancy or experimenter bias. The following questions then appear crucial:

What does the teacher or experimenter consciously do that is different as a result of a preconceived notion or bias?

How does the teacher or experimenter unconsciously act that is different as a result of a preconceived notion or bias?

What does the teacher or experimenter with a preconceived notion or bias have the subjects or students do which is different?

Or, another question on a somewhat different plane:

What research already exists which may suggest leads in uncovering overt manifestations of experimenter bias or teacher expectancy?

Table 1. Mean Gains in IQ

| Grade | *Controls* | | *Experimentals* | | Diff. | $t$ | $p$† |
|---|---|---|---|---|---|---|---|
| | M | $\sigma$ | M | $\sigma$ | | | |
| 1 | 12.0 | 16.6 | 27.4 | 12.5 | 15.4 | 2.97 | .002 |
| 2 | 7.0 | 10.0 | 16.5 | 18.6 | 9.5 | 2.28 | .02 |
| 3 | 5.0 | 11.9 | 5.0 | 9.3 | 0.0 | | |
| 4 | 2.2 | 13.4 | 5.6 | 11.0 | 3.4 | | |
| 5 | 17.5 | 13.1 | 17.4 | 17.8 | −0.1 | | |
| 6 | 10.7 | 10.0 | 10.0 | 6.5 | −0.7 | | |
| Weighted M | 8.4* | 13.5 | 12.2** | 15.0 | 3.8 | 2.15 | .02 |

* Mean number of children per grade = 42.5.
** Mean number of children per grade = 10.8.
† $p$ one-tailed.

***Research Example***

In a classical design study, Page randomly selected 74 teachers from among all of the secondary teachers in three school districts. The selected teachers followed detailed printed instructions in:

1. Selecting at random one of their classes
2. Administering to the selected class whatever objective test was next prescribed for the class
3. Marking all of the test papers in his usual way and on the basis of the score, assigning appropriate letter grade A, B, C, D, or F
4. Placing the papers in rank order from best to poorest
5. Assigning, in sequence and at random, the papers to one of three groups:
   a. No comment
   b. Free comment (any comment the teacher decides to make)
   c. Specified comment (Excellent, Keep it up, Good work, Keep at it, etc.)
6. Returning the papers
7. Analyzing the effects of comments on the basis of the results of the next regularly scheduled test.

From the results of the following table from Page's study, he concluded ". . . that the comments had a real and beneficial effect upon the student's mastery of subject matter in the various experimental classes."

Since the teacher's comments do affect student performance and because Page, in his study, accounted for reactive arrangements on the part of the subjects by noting ". . . that the student

| Units considered | N | F | S | df | $Xr^2$ | $p$ |
|---|---|---|---|---|---|---|
| Individual Subjects | 1363 | 1488 | 1427 | 2 | 10.9593 | $<.01$ |
| Class-group Subjects | 129.5 | 170.0 | 144.5 | 2 | 11.3310 | $<.01$ |

Table 2. The Friedman Test of the Overall Treatment Effects

subjects were totally naïve. In other psychological experiments, while often not aware of precisely what is being tested, subjects are almost always sure that something unusual is underway." Could we not infer that teacher comments *may* be an example of what could be an overt manifestation of expectancy bias; and is it also possible that the teachers in Page's study manifested other perceivable forms of expectancy bias?

In conclusion then, let it be recognized that there is an apparent phenomenon of investigator bias which may be affecting much of the behavioral sciences research and that, although the validity of many studies may be questionable, it might be advantageous to capitalize on an apparent phenomenon by recognizing a possible relationship between experimenter bias and teacher expectancy.

Further, it may prove fruitful to review the literature carefully in an effort to uncover what may be indications of overt manifestations of expectancy bias as well as directing future research efforts toward the development of a schematic framework of expectancy bias manifestations.

Therefore, let us:

1. Continue to investigate the phenomenon of experimenter bias
2. Attempt to analyze carefully the possible relationships between experimenter bias and teacher expectancy
3. Review the carefully controlled studies which may give us insights regarding the overt manifestations of expectancy bias
4. Conduct basic and applied research designed to explore information regarding overt manifestations of expectancy bias.

**References**

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—JOHN F. FANNING, *Coordinator, Curriculum Research and Development, Arlington County Public Schools, Arlington, Virginia.*