

## Slavin Replies

### Controlled Studies

What Slavin does not tell the reader is that over the past 12 years we have published 43 studies comparing the relative impact of cooperative, competitive, and individualistic learning on achievement. In our studies, primarily field-experimental, students were randomly assigned to conditions, teachers were rotated across conditions, the same curriculum was used in all conditions, and the conditions were observed daily to ensure that they were appropriately implemented. These criteria make them some of the best controlled studies in the field. They took place in primary (8 studies), intermediate (20 studies), junior high (7 studies), high school (4 studies), and college (4 studies) classes. They were conducted on a wide variety of subject areas (some were conducted on more than one subject area): math (11 studies), social studies (11 studies), science (10 studies), reading and language arts (6 studies), geography/mapping (4 studies), physical education (2 studies), music education (1 study), and foreign languages (1 study).

Of our 43 studies, 10 compared cooperative and competitive learning; from these studies effect sizes weighted (1) to control for the number of findings in the study and (2) to minimize the variance of the effect size could be computed (see fig. 1). The effect size is 0.95. The effect size for the 6 studies that lasted for less than two weeks is 0.92, and the effect size for the 4 studies that lasted for two weeks or more is 1.01. The weighted effect size for the 29 studies that compared cooperative and individualistic learning is 1.02. Of the 29 studies, for the 9 that lasted less than two weeks, the effect size is 0.98; and for the 20 that lasted for two weeks or more, the effect size is 1.05. For 4 studies, no effect size could be computed, as a result of nonexperimental design or small sample size. The results of all 4 studies favor cooperation over competitive or individualistic learning (voting method).

Slavin criticized our 1981 meta-analysis because we included all available studies *before* we conducted subanal-

yses on the methodologically superior studies. He insists that physical education and the use of manipulatives (such as blocks and mazes) in math are not legitimate educational tasks. We disagree. Learning how to swim or play golf, furthermore, represent "procedural learning," whereby students not only have to learn conceptually the nature of swimming but also have to be able to perform it. Since most adult learning is of a procedural nature, studying procedural learning in the schools is an important enterprise.

What is important for classroom practice, however, is how much *individual* students learn from a cooperative experience, as shown on a test they take by themselves. These are the only data considered in my reviews. I also think few educators would disagree with my contention that studies of less than four weeks' duration have little direct relevance for practice. Cooperative learning still succeeds under these more stringent and meaningful conditions, but the effects are (obviously) smaller and appear only when the methods incorporate group goals and individual accountability.

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operationalization over methodological quality does the field a disservice.

**A Cooperative Effort**

It is time researchers stop competing over whose cooperative learning method is best and start focusing on conducting theoretical research that enhances our knowledge of the basic dynamics of cooperative efforts. There is room for all approaches. We invite Slavin to join in a cooperative effort to better understand the conditions under which cooperative, competitive, and individualistic efforts are effective and *how* and *why* cooperative efforts are so powerful. □

### A Fatal Flaw

Slavin's summary of the research on cooperative learning and achievement suffers from a fatal flaw. He takes the position that field-experimental studies that lasted *less* than 20 days—but did test theoretical propositions, include random assignment of students to conditions, rotate teachers across conditions, use the same curriculum in all conditions, check daily to ensure that the independent variable was being operationalized adequately, and use a well-conceptualized and well-defined control condition—are inferior to nontheoretical curriculum evaluation studies that *did* last 20 days but did not meet these criteria for experimental design. This emphasis on length of

### References

- Johnson, D.W. (1970). *Social Psychology of Education*. New York: Holt, Rinehart, and Winston.
- Johnson, D.W., and R. Johnson. (1975 and 1987). *Learning Together and Alone: Cooperative, Competitive, and Individualistic Learning*. Englewood Cliffs, NJ: Prentice-Hall.

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