Cooperative Learning: Where Behavioral and Humanistic Approaches to Classroom Motivation Meet

Author(s): Robert E. Slavin

Source: *The Elementary School Journal*, Vol. 88, No. 1 (Sep., 1987), pp. 29-37
Published by: The University of Chicago Press
Stable URL: http://www.jstor.org/stable/1002001
Accessed: 25/05/2010 20:00

Cooperative Learning: Where Behavioral and Humanistic Approaches to Classroom Motivation Meet

Robert E. Slavin
Johns Hopkins University

Abstract

This article discusses behavioral and humanistic perspectives on cooperative learning. In the behavioral view, cooperative learning is a form of group contingencies, because it rewards students on the basis of the performance of their group. The humanistic view emphasizes understandings arising from peer interactions. However, group contingencies have more often been applied to behavior than to learning, and research on peer interaction per se finds few achievement benefits. Rather, it is the combination of group rewards (based on group members' individual learning) and peer interaction on learning tasks that is necessary to produce the learning gains characteristic of effective cooperative learning methods. Of 35 studies of cooperative learning methods that used group rewards based on the sum of group members' individual learning, 30 found significantly greater achievement for cooperative than for control classes, and 5 found no differences. In contrast, of 20 studies of cooperative learning methods lacking group rewards based on group members' learning, only 3 favored the cooperative classes, and 2 favored control groups. These and other findings are discussed in an attempt to reconcile the behavioral perspective with other perspectives on cooperative learning.

Euclid, the author of the world's first geometry textbook, was once called upon by his king (or so the story goes). The king, who was a very busy man, wanted to know if there were any shortcuts he could take to learning geometry. "I'm sorry," Euclid is supposed to have replied, "but there is no royal road to geometry!"

Learning is work. To learn geometry or any other topic, students must apply themselves to pay attention in class, to practice the skills being taught, and to obtain information for themselves. The degree to which students will apply themselves to learning

The Elementary School Journal
Volume 88, Number 1

0013-5984/88/8801-0002$01.00

activities is a function primarily of their motivation. This motivation may come from many sources. Some students come to school eager to learn and receive constant reinforcement at home for learning-related behaviors. Many subjects are inherently interesting to students or can be made so by talented teachers. However, few subjects or teachers are so interesting and few students are so internally motivated as to make extrinsic rewards unnecessary. Students receive about 900 hours of instruction every year. It is unrealistic to expect that intrinsic interest and internal motivation will keep them enthusiastically working day in and day out.

Schools have long recognized the problem of motivating students to do schoolwork and have devised many ways of doing so. The most common formal extrinsic incentives are grades. Yet grades are far from ideal as incentives (Slavin, 1978a, 1986). First, we know that feedback and rewards should be given close in time to student performance (Leach & Graves, 1973), should be given on the basis of well-defined behaviors (Brophy, 1981), and should be given frequently (Peckham & Roe, 1977). Yet grades are typically given long after the behaviors they are supposed to reinforce, are based on general, often vague standards, and are given relatively infrequently (every 6–9 weeks).

Further, grades are generally given on a competitive basis. Even teachers who claim to give grades on a strictly noncompetitive standard would rarely give all their students A's; if all students met their "objective" standard, they would probably change the standard. The problem with the competitive nature of grading is that it creates a situation in which students hope their classmates will fail. Think how happy students usually are when a classmate gives a wrong answer in class, how they come halfway out of their seats raising their hands to correct the error. Leaving aside the serious negative social effects that this competitive situation can have (see, e.g., Ames, Ames, & Felker, 1977), consider its effect on student motivation. Students perceive that, if their classmates work too hard, they will have trouble succeeding and will also have to work very hard. Therefore, they express peer norms against doing academic work, branding those who ignore these norms as "teacher's pets," "nerds," "grinds," and so on (Coleman, 1961; Thomas, 1957). These norms are exactly analogous to work restriction norms in industry, where the "rate-buster" is socially shunned (Jones & Vroom, 1964). Also, the competitive grading system makes it difficult or impossible for many students to be successful. After a while many students come to understand that school success is not a route open to them and begin to seek other routes to a positive self-image, such as delinquent or antisocial behavior (Weis & Sederstrom, 1981).

If competitive grades are inadequate as classroom incentives, then what is a better approach? This article discusses two related approaches to classroom motivation that use cooperative rather than competitive standards for success: *group contingencies* and *cooperative learning*. In group contingencies, groups of students are rewarded on the basis of the behavior of all the group members. For example, a teacher might promise the class 5 min of extra recess if all students hand in their homework. Cooperative learning methods may also reward groups of students based on the behavior of their members but also engage students in face-to-face interaction around learning activities. The remainder of this paper discusses research on group contingencies and cooperative learning, points out the similarities and differences between them, and draws the implications of the research on these methods for classroom motivation in general.

Group contingencies

Group contingencies are methods derived directly from behavioral learning theory (Bandura, 1969). What defines a group contingency is that the behavior of one or more group members brings rewards to a group. It is possible to make a group's rewards de-

pendent on the behavior of a single member, but for ethical reasons this is rarely seen in classrooms. Rather, classroom group contingencies are almost always interdependent group contingencies, which means that the group's success depends on the behavior of all group members (Litow & Pumroy, 1975). One of the earliest classroom group contingencies to be studied was the Good Behavior Game (Barrish, Saunders, & Wolf, 1969). In this program, students were randomly assigned to two large teams. When the teacher saw any student disobeying class rules, the whole team received a check mark on the chalkboard. If a team had fewer than five check marks in a period, all team members could take part in a free-time activity at the end of the day. If both teams got more than five check marks, the team that got fewer marks would receive the free time. This program had an immediate and dramatic effect on student "talking out" and "out-of-seat" behavior. Similar findings have been obtained in dozens of classroom studies (Cavanagh, 1984; Hayes, 1976; Litow & Pumroy, 1975).

The theory behind group contingencies hypothesizes a two-step process. First, the group is rewarded if it collectively meets some standard. Second, the members of the group apply social sanctions to one another to encourage group members to do what is necessary to ensure that the group will be successful. It is actually these interpersonal reinforcers and punishers that are hypothesized to affect student behavior.

Although group contingencies have most often been applied to observable student compliance behavior, a few studies have established the effects of these methods on student achievement. Several (e.g., Axelrod & Paluska, 1975; Lovitt, Guppy, & Blattner, 1969) used immediate recall or accuracy in classroom tasks as dependent measures, but others (e.g., Cavanagh, 1984; Hamblin, Hathaway, & Wodarski, 1971; Jacobs, 1970; Van Houten, 1980) found that group contingencies were more effective than individual contingencies or untreated control conditions for increasing student performance on achievement tests. For example, Jacobs (1970) randomly assigned fourth graders to five groups: no rewards, random rewards, individual rewards, group rewards (based on the behavior of the entire class), and combined individual plus group rewards. All students used programmed reading materials. After 11 weeks, students were assessed on the Stanford Achievement Test. All of the reinforcement conditions resulted in greater achievement than the control group, but the group rewards were considerably more effective than the individual rewards. Similarly, Cavanagh (1984) compared Team Assisted Individualization (Slavin, 1985), an individualized mathematics program that uses cooperative teams and group rewards, to a form of the program that was identical except that it used individual rewards. The group rewards students finished substantially more units and achieved more on a standardized mathematics test than did the individually rewarded students.

Cooperative learning

Cooperative learning refers to a set of instructional methods in which students are encouraged or required to work together on academic tasks. Cooperative learning methods may be as simple as having students sit together to discuss or help one another with classroom tasks, or they may be quite complex. They may use group rewards, as in group contingencies, or may not do so. Thus, group rewards are an essential element of group contingencies but an optional element of cooperative learning, while peer interaction is an essential element of cooperative learning but may or may not exist in group contingencies.

Cooperative learning strategies vary two principal aspects of classroom organization: *task structure* and *reward structure* (Slavin, 1977, 1980a, 1983a). The traditional American classroom overwhelmingly uses an individual task structure in which students do their own work (Sirotnik, 1982; Stodolsky, 1984). Even British primary schools, which

make extensive use of group seating ("base groups"), use few alternatives to individual task structures (Galton, Simon, & Croll, 1980). In contrast, cooperative learning methods always use cooperative task structures in which students are required or encouraged to work with one another. In some cooperative learning methods each group member is given a unique subtask within the group (task specialization), while in others all students work together to accomplish a common product (group work) or to study and master a common set of material (group study).

Although all cooperative learning methods utilize cooperative task structures, they vary considerably in the degree to which they use cooperative reward structures (rewards to groups based on group members' performance). For example, the British "base groups" (Galton et al., 1980) and German *Gruppenunterricht* (Meyer, 1983) encourage students to work together but do not use a cooperative reward structure. However, many cooperative learning methods developed in the United States do reward students on the basis of their group performance. In some cases, rewards (e.g., praise, certificates, recognition, sometimes grades) are given on the basis of a single group product, such as a worksheet or report. For example, in methods developed by Johnson and Johnson (1975), students agree on answers to a common worksheet and are praised and rewarded based on the quality of the worksheet. In other cases, group rewards are given on the basis of the sum of individual learning performances. For example, in Student Teams Achievement Divisions or STAD (Slavin, 1978b), students in four- or five-member teams study academic materials together following teacher instruction and are then individually quizzed. Teams receive recognition or certificates based on the sum of all team members' scores.

In a comprehensive review of research on cooperative learning and achievement, Slavin (1983b) located 46 studies that met the following criteria for internal and external validity: (*a*) A cooperative learning method was compared with a control group that could be considered initially equivalent (because of random assignment or matching plus analysis of covariance). (*b*) The study took place in regular elementary or secondary classrooms for at least 2 weeks. (*c*) Achievement measures assessed individual learning of objectives taught equally in experimental and control classes.

The 46 studies that met the above inclusion requirements took place in grades 2–12; in urban, rural, and suburban locations in four countries; and in such diverse subject areas as mathematics, language arts, social studies, science, and foreign language. Sample sizes ranged from 27 to 1,742 (median = 118), durations from 2 to 30 weeks (median = 7 weeks).

Overall, the findings of the 46 studies are fairly consistent in showing significantly greater gains for experimental than for control treatments. Twenty-nine of the studies (63%) found such effects, and in only two (4%) did control students achieve significantly more than experimental students. However, the effects were not consistent across types of cooperative learning methods but depended on combinations of reward and task structures. Two elements are required to make cooperative learning more effective than traditional instruction: *group rewards* and *individual accountability*. Group rewards provide an incentive to the cooperating group to encourage and help its members to do whatever helps the group to succeed. Individual accountability, most often achieved by calculating group scores based on the sum of individual test scores, focuses the activities of the group members on increasing the achievement of *all* group members. When the group completes a single group worksheet or product, there is a danger that some group members' efforts will not be needed or may even interfere with the group's success. For example, in a heterogeneous four-member group, the two most able students could probably complete a group worksheet by themselves as well as

or better than if they actively involved the two less able group members. In contrast, if the group's success depends on the individual learning of each group member, then group members are motivated to attempt to ensure that all group members master the material being studied.

Of 28 studies of cooperative learning methods cited by Slavin (1983b) using group rewards based on the sum of individual learning performances, 25 (89%) found significantly greater achievement in cooperative than in control classes, and only three found no differences. More recent studies (e.g., Lew et al., 1983; Sherman & Thomas, 1986; Slavin & Karweit, 1985; Stevens, Madden, Slavin, & Farnish, in press; Yager, Johnson, & Johnson, 1985) have also found significantly greater achievement in classes using cooperative learning with group rewards and individual accountability than in control classes, although two studies of this type (Johnson, Johnson, Scott, & Ramolae, 1985; Kagan, Zahn, Widaman, Schwartzwald, & Tyrrell, 1985) found no differences. In contrast, of the 18 studies in the Slavin (1983b) review that evaluated cooperative learning without group rewards for individual learning, only three comparisons significantly favored cooperative learning, and two favored control groups. Recent studies of methods that involve group tasks but not group rewards have been equally disappointing in terms of achievement outcomes (e.g., Johnson & Waxman, 1985; Vedder, 1985).

Several component analyses have specifically examined the achievement effects of group rewards and individual accountability. Two studies (Hulten & DeVries, 1976; Slavin, 1980b) found that providing recognition to student teams based on the sum of their individual learning increased student achievement even if students were not permitted to interact in class. A German study (Huber, Bogatzki, & Winter, 1982) found that providing students an opportunity to study together did not increase their achievement, but adding group rewards based on individual learning did lead to enhanced achievement. Finally, Cavanagh (1984) found that students using an individualized instruction method in which they were assigned to work in small teams both completed more units accurately and achieved more if they received group rewards based on unit completion than if they received individual rewards.

Group contingencies and cooperative learning

The research on practical cooperative learning methods clearly supports the position that cooperative reward structures, or group contingencies, based on the individual learning of group members are necessary for the success of these methods in improving student achievement. However, does the peer interaction central to cooperative learning add to the effectiveness of group contingencies? Here the evidence is more indirect, but there are indications that peer interaction is important to the success of cooperative strategies. For example, Webb (1985) and Peterson and Janicki (1979) have found that the students who learn best from cooperative interaction are those who give and receive elaborated explanations (i.e., are not simply given answers or ignored by their groupmates). This finding mirrors that of the Piagetian tradition, which finds that if two nonconserving children actively work together both can become conservers (Ames & Murray, 1982), but if they simply accept a higher-quality answer to a conservation task they will not make cognitive progress (e.g., Mugny, Giroud, & Doise, 1979). However, what is critical in cooperative learning is the *combination* of group contingencies and high-quality peer interactions. Students are motivated to engage in elaborated, cognitively involving explanations and discussions if the learning of their groupmates is made important by the provision of group rewards based on individual learning performances (Slavin, 1983b). For example, several studies (e.g., Hamblin, Hathaway, & Wodarski, 1971; Slavin, 1980b) have established that active

peer discussion and peer explanation within cooperative groups are much more frequent under conditions in which group rewards are based on individual learning than under conditions in which collaborative work is encouraged but there are no consequences based on group members' learning.

The relationship between group contingencies and cooperative learning is summarized in Table 1. The table notes that group rewards and individual accountability are essential in group contingencies; group members must be aware of the individual contributions made by each groupmate if they are to be able to apply the interpersonal sanctions held to be central to the effectiveness of the group contingency. In contrast, cooperative learning emphasizes cooperative interaction but may or may not use group rewards or individual accountability. When all three elements are present, the distinction between group contingencies and cooperative learning is more or less semantic. Researchers from the behavioral learning theory tradition would probably insist on the term "group contingencies," while those from a social psychological or humanistic background would use "cooperative learning." Yet it is just this form of cooperative learning/group contingencies, one that emphasizes interactions, group rewards, and individual accountability, that has the greatest research support in terms of student achievement.

The cooperative learning movement has created an interesting phenomenon, in which humanistic educators and psychologists are championing classroom methods that could be completely described in behaviorist language. For example, a forthcoming book by the humanistic psychiatrist William Glasser, author of *Schools without Failure* (Glasser, 1969), attacks behavioral learning theory but proposes widespread use of cooperative learning teams (Glasser, in press). However, the attraction of cooperative learning for many humanistic educators probably lies not so much in accelerating student achievement as in the consistently found positive effects of cooperative learning on such variables as race relations, attitudes toward mainstreamed classmates, self-esteem, and other nonacademic outcomes (see Slavin, 1983a). In contrast to achievement effects, these important outcomes do not appear to depend on the use of group rewards for individual learning.

Despite the consistent evidence supporting the use of group rewards based on group members' learning in cooperative learning, there are many important questions yet to be resolved. Conclusions about the centrality of these components are based on comparisons of achievement effects of alternative models, not on direct observation of changes in student behavior. To confirm the arguments made in this article it would be important to contrast groups working under group contingencies to those simply asked to work together, to see if the quantity and quality of peer interactions are affected by the reward structures under which they take place. Also, the students' perspectives on the reward and task structures that compose cooperative learning have only been crudely assessed. Finally, it is possible that aspects of cooperative learning other than cooperation per se (e.g., clear

TABLE 1. Critical Features of Group Contingencies and Cooperative Learning

	Group Contingencies	Cooperative Learning	Effective Cooperative Learning Methods
Cooperative interaction	Optional	Essential	Essential
Group rewards	Essential	Optional	Essential
Individual accountability	Essential	Optional	Essential

objectives, frequent assessment) account for part or all of the achievement effect.

Cooperative learning represents an odd but happy marriage between behavioral and humanistic approaches to classroom motivation. Research on cooperative learning is more than sufficient to justify the practical use of these methods to accelerate student achievement, but much work still lies ahead to understand fully why and how the methods affect student learning and motivation. However, whatever future research discovers, it is certain that any understanding of the effects of cooperative learning will be enriched by these two different perspectives.

Note

An earlier version of this paper was presented at the annual meeting of the American Educational Research Association, San Francisco, April, 1986. This paper was written under a grant from the Office of Educational Research and Improvement, no. OERI-G-86-0006. However, all opinions expressed are those of the author and do not necessarily represent OERI policy.

References

Ames, C., Ames, R., & Felker, D. (1977). Effects of competitive reward structure and valence of outcome on children's achievement attributions. *Journal of Educational Psychology,* **69,** 1–8.

Ames, G. J., & Murray. F. B. (1982). When two wrongs make a right: Promoting cognitive change by social conflict. *Developmental Psychology,* **18,** 894–897.

Axelrod, S., & Paluska, J. (1975). A component analysis of the effects of a classroom game on spelling performance. In E. Ramp & G. Semb (Eds.), *Behavior analysis: Areas of research and application.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1969). *Principles of behavior modification.* New York: Holt, Rinehart, & Winston.

Barrish, H. H., Saunders, M., & Wolf, M. M. (1969). Good behavior game: Effects of individual contingencies for group consequences on disruptive behavior in a classroom. *Journal of Applied Behavior Analysis,* **2,** 119–124.

Brophy, J. (1981). Teacher praise: A functional analysis. *Review of Educational Research,* **51,** 5–32.

Cavanagh, B. R. (1984). *Effects of interdependent group contingencies on the achievement of elementary school children.* (Doctoral dissertation, University of Maryland, 1984). *Dissertation Abstracts International,* **46,** 1558.

Coleman, J. (1961). *The adolescent society.* New York: Free Press.

Galton, M., Simon, B., & Croll, P. (1980). *Inside the primary classroom.* London: Routledge & Kegan Paul.

Glasser, W. (1969). *Schools without failure.* New York: Harper & Row.

Glasser, W. (In press). *Control theory in the classroom.* New York: Harper & Row.

Hamblin, R. L., Hathaway, C., & Wodarski, J. S. (1971). Group contingencies, peer tutoring, and accelerating academic achievement. In E. Ramp & W. Hopkins (Eds.), *A new direction for education: Behavior analysis* (pp. 41–53). Lawrence: University of Kansas.

Hayes, L. (1976). The use of group contingencies for behavioral control: A review. *Psychological Bulletin,* **83,** 628–648.

Huber, G. L., Bogatzki, W., & Winter, M. (1982). *Kooperation als Ziel schulischen Lehrens und Lehrens.* Tübingen, West Germany: Arbeitsbereich Pädagogische Psychologie der Universität Tübingen.

Hulten, B. H., & DeVries, D. L. (1976). *Team competition and group practice: Effects on student achievement and attitudes* (Report No. 212). Baltimore, MD: Johns Hopkins University, Center for Social Organization of Schools.

Jacobs, J. F. (1970). *A comparison of group and individual rewards in teaching reading to slow learners.* Unpublished paper, University of Florida. (ERIC Document Reproduction Service No. ED 044 265)

Johnson, D. W., & Johnson, R. T. (1975). *Learning together and alone.* Englewood Cliffs, NJ: Prentice-Hall.

Johnson, L. C., & Waxman, H. C. (1985, March). *Evaluating the effects of the "groups of four" program.* Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Johnson, R. T., Johnson, D. W., Scott, L. E., & Ramolae, B. A. (1985). Effects of single-sex and mixed-sex cooperative interaction on science achievement and attitudes and cross-handicap and cross-sex relationships. *Journal of Research in Science Teaching,* **22,** 207–220.

Jones, S. C., & Vroom, V. H. (1964). Division of labor and performance under cooperative and

competitive conditions. *Journal of Abnormal and Social Psychology,* **68,** 313–320.

Kagan, S., Zahn, G. L., Widaman, K. F., Schwartzwald, J., & Tyrrell, G. (1985). Classroom structural bias: Impact of cooperative and competitive classroom structures on cooperative and competitive individuals and groups. In R. E. Slavin, S. Sharan, S. Kagan, R. Hertz-Lazarowitz, C. Webb, & R. Schmuck (Eds.), *Learning to cooperate, cooperating to learn* (pp. 277–312). New York: Plenum.

Leach, D. M., & Graves, M. (1973). The effects of immediate correction on improving seventh grade language arts performance. In A. Egner (Ed.), *Individualizing junior and senior high instruction to provide special education within regular classrooms.* Burlington: University of Vermont.

Lew, M., Gangi, D., Orban, D., Spanos, G., Maglio, K., Sullivan, G., & Schimmel, J. (1983, April). *Group contingencies in the secondary school: Some research applications.* Paper presented at the annual meeting of the American Educational Research Association, Montreal.

Litow, L., & Pumroy, D. K. (1975). A brief review of classroom group-oriented contingencies. *Journal of Applied Behavior Analysis,* **8,** 341–347.

Lovitt, T. C., Guppy, T. E., & Blattner, J. E. (1969). The use of a free-time contingency to increase spelling accuracy. *Behavior Research and Therapy,* **7,** 151–156.

Meyer, E. (1983). *Gruppenunterricht: Grundlegung und Beispiel.* Oberursel/Taunus: Ernst Wunderlich.

Mugny, G., Giroud, J., & Doise, W. (1979). Conflit de centration et progres cognitif. *Bulletin de Psychologie,* **32,** 978–985.

Peckham, P. D., & Roe, M. D. (1977). The effects of frequent testing. *Journal of Research and Development in Education,* **10,** 40–50.

Peterson, P. L., & Janicki, T. C. (1979). Individual characteristics and children's learning in large-group and small-group approaches. *Journal of Educational Psychology,* **71,** 677–687.

Sherman, L. W., & Thomas, M. (1986). Mathematics achievement in cooperative versus individualistic goal-structured high school classrooms. *Journal of Educational Research,* **79,** 169–172.

Sirotnik, K. A. (1982, March). *What you see is what you get: A summary of observations in over 1,000 elementary and secondary classrooms.* Paper presented at the annual meeting of the American Educational Research Association, New York.

Slavin, R. E. (1977). Classroom reward structure: An analytic and practical review. *Review of Educational Research,* **47,** 633–650.

Slavin, R. E. (1978a). Separating incentives, feedback, and evaluation: Toward a more effective classroom system. *Educational Psychologist,* **13,** 97–100.

Slavin, R. E. (1978b). Student teams and achievement divisions. *Journal of Research and Development in Education,* **12,** 39–49.

Slavin, R. E. (1980a). Cooperative learning. *Review of Educational Research,* **50,** 315–342.

Slavin, R. E. (1980b). Effects of student teams and peer tutoring on academic achievement and time-on-task. *Journal of Experimental Education,* **48,** 252–257.

Slavin, R. E. (1983a). *Cooperative learning.* New York: Longman.

Slavin, R. E. (1983b). When does cooperative learning increase student achievement? *Psychological Bulletin,* **94,** 429–445.

Slavin, R. E. (1985). Team Assisted Individualization: Combining cooperative learning and individualized instruction in mathematics. In R. E. Slavin, S. Sharan, S. Kagan, R. Hertz-Lazarowitz, C. Webb, & R. Schmuck (Eds.), *Learning to cooperate, cooperating to learn* (pp. 177–209). New York: Plenum.

Slavin, R. E. (1986). *Educational psychology: Theory into practice.* Englewood Cliffs, NJ: Prentice-Hall.

Slavin, R. E., & Karweit, N. L. (1985). Effects of whole-class, ability grouped, and individualized instruction on mathematics achievement. *American Educational Research Journal,* **22,** 351–367.

Stevens, R. J., Madden, N. A., Slavin, R. E., & Farnish, A. M. (In press). Cooperative integrated reading and composition: Two field experiments. *Reading Research Quarterly.*

Stodolsky, S. S. (1984). Frameworks for studying instructional processes in peer work-groups. In P. L. Peterson, L. C. Wilkinson, & M. Hallinan (Eds.), *The social context of education* (pp. 107–124). New York: Academic Press.

Thomas, E. J. (1957). Effects of facilitative role interdependence on group functioning. *Human Relations,* **10,** 347–366.

Van Houten, R. (1980). *Learning through feedback: A systematic approach for improving academic performance.* New York: Human Sciences Press.

Vedder, P. H. (1985). *Cooperative learning: A study on processes and effects of cooperation between primary school children.* The Hague: Stichting voor Onderzoek van het Onderwijs.

Webb, N. (1985). Student interaction and learning in small groups: A research summary. In R. E. Slavin, S. Sharan, S. Kagan, R. Hertz-Lazarowitz, C. Webb, & R. Schmuck (Eds.), *Learning to cooperate, cooperating to learn* (pp. 147–172). New York: Plenum.

Weis, J.G., & Sederstrom, J. (1981). *The prevention of serious delinquency: What to do?* Seattle: University of Washington, Center for Law and Justice.

Yager, S., Johnson, D. W., & Johnson, R. T. (1985). Oral discussion, group-to-individual transfer, and achievement in cooperative learning groups. *Journal of Educational Psychology,* **17,** 60–66.