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ABSTRACT

Forty 4th and 5th grade remedial reading students from two schools participated in a study that investigated whether providing remedial readers with information on the value of using a particular strategy would influence their self-efficacy and comprehension. In addition, the study explored the effects of emphasizing the general or the task-specific usefulness of the strategy. As part of a training program on main ideas, students in one condition received information that strategy use would benefit them on that task, students in a second condition were told that the strategy was useful on various reading tasks, and those in a third condition were given both types of information. Students in the controlled condition received the training, but no information about the importance of the strategy. Comparison of pretest and posttest data gathered by comprehension and self-efficacy measures revealed that providing students with both types of information resulted in the highest self-efficacy and skill, but that the treatments did not differentially affect achievement outcomes on a generalized task. Five pages of references conclude the document. (FL)

Comprehension Strategy Importance: Effects on Remedial Readers

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Abstract

This experiment investigated how providing remedial readers with information on the value of using a strategy influenced their self-efficacy and reading comprehension, and also explored the effects of emphasizing the task-specific or the general usefulness of the strategy. During a training program on finding main ideas, students in one condition received information that strategy use would benefit them on that task, students in a second condition were told that the strategy was useful on various reading tasks, those in a third condition received both types of information, and control subjects received training but no strategy importance information. Providing children with both types of information led to the highest self-efficacy and skill, but treatments did not differentially affect achievement outcomes on a generalization task.

Comprehension Strategy Importance:
Effects on Remedial Readers

Research shows that students differ in their use of memory and comprehension strategies, or conscious and planful activities oriented toward improving performance (Brown, 1980; Brown, Campione, & Day, 1981; Flavell, 1985). Children's strategic behaviors typically increase with age and task experience (Flavell, 1985; Myers & Paris, 1978).

A strategic approach to reading comprehension includes activities such as understanding the task demands, monitoring one's level of comprehension, and taking corrective action (e.g., rereading) when failures are detected (Brown, 1980; Brown et al., 1981). It has been suggested that students who demonstrate strategic deficiencies can benefit from strategy training (Brown et al., 1981; Myers & Paris, 1978; Paris, Lipson, & Wixson, 1983). Studies have shown enhanced performance following training on reading strategies (Paris, Cross, & Lipson, 1984; Raphael & McKinney, 1983).

At the same time, strategy training does not ensure that children will continue to utilize the strategy (Borkowski & Cavanaugh, 1979; Kramer & Engle, 1981). Failure to employ a strategy may result partly from the belief that, although the strategy is useful, it is not as important for success as are factors such as time available or effort expended (Fabricius & Hagen, 1984). To promote strategy maintenance, researchers have suggested providing students with information on the value of a strategy or the importance of strategy use; that is, information linking strategy use with improved performance (Borkowski & Cavanaugh, 1979; Brown et al., 1981; Paris et al., 1983). For example, students can be shown how their performances have improved by using the strategy, given instructions to employ a strategy, or provided with social comparative information indicating how strategy use benefited other students (Borkowski & Cavanaugh, 1979; Brown, 1980; Schunk & Gunn, 1985). Feedback on strategy value can promote actual strategy use and task performance (Borkowski, Levers, & Gruenenfelder, 1976; Kennedy & Miller, 1976; Kramer & Engle, 1981; Lodico, Ghatala, Levin, Pressley, & Bell, 1983; Paris, Newman, & McVey, 1982; Ringel & Springer, 1980; Schunk & Gunn, 1985).

The present study tested the hypothesis that providing elementary school children with information on the value of strategy use would improve their reading comprehension performance. The subjects, who regularly received remedial reading instruction, participated in comprehension strategy training over sessions. Some subjects also were given information on the value of consistent strategy use in the form of instructions to use the strategy and feedback that strategy use by other students improved their performances.

Within this context, this study explored the effects of strategy value information on students' perceived self-efficacy. Different procedures are hypothesized to change behavior in part by creating and strengthening self-efficacy, or personal judgments of one's performance capabilities in a given activity (Bandura, 1982a, 1982b). Self-efficacy can influence choice of activities, effort expended, persistence, and task accomplishments. Students acquire information about their self-efficacy from their own performances, observations of others, forms of persuasion, and physiological indexes (e.g., heart rate). Self-efficacy has been shown to exert an important influence on school achievement (Schunk, 1984, 1985).

Poor readers often possess self-doubts about their reading capabilities (Butkowsky & Willows, 1980; Paris et al., 1983). It was expected that providing information on the value of strategy use would promote students' comprehension self-efficacy. Emphasizing strategy use conveys to children that they are capable enough to successfully employ it, which can engender a sense of greater control over learning outcomes and raise self-efficacy (Bandura, 1982a; Schunk, 1984, 1985). Further, information that strategy use benefited other students' performances ought to raise self-efficacy, because students are apt to believe that if similar others could successfully apply a strategy then they can as well (Bandura, 1982b; Schunk, 1984, 1985). Research shows that social comparative information promotes students' self-efficacy on cognitive tasks (Schunk & Gunn, 1985).

The strategy value information provided to subjects emphasized either the task-specific or the general nature of the strategy. A task-specific strategy is relevant to the task at hand; a general strategy also can be applied to other, similar tasks (Harris, 1982; Kendall & Finch, 1979; Kendall & Wilcox, 1980; Meichenbaum & Asarnow, 1979). Research comparing the effects of task-specific with general strategies has shown that both can benefit performance on training tasks (Kendall & Finch, 1979; Schleser, Meyers, & Cohen, 1981). Research has not explored whether task-specific and general strategies differentially affect self-efficacy. It was expected that emphasizing either the task-specific or the general nature of the trained strategy would enhance comprehension performance and self-efficacy on the training task equally well.

To explore the transfer issue in the present study, we tested students on both the training task and on a generalization task. We expected that, compared with emphasizing the task-specific nature of the trained strategy, emphasizing its general nature would lead to higher comprehension performance and self-efficacy on the generalization task. Much research shows that students trained to use a strategy transfer it to other tasks (Borkowski & Varnhagen, 1984; A. Brown, Palincsar, & Armbruster, 1984; C. Brown, Meyers, & Cohen, 1984; Kurtz & Borkowski, 1984; Leal, Crays, & Moely, 1985; Nichol, Cohen, Meyers, & Schleser, 1982; Ringel & Springer, 1980; Schleser, Cohen, Meyers, & Rodick, 1984). Failure to obtain generalization may result because students do not understand how to alter a strategy to fit the demands of other tasks (Borkowski & Cavanaugh, 1979; Brown, 1980). We hypothesized that emphasizing the general nature of the trained strategy would make it more likely that students would understand that the strategy could be used on the generalization task and would attempt to alter the strategy for use on that task.

Method

Subjects

The subjects were 40 fourth and fifth grade children drawn from two elementary schools within one school district. The 21 boys and 19 girls ranged in age from 9 years 7 months to 13 years 2 months (*M* = 11.2 years). Although different socioeconomic backgrounds were represented, children predominantly were lower-middle class. Subjects regularly received remedial reading comprehension instruction. Students had been placed in remedial classes by the school district as follows: Fourth graders scored below grade level equivalent 1.9 on the reading subtest of the Iowa Test of Basic Skills (Lindquist & Hieronymus, 1972), whereas fifth graders scored below grade level equivalent 3.0.

Pretest

Subjects initially were administered the pretest individually by one of two female adult testers drawn from outside the school.

Self-efficacy. Children's reading comprehension self-efficacy was measured following procedures of previous research (Schunk & Rice, in press). The efficacy scale ranged in 10-unit intervals from 10--not sure, to 100--really sure. Students initially received practice by judging their certainty of successfully jumping progressively longer distances ranging from a few inches to several yards. In this concrete fashion, children learned the meaning of the scale's direction and the different numerical values.

Following this practice, students received two self-efficacy assessments that tapped comprehension of important ideas (the training task) and comprehension of details (the transfer task). These assessments were administered in counterbalanced order across students. For each assessment, students read eight passages one at a time. Passages ranged from 4 to 25 sentences; two passages each were appropriate for grades three through six (Cohen & Foreman, 1978). Each passage was followed by one to four questions (e.g., main ideas, "What is the most important idea in this story?", "What is a good title for this passage?"; details, "Who gave orders not to sail?", "Where is Antarctica located?"). The 16 passages included a total of 40 questions; 20 each tapped comprehension of main ideas and comprehension of details. Passages and questions corresponded in reading level to those on the ensuing skill test although they were not identical.

After children read each passage, the tester read its questions one at a time. For each question, students privately judged their certainty of answering correctly questions of that type; thus, children judged their capability of answering different types of questions rather than whether they could answer particular questions. Students were not allowed to consult passages and questions did not appear on their test pages to preclude them from actually answering the questions. Students were advised to be honest and mark the efficacy value that matched how they really felt. Each of the 20 efficacy scores was averaged separately.

Reading comprehension skill. The two skill tests were administered immediately following the efficacy assessments. Tests were given in counterbalanced order across subjects. Each skill test (main ideas, details) included 8 passages with 20 questions that ranged in difficulty as above. The tester presented each passage, along with its one or more multiple choice questions, one at a time. After children read each passage, they answered its questions without assistance or performance feedback. The number of questions that students answered correctly on each test constituted the measure of skill.

Training Procedure

Following the pretest, children were assigned randomly within gender and school to one of four experimental conditions ($n = 10$ per condition): task-specific strategy importance, general strategy importance, task-specific plus general strategy importance, instructional control (no strategy importance). All students received 30-min training sessions over 15 consecutive school days, during which they worked on instructional materials that covered comprehension of important ideas.[1]

Children assigned to the same experimental condition met in small groups of 3-5 with one of two female adult proctors drawn from outside the school. Written on a nearby poster board were the following steps (Schunk & Rice, in press):

What do I have to do? (1) Read the questions. (2) Read the passage to find out what it is mostly about. (3) Think about what the details have in common. (4) Think about what would make a good title. (5) Reread the story if I don't know the answer to a question.

At the start of the first training session, the proctor distributed instructional materials, pointed to the poster board, and gave the treatment instructions appropriate to students' experimental condition (described below). The proctor then verbalized the five steps aloud and applied them to a sample passage by repeating, "What do I have to do? Read the questions." The proctor read aloud the multiple-choice questions for the first comprehension passage while children followed along, after which she pointed to and verbalized steps (2) and (3). The proctor explained that details referred to bits of information and gave some examples, and said that while she was reading the passage she would be thinking about what the details had in common. She then read the passage aloud. The proctor pointed to and verbalized step (4), and explained that trying to think of a good title helps to remember important ideas in a story. She stated some of the details in the story, explained what they had in common, and made up a title for the story. The proctor then read aloud the first question and its multiple choice answers, selected the correct answer, and explained her selection by referring to the passage. She answered the remaining questions in the same fashion.

Following this modeled demonstration, the proctor instructed children to repeat aloud each step after she verbalized it. She then said, "What do I have to do? Read the questions." After children verbalized these statements, she selected one student to read the questions aloud. When this child finished, the proctor instructed students to repeat after her steps (2) and (3). The proctor then called on a different child to read the passage aloud, after which she asked children to repeat step (4) after her. A third student was selected to think of a title for the story and explain his or her answer. The proctor then called on individual children to read aloud each of the questions with its answers and to answer that question. If a child answered a question incorrectly, the student repeated step (5) and reread enough of the passage to answer the question correctly. When students stumbled on a word while reading the proctor prompted with contextual and phonetic cues.

The training format for the remainder of the first session and the rest of the training program was identical except that the proctor did not model strategies and children did not verbalize each step prior to applying it. Instead, she referred to steps at the appropriate places and occasionally asked children to verbalize them. Proctor instructions were scripted to insure standardized implementation. Occasional observations by the authors confirmed that training procedures were properly implemented. During the experiment, children did not receive comprehension instruction in their classes.

Treatment Conditions

Instructional control (no strategy importance). At the start of each training session, the proctor pointed to the poster board and said to these children, "Today we're going to use these steps to answer questions about main ideas." The training program then proceeded as described above. This condition controlled for the effects of strategy training and practice.

Task-specific strategy importance. For these students, the proctor introduced the steps as above, after which she provided information on the value of strategy use as follows:

> Using these steps should help you whenever you have to answer questions about main ideas, because most children like you find that using these

steps helps them whenever they have to answer questions about main ideas.

At the end of each training session, the proctor re-emphasized the value of strategy use by remarking, "Remember that using these steps should help you whenever you have to answer questions about main ideas."

General strategy importance. At the start of each session, the proctor introduced the steps as above, after which she conveyed the value of strategy use as follows:

> Using steps like these should help you whenever you have to answer questions about passages you've read, because most children like you find that using steps like these helps them whenever they have to answer questions about passages they've read.

At the end of each training session, the proctor again stressed the general importance of strategy use by remarking, "Remember that using steps like these should help you whenever you have to answer questions about passages you've read."

Specific + general strategy importance. Students assigned to this condition received both of the above sets of instructions. At the start and end of each training session, the proctor first gave the task-specific instructions, followed by the general instructions.

Posttest

The posttest was administered 1-2 days after the last training session. The instruments and procedures were similar to those of the pretest except that parallel forms of the self-efficacy and comprehension skill tests were used to eliminate possible question familiarity. For any given child, the same tester administered the tests, had not served as the child's training proctor, and was unaware of the child's experimental assignment.

Results

Means and standard deviations of all measures are presented by experimental condition in Table 1. Preliminary analyses revealed no significant differences on any measure due to tester, school, student gender or grade level, nor any significant interactions among these variables or between them and treatment conditions. There also were no significant differences between experimental conditions on the pretest measures or on the number of passages completed during training.

Insert Table 1 about here

Self-Efficacy/Skill

Training task. Intragroup changes on each measure were evaluated using the *t* test for correlated scores (Winer, 1971). These analyses revealed that students in the task-specific condition made a significant improvement in self-efficacy ($p < .05$), and that subjects in the specific + general condition showed significant gains in comprehension self-efficacy and skill ($ps < .01$).

Posttest measures were analyzed with a multivariate analysis of covariance (MANCOVA) using the two corresponding pretest measures as covariates. The four experimental conditions constituted the treatment factor. This analysis was significant, Wilks' lambda = .542, $F(6, 66) = 3.94$, $p < .01$. Univariate *F* tests (ANCOVAs) revealed significant between-group differences on both measures: self-efficacy, $F(3, 35) = 5.67$, $p < .01$; skill, $F(3, 35) = 6.91$, $p < .01$.

Dunn's multiple comparison procedure (Kirk, 1968) showed that students in the specific + general condition judged self-efficacy significantly higher than did students in the specific ($p < .05$), general ($p < .05$), and control ($p < .01$) conditions. Providing students with both task-specific and general strategy importance information also led to significantly higher comprehension performance than did the other three treatments ($ps < .05$).

Generalization task. All intragroup comparisons on self-efficacy and skill yielded nonsignificant results. Posttest measures were analyzed with MANCOVA using the two corresponding pretest measures as covariates. The four conditions constituted the treatment factor. This analysis yielded a nonsignificant result; therefore, treatments did not differentially affect students' self-efficacy or comprehension performance on the generalization task.

Correlational Analyses

Product-moment correlations were computed between the four pretest measures (self-efficacy and skill for the training and generalization tasks) and the corresponding four posttest measures. Initially, correlations were computed separately within each experimental condition. No significant between-condition differences existed in correlations between any two measures; therefore, correlations were averaged across conditions using an r to z transformation (Edwards, 1984).

Among the pretest measures, comprehension skill on the training task (main ideas) correlated positively with self-efficacy for main ideas ($r = .48$, $p < .01$) and details ($r = .34$, $p < .05$). Pretest and posttest skill on the generalization task (details) were positively related, $r = .59$, $p < .01$, as were pretest self-efficacy for details and both posttest self-efficacy measures (main ideas, $r = .35$, $p < .05$; details, $r = .60$, $p < .01$). Among the posttest measures, significant correlations were obtained between self-efficacy and skill on main ideas, $r = .56$, $p < .01$; self-efficacy and skill on details, $r = .37$, $p < .05$ and between the two self-efficacy measures, $r = .51$, $p < .01$.

Discussion

The present study shows that emphasizing both the task-specific and the general nature of a comprehension strategy enhanced remedial readers' self-efficacy and performance on the training task. This treatment presented students with the most complete set of influences on achievement outcomes, because it comprised strategy training, advice to use the strategy on comprehension tasks, and social comparative information that strategy use benefited other students' performances. It is possible that this treatment engendered in students a sense of greater control over their outcomes on comprehension tasks, which can raise self-efficacy (Bandura, 1982a). This initial sense of self-efficacy likely was validated during training as students applied the strategy and experienced success (Schunk, 1984, 1985), and higher self-efficacy can result in better posttest performance. This explanation is consistent with the idea that becoming a strategic reader requires combining skills with positive beliefs (Paris et al., 1983).

Informing children about either the task-specific or the general value of strategy use led to no benefits compared with those obtained from merely receiving training. This result seems surprising given much evidence that stressing the value of strategy use enhances performance on cognitive tasks (Borkowski et al., 1976; Kennedy & Miller, 1976; Kramer & Engle, 1981; Lodico et al., 1983; Paris et al., 1982; Schunk & Gunn, 1985). It is possible that students in the specific strategy importance and the general strategy importance conditions believed that the strategy was of limited usefulness and that other factors (e.g., time available, passage difficulty) had greater effects on reading outcomes. Children often have naive ideas about when strategies may be useful (Fabricius & Hagen, 1984; Myers & Paris, 1978). Specific strategy importance subjects may have believed that, because the strategy might help only on the training task, they could locate main ideas without using it. General strategy importance subjects may not have understood how to modify the strategy for other tasks, and therefore felt that it might not help them much. Future strategy training research needs to assess children's perceptions of strategy usefulness (Myers & Paris, 1978).

To enhance the effects of strategy training may require explicitly linking strategy use with better performance. For example, a trainer might remark, "That's correct. You got it right because you applied the steps in the right order," after children successfully apply a strategy and answer questions correctly. Another suggestion is to have children cognitively transform the strategy (Borkowski & Cavanaugh, 1979). Greater cognitive activity can lead to better strategy coding, retention, and retrieval (Borkowski & Cavanaugh, 1979). A procedure that has been effectively employed to train strategy use is self-instructional training, which comprises modeling, guided practice, faded self-guidance (i.e., verbalizations are faded to whispers), and covert (silent) self-instruction (Borkowski & Varnhagen, 1984; C. Brown et al., 1984; Harris, 1982; Kendall & Wilcox, 1980; Meichenbaum & Asarnow, 1979; Schleser et al., 1981, 1984). Self-instructional training might be used to help poor readers actively monitor their level of comprehension and thereby enhance strategy maintenance beyond the training context (Borkowski & Cavanaugh, 1979; Meichenbaum & Asarnow, 1979).

The nonsignificant results on the generalization measures conflict with evidence that providing students with feedback on the value of strategy use can lead to improved performance on generalization tasks (Borkowski & Varnhagen, 1984; C. Brown et al., 1984; Kurtz & Borkowski, 1984; Leal et al., 1985; Nichol et al., 1982; Ringel & Springer, 1980; Schleser et al., 1981, 1984). Subjects who were given information on the general value of the strategy may not have understood how to adapt the strategy for use on the transfer task. Although the training (main ideas) and transfer (details) tasks differed in their cognitive demands, the trained strategy could have been used on the transfer task with only minor modification. As Borkowski and Cavanaugh (1979) note, however, even minor strategy modification is often a problem for children with cognitive deficits.

It also is possible that students felt they did not need to use the steps while reading for details. Subjects perceived themselves as more capable and demonstrated greater skill in reading for details than in locating important ideas (Table 1). This finding is not surprising, because locating main ideas is the more difficult task for poor readers (Brown, 1980). Students might have believed that they could answer details questions using their own strategy and might have felt no need to adapt the trained strategy. Future research might initially examine the strategies that students typically use and then institute training to improve their efficiency (Borkowski & Cavanaugh, 1979; Brown, 1980).

Assuming that children retain and continue to utilize a strategy, an effective means for promoting generalization may be to train students on multiple tasks (Borkowski & Cavanaugh, 1979). Training on only one task can engender the belief among students that the strategy has limited applicability (Borkowski & Cavanaugh, 1979). One possibility is to begin training on one task with a specific strategy, and then train students to use a general strategy on various tasks (Harris, 1982). Within this context, children could be given explicit feedback on the strategy's value as mentioned previously. As Brown and her colleagues have emphasized, cognitive skills training needs to include practice in the use of skills, instruction in how to monitor the outcomes of one's efforts, and feedback on when and where a strategy may be useful (Brown, 1980; A. Brown et al., 1981, 1984).

This study supports the idea that, although self-efficacy is influenced by one's performances, it is not merely a reflection of them (Bandura, 1982a, 1982b; Schunk, 1984, 1985). Treatment conditions did not differ in the number of comprehension exercises completed during training but children who received strategy value information that emphasized both the task-specific and general usefulness of the strategy subsequently judged self-efficacy higher. This study also shows that self-efficacy bears an important relationship to comprehension performance. Personal success expectations are viewed as important influences on achievement by different theoretical approaches (Bandura, 1982a; Covington & Omelich, 1979; Kukla, 1972; Weiner, 1983).

This study has applied implications. Small group remedial reading instruction is common in schools, and strategy training can easily be accomplished in this context. At the same time, teachers ought to address strategy transfer. For example, teachers could introduce a reading comprehension strategy on one task, and then have children apply it during the year to different comprehension tasks (e.g., details, main ideas, inferences).

Although this strategy primarily would comprise general steps, teachers could tailor it to different tasks by including some task-specific steps (e.g., main ideas, "Think about what would make a good title for this story"). Teachers who try to foster consistent strategy use are likely to promote their students' skills and self-efficacy for applying them.

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Footnote

[1]The sources from which the test items and instructional materials were drawn can be obtained from the first author.

Table 1

Means (and Standard Deviations)

Measure	Phase	Experimental Condition Task-Specific	General	Specific + General	Control
Self-Efficacy[a]	Pretest	58.2 (17.0)	66.7 (13.0)	64.0 (11.2)	69.6 (11.1)
	Posttest	73.9 (17.3)	73.8 (11.5)	90.7 (7.7)	71.6 (8.9)
Skill[a]	Pretest	4.5 (2.7)	4.5 (2.8)	4.9 (1.9)	4.3 (2.2)
	Posttest	6.3 (3.1)	6.2 (4.9)	11.2 (4.9)	6.3 (2.5)
Self-Efficacy[b]	Pretest	75.7 (13.4)	78.8 (16.4)	80.6 (7.3)	87.8 (11.1)
	Posttest	79.2 (16.9)	83.0 (17.3)	87.4 (16.6)	88.1 (7.6)
Skill[b]	Pretest	12.2 (4.2)	13.2 (4.3)	12.7 (2.9)	13.1 (3.4)
	Posttest	14.2 (4.1)	13.3 (4.0)	13.6 (3.1)	14.3 (3.6)

Note. $N = 40$; $n = 10$ per condition. Self-efficacy means represent the average judgment per question; range of scale is 10 (low) - 100. Skill means represent the number of correct answers out of 20 questions.

[a]Training task (main ideas).

[b]Generalization task (details).