

# Reciprocal Teaching of Reading Comprehension Strategies for Students with Learning Disabilities Who Use English as a Second Language

Janette Kettmann Klingner  
Sharon Vaughn  
*University of Miami*

## Abstract

In this study, we investigated the efficacy of 2 related interventions on the reading comprehension of seventh and eighth graders with learning disabilities who used English as a second language. All 26 students participated in reciprocal teaching for 15 days and then were randomly assigned for 12 days to 1 of 2 groups: reciprocal teaching with cooperative grouping ( $n = 13$ ) or reciprocal teaching with cross-age tutoring ( $n = 13$ ). Though there were no statistically significant differences between groups on 2 measures of comprehension, students in both groups made significant progress in reading comprehension. Analyses focused on understanding the performance of more and less successful students within groups. Findings revealed that initial reading ability and oral language proficiency seemed related to gains in comprehension, that a greater range of students benefited from strategy instruction than would have been predicted on the basis of previous research, and that students in both groups continued to show improvement in comprehension when provided minimal adult support.

Approximately 1 million students who speak English as a second language (ESL) also exhibit serious learning problems that may qualify them for placement in special education programs (Baca & Cervantes, 1989). These students often exhibit more problems with reading comprehension than do fluent speakers of English of comparable ability, because of differences in background knowledge relevant to what is read in school and limited English language proficiency (Clarke, 1980; Lee, 1986; Pritchard, 1990). Yet, as is often the case with monolingual students with learning disabilities (LD), ESL students with LD typically have been placed in programs that stress activities related to word identification and literal

comprehension rather than the development of comprehension strategies, in either Spanish or English (Allington, 1991; Cummins, 1984; Gersten & Jiménez, 1994; Hernandez, 1991; McGill-Franzen & Allington, 1990).

Comprehension strategy instruction is one promising approach for improving learning opportunities for ESL students, particularly those with LD. Because many students with LD are inefficient learners who are unaware of their own cognitive processes or of how to determine the particular task demands within a learning situation (Flavell, 1971, 1977; Torgesen, 1977, 1980), their lack of knowledge about when and how to apply strategies prevents them from using their abilities most advantageously (Baker & Brown, 1984; Gibson & Levin, 1975). Many strategies have been developed to improve the understanding, storage, and retrieval of complex, meaningful, and organized information (Armbruster, Anderson, & Ostertag, 1987; Dewitz, Carr, & Patberg, 1987; Schumaker & Deshler, 1992; for a review see Pressley, Johnson, Symons, McGoldrick, & Kurita, 1989). The effectiveness of some of these strategies for use with students with LD has been documented (Weisberg, 1988; Wong, 1985). Instruction in reading comprehension strategies has been found to be effective for ESL students as well (Boyle & Perego, 1990; Hernandez, 1991; Padron, 1985).

With the exception of the work conducted by Bos and colleagues (Bos, Allen, & Scanlon, 1989; Bos & Anders, 1992; Gallego, Duran, & Scanlon, 1990), however, almost no research has been conducted in comprehension strategy instruction for ESL students with LD. One approach to teaching comprehension strategies that holds promise for second-language readers is Palincsar and Brown's (1984) reciprocal teaching model (Casanave, 1988; Hernandez, 1991; Miller & Perkins, 1989; O'Malley & Chamot, 1990).

### **Reciprocal Teaching**

The reciprocal teaching model has been used to improve comprehension for stu-

dents who can decode but have difficulty comprehending text (Lysynchuk, Pressley, & Vye, 1990; Palincsar & Brown, 1984, 1985; for a review, see Rosenshine & Meister, 1991). In this model, students are taught to use the four strategies of prediction (Anderson & Pearson, 1984; Hansen & Pearson, 1983), summarization (Brown & Day, 1983; Weisberg & Balajthy, 1990), question generation (Davey & McBride, 1986; Singer & Donlan, 1982), and clarification (Baker, 1979).

At first, the teacher models use of these strategies by "thinking aloud" as she reads through a text. The teacher then leads students in a text-related discussion, assisting them in strategy use and gradually withdrawing support as it is no longer necessary. As students become more proficient at applying the strategies, they take turns being the "teacher" and leading discussions about text content.

Reciprocal teaching recognizes that cognitive development occurs when concepts first learned through social interactions become internalized and made one's own. Thus, reciprocal teaching provides an environment in which students, with the assistance of the teacher and/or more knowledgeable peers, become increasingly proficient at applying comprehension strategies while reading text passages.

Previous reciprocal teaching research has established the effectiveness of comprehension strategy instruction for students who are adequate decoders but poor comprehenders (Palincsar & Brown, 1984). However, further research is needed to examine the effects of strategy instruction on students who demonstrate patterns of reading abilities characteristic of most students with LD (i.e., students who are low in both decoding and comprehension). Although reciprocal teaching has been recommended for second-language learners by experts in the field (O'Malley & Chamot, 1990), few empirical studies documenting its effectiveness have been conducted (for an exception, see the exploratory studies of Hernandez,

1991, who taught strategies in Spanish, or Padron, 1985, who provided instruction in English).

Prior reciprocal teaching research has examined the effects of teacher-facilitated strategy instruction without examining how students apply strategies when the teacher is not present. To address this issue, in our study we included cross-age tutoring and cooperative learning groups as a means to enhance strategic learning following teacher-facilitated strategy instruction. A potential strength of these collaborative approaches is that they enable second-language learners to use their native language to explain difficult passages or confusing procedures to one another *even when the classroom teacher does not speak their first language*. Previous research in second language learning suggests that conceptual knowledge developed through students' native language can transfer to English when the appropriate vocabulary is learned in English (e.g., Cummins, 1984, 1989; Diaz, Moll, & Mehan, 1986; Hakuta, 1990; Hudelson, 1987), thereby improving understanding of English-language text. Thus, reciprocal teaching in combination with either cross-age tutoring or cooperative learning should accommodate linguistic differences in a way that reciprocal teaching alone does not and provide a viable method of comprehension strategy instruction for ESL students with LD.

### **Cross-Age Tutoring and Cooperative Learning**

Cross-age tutoring has been shown to benefit both tutors and tutees and to provide academic and social benefits (Cohen, Kulik, & Kulik, 1982; Goodlad & Hirst, 1989; Scruggs & Richter, 1988). However, almost all of the research on tutoring students in reading has involved word-level oral reading or low-level comprehension activities rather than comprehension strategy training (Pearson & Fielding, 1991). Nevertheless, two studies suggest that tutors can successfully teach comprehension strategies to

same-age or younger peers (Palincsar et al., 1987; Schrader & Valus, 1990). Although few empirical studies with ESL students as either the tutor or tutee have been conducted, this type of peer interaction has been promoted strongly as a way to increase opportunities for meaningful communication about academic content in either English or students' native languages (Cazden, 1988; Garcia, 1987/1988, 1992; Richard-Amato, 1992).

Cooperative learning also appears to be an appropriate instructional approach for ESL students with LD. Cooperative learning methods have sometimes produced favorable results for students with LD (e.g., Madden & Slavin, 1983; Stevens, Madden, Slavin, & Farnish, 1987) and for ESL students (Kagan, 1986; Long & Porter, 1985). The key to academic and cognitive growth appears to be how well the learning environment is structured to promote improved performance—just placing students together and telling them to cooperate is not enough. Cooperative groups provide ESL students an opportunity to draw on native language support from bilingual peers (Cohen, 1986; Díaz et al., 1986).

### **Purpose of Study**

The purpose of this study was to investigate the effect of two approaches for providing reading comprehension strategy instruction to seventh- and eighth-grade ESL students with LD on comprehension of English-language text: (a) reciprocal teaching in combination with cross-age tutoring, and (b) reciprocal teaching in combination with cooperative grouping. Though we explored between-group differences, we focused on understanding the performances of individual students in each treatment group in an effort to determine which characteristics were most likely to contribute to success.

### **Method**

#### **Subjects**

Subjects were drawn from one predominantly (89%) Hispanic urban middle

school. The population of potential subjects invited to participate in the study included 42 seventh- and eighth-grade ESL students with LD. Of these, 28 returned permission slips, and 26 of those met the following criteria: (a) a significant discrepancy of at least 1½ standard deviations between standard scores on an intelligence test and an achievement test (both administered in English) and evidence that their learning difficulties were not due to other conditions (e.g., second-language learning, sensory handicap, physical handicap); (b) Spanish spoken as their native language, as determined by both the State of Florida Language Survey and a researcher-administered interview; (c) English decoding skills at least at the second-grade level, as measured by the Woodcock-Johnson Tests of Achievement (Woodcock & Johnson, 1989), Letter-Word Identification Subtest; and (d) scores at least 2 years below grade level on the Woodcock-Johnson Tests of Achievement, Passage Comprehension Subtest. For all qualifying students, social studies instruction in their middle school was provided predominately in English, using English-language textbooks.

Descriptive information in the form of marker variables, similar to those used in the UCLA Marker Variable System (Keogh, 1987; Keogh, Major-Kingsley, Omori-Gordon, & Reid, 1982), was collected to provide "descriptive benchmarks" that facilitate the interpretation of research results and allow comparisons of findings across different samples. This information is provided in three ways. Table 1 lists background information other than test scores for each student. Table 2 contrasts the two treatment groups on selected variables. Table 5 provides background test information for individual students, by reading comprehension growth and treatment group.

Students were randomly assigned to the tutoring group or the cooperative learning group, so that there were 13 students in each group. There was no attrition of subjects in this study.

### Procedures

Students participated in modified reciprocal teaching sessions for 27 days. First, all 26 seventh- and eighth-grade students received 15 days of this modified reciprocal teaching instruction, for 40 minutes a day, in groups of six or seven students each (facilitated by the first author). While they were reading social studies passages, students learned the following six strategies (expanded from Palincsar & Brown's four strategies, 1984): (a) predict what a given passage would be about, (b) brainstorm what they already knew about the topic of a passage, (c) clarify words and phrases they did not understand while reading, (d) highlight the main idea of a paragraph, (e) summarize the main idea(s) and the important details in a paragraph or passage, and (f) ask and answer questions about a passage.

On the first day of strategy instruction, after preparing students with purpose-setting statements (Deshler, Schumaker, & Lenz, 1984; Duffy et al., 1987; Palincsar & Brown, 1984; Paris, Lipson, & Wixson, 1983), the researcher (the first author) modeled the entire process of reading a passage and applying the strategies. Comprehension strategy cue sheets that included descriptions of the strategies were distributed. On the second day, the researcher again modeled the entire process of reading a passage and applying the strategies, involving students in discussions about passage content. On subsequent days, students took turns leading discussions in the role of "teacher," with the amount of support provided by the researcher gradually decreasing as students became more proficient in leading discussions and applying the strategies on their own. By the tenth day of strategy instruction, students, in their alternating roles as "teachers," required minimal assistance from the researcher, who by then functioned more as a facilitator than a coach.

Although text passages were read in English and discussions were conducted primarily in English, students were encour-

TABLE 1. Descriptive Background Information for Individual Students

Student	Age (Years)	Origin/If U.S., Parents'	Free Lunch	Grade	Years in LD	1992/93 Classes in LD	No. of 1992/93 Absences	Social Studies/ Language Arts Grades
<b>Tutoring group:</b>								
Jennifer	13	U.S./Cuba	N	7	4	4	17	C/C
Vicente	15	Cuba	Y	7	7	4	36	C/C
Miguel	14	U.S./Chile	Y	8	5	4	18	C/B
Luis	15	Cuba	N	7	5	4	32	C/C
Susana	13	Nicaragua	Y	7	4	4	50	C/C
Carmen	13	Costa Rica	Y	7	2	3	20	A/C
Omar	13	Nicaragua	Y	7	4	2	11	B/D
Linda	15	U.S./Cuba	Y	8	5	4	7	B/B
Trina	14	U.S./Puerto Rico and Italy	Y	7	3	4	22	B/B
Betina	15	U.S./Cuba	Y	8	1	2	9	B/A
Manuel	13	Cuba	Y	7	4	3	14	C/C
Raul	14	Cuba	Y	7	4	4	18	D/C
Marta	14	Honduras	Y	7	4	4	8	B/F
<b>Cooperative learning group:</b>								
Patricia	14	Nicaragua	Y	7	2	1	23	B/D
Juan	13	Cuba	Y	7	3	3	31	D/D
Erica	12	U.S./Puerto Rico and Guatemala	Y	7	3	3	17	B/C
Azucena	15	Honduras	Y	8	6	4	22	C/D
Francisco	13	Cuba	N	7	4	3	28	D/C
Marcos	15	Nicaragua	Y	8	5	1	3	C/B
Miriam	14	Nicaragua	Y	7	5	4	4	B/D
Cecilia	14	Nicaragua	Y	7	4	4	32	B/B
Roberto	13	U.S./Cuba	Y	7	5	1	42	C/D
Yolanda	14	U.S./Cuba	Y	7	4	3	22	B/A
Luisa	14	Cuba	N	7	5	4	12	B/C
Jesse	14	U.S./Honduras and Cuba	Y	8	5	3	17	C/C
Alberto	13	U.S./Cuba	Y	7	5	3	16	B/B

NOTE.—Y = yes; N = no; LD = learning disabilities.

TABLE 2. Descriptive Information for the Two Treatment Groups

Variable	Tutoring Group (N = 13)	Cooperative Learning Group (N = 13)
Gender:		
Males	6	6
Females	7	7
Age (years):		
Mean	13.92	13.69
Median	14	14
Range	13-15	12-15
Grade:		
Seventh	10	10
Eighth	3	3
Years in LD:		
Mean	4	4.3
Median	4	5
Range	1-7	2-6
WISC-R IQ:		
Mean	88	85.38
Median	89	81
Range	70-111	71-107
Language Assessment Scales (English):		
Mean	4.31	3.38
Median	5	4
Range	2-5	2-5
Stanford Achievement Test (Reading):		
Mean %	9.27	8.75
Median	6	8
Range	1-20	1-16
Woodcock-Johnson Word Identification (English):		
Mean grade	3.38	3.56
Median	2.8	3.1
Range	2.0-6.2	2.0-6.7
Woodcock-Johnson Compre- hension (English):		
Mean grade	3.87	3.42
Median	4.2	3.0
Range	2.0-5.8	1.7-5.6

NOTE.—% = national percentile score; grade = grade-level equivalent.

aged to use Spanish when they felt it might increase understanding of important concepts.

**Phase 2: cross-age tutoring group.** After students in this group participated in 15 reciprocal teaching sessions, they tutored younger (sixth-grade) students in comprehension strategies. Before they tutored, students received training in best practices for tutors (Barron & Foot, 1991). Tutors then taught the comprehension strategies to their tutees for 12 school days, for 35-40 minutes each day. Tutors were directed to teach by modeling all of the strategies on the first

and second days and by having their tutees gradually take over more responsibility for using the strategies on subsequent days. After the first 3 or 4 days, tutors and tutees took turns "being the teacher."

**Phase 2: cooperative learning group.** After students in this group participated in 15 reciprocal teaching sessions, they implemented the comprehension strategies in cooperative learning groups (of three to five students) for 12 school days, for 35-40 minutes each day. These students essentially followed the same procedures implemented in the reciprocal teaching phase, except that

now the researcher was no longer serving as a coach or facilitator. Students in this condition read the same passages that were read by the tutors and their tutees.

*Role of the researcher in phase 2.* During cross-age tutoring and cooperative learning sessions, the researcher circulated around the room, monitoring behavior and providing assistance as needed (e.g., reading words, clarifying concepts, or reminding students of a strategy they had skipped). The researcher spent approximately the same amount of time with cooperative learning groups as with tutor/tutee pairs.

### Measures

*Descriptive measures* were administered individually prior to the intervention to assist in sample description and to aid in the interpretation of growth. These included the following Woodcock-Johnson Tests of Achievement: Letter-Word Identification, Passage Comprehension, and Social Studies Subtests (Woodcock & Johnson, 1989). They also included the following language measures: Woodcock Language Proficiency Battery—Spanish Form (Woodcock, 1981), and the Language Assessment Scales—English and Spanish Versions (De Avila & Duncan, 1990).

*Additional quantitative measures* included two used by Palincsar and Brown (1984): the Gates-MacGinitie Reading Comprehension Test (Gates-MacGinitie & MacGinitie, 1989) and Passage Comprehension Tests (10 passages with comprehension questions, developed by Palincsar & Brown, 1984). Finally, a researcher-developed strategy interview was administered (similar to that used by Myers & Paris, 1978). The Gates-MacGinitie and the strategy interview were administered as pre- and posttests only. The Passage Comprehension Tests were administered on an ongoing basis: twice before the intervention began, once a week during the intervention, and twice after the intervention. Administration of the Passage Comprehension Tests was staggered so that, for every testing ses-

sion, each of the 10 passages was read by at least two students.

For the Passage Comprehension Tests, scores representing the percentage of correct answers were calculated using the following procedure. Each of the 10 questions per comprehension test was scored as incorrect (0 points), correct and complete (2 points), or correct but incomplete (1 point), so that the total number of possible points per test was 20. All of the tests were scored by two independent raters, the researcher and an assistant trained in the scoring procedure. The Pearson product moment correlation calculated on all tests to yield interrater reliability was .97. Scores from the first two administrations of the Passage Comprehension Tests were averaged to yield a pretest score; scores on the tests administered immediately upon completion of the treatment and 1 week later were averaged to produce a posttest score.

For the strategy interview, scores indicated the percentage correct of a possible 25 points. The researcher and an assistant trained in this scoring procedure independently rated all of the strategy interviews. The Pearson correlation calculated to yield interrater reliability was .98.

*Qualitative data* included student and researcher daily logs (Strauss & Corbin, 1990) and focus group interviews with all participating students (Stewart & Shamdasani, 1990), conducted during and after the intervention.

### Results

Data analyses were directed toward questions regarding group outcomes, patterns of change in reading comprehension over time, and understanding the characteristics that differentiate more and less successful students in each condition. Although this analysis of within-group variability was of greatest interest to us, information regarding group outcomes is presented first, to provide a background for subsequent discussions.

### Group Outcomes

A two-way analysis of variance with one between-subjects and one within-subjects factor was applied to answer questions regarding treatment outcomes. This procedure was conducted using pre- and posttest scores from: (a) the Gates-MacGinitie (national percentile scores were used), (b) Passage Comprehension Tests, and (c) the strategy interview.

Table 3 presents the pretest, posttest, and gain scores for individual seventh- and eighth-grade students on each of these measures, and Table 4 presents the means and standard deviations for each measure, by group.

The results of the between-group analysis indicated that the overall difference in growth between groups was not statistically significant on any of the three measures.

The results of the analysis of pre- to posttest gains on the dependent measures suggested that the overall reading comprehension of the subjects in this study showed statistically significant growth,  $F(1,22) = 77.14$ ,  $p = .0001$ . There was not a significant time  $\times$  group interaction on a repeated-measures multivariate analysis of variance,  $F(1,24) = 2.00$ ,  $p = .1706$ .

On the Gates-MacGinitie, the mean difference between pre- and posttest percentile scores was 4.12, with a standard deviation of 7.32,  $t(25) = 2.87$ ,  $p < .01$ . Inspection of the distribution of change scores on the Gates MacGinitie indicated wide variation, with three students showing negative gains, two students showing a positive gain of more than 26 percentile points, and the remaining students exhibiting gains between 0 and 9 percentile points (see Table 3).

For the Passage Comprehension Tests, the mean gain in percentage of correct answers was 23.75, with a standard deviation of 19.15,  $t(25) = 6.32$ ,  $p = .0001$ . For the strategy interview, the mean gain in percentage of correct answers was 18.88, with a standard deviation of 15.94,  $t(24) = 5.92$ ,  $p = .0001$ . Because these measures are not standardized like the Gates MacGinitie, in-

terpretation of these findings must be tempered because of the lack of a comparison group.

Although caution must be advised in interpreting these results, in light of the lack of a control group, our findings are consistent with the results of previous research with native-speaking, non-special-education students in which control groups were included (Lysynchuk et al., 1990; Palincsar & Brown, 1984).

### Patterns of Change in Reading Comprehension

To assist in evaluating patterns of change in reading comprehension, results of weekly administered Passage Comprehension Tests were plotted on individual and group simple line graphs for purposes of visual analysis (Parsonson & Baer, 1992). Figures 1 and 2 depict students' percentages of correct answers during (a) baseline, (b) reciprocal teaching, (c) cross-age tutoring or cooperative learning, and (d) follow-up phases of the intervention. Figure 1 presents separately the mean percentage scores for the two groups. Figure 2 shows the mean percentage scores for all students.

As assessed by the Passage Comprehension Tests, the rates of growth for both groups during the reciprocal teaching and tutoring/cooperative learning phases of the intervention were similar, with the tutoring group scoring somewhat higher than the cooperative learning group on each test administration except the last. For both groups, actual increases in comprehension were greatest during the reciprocal teaching phase that included intensive input from the researcher. Improvement continued during the tutoring/cooperative learning phase but did flatten out somewhat (see Fig. 1).

The overall reading comprehension of students in this study, as measured by the Passage Comprehension Tests, improved noticeably during intervention phases in comparison with a baseline phase and was maintained a month later during a follow-



TABLE 3. Pretest, Posttest, and Difference Scores for Individual Seventh- and Eighth-Grade Students

Student	Gates-MacGinitie Percentile Scores			Comprehension Passages (% Correct)			Strategy Interview (% Correct)		
	Pretest	Posttest	Difference	Pretest	Posttest	Difference	Pretest	Posttest	Difference
Tutoring group:									
Jennifer	4	6	+2	2.5	45	+42.5	28	52	+24
Vicente	4	9	+5	5	45	+40	24	76	+52
Miguel	5	6	+1	10	75	+65	40	60	+20
Luis	4	12	+8	57.5	57.5	0	44	80	+36
Susana	16	23	+7	37.5	75	+37.5	44	...	...
Carmen	9	15	+6	35	77.5	+42.5	52	60	+8
Omar	13	11	-2	45	65	+20	36	44	+8
Linda	1	1	0	12.5	50	+37.5	12	28	+16
Trina	10	15	+5	30	50	+20	36	64	+28
Betina	1	2	+1	17.5	12.5	-5	32	48	+16
Manuel	5	12	+7	22.5	72.5	+50	52	68	+16
Raul	2	5	+3	10	7.5	-2.5	8	20	+12
Marta	1	1	0	15	32.5	+17.5	20	52	+32
Cooperative learning group:									
Patricia	4	4	0	22.5	52.5	+30	24	64	+40
Juan	4	6	+2	30	42.5	+12.5	8	48	+40
Erica	6	4	-2	17.5	25	+7.5	20	60	+40
Azucena	1	1	0	5	0	-5	12	28	+16
Francisco	5	5	0	20	32.5	+12.5	60	68	+8
Marcos	5	8	+3	27.5	77.5	+50	40	76	+36
Miriam	1	2	+1	0	10	+10	20	24	+4
Cecilia	7	34	+27	40	77.5	+37.5	44	36	-8
Roberto	4	1	-3	15	25	+10	24	36	+12
Yolanda	2	11	+9	40	42.5	+2.5	32	24	-8
Luisa	1	1	0	0	22.5	+22.5	20	28	+8
Jesse	8	34	+26	42.5	67.5	+25	36	32	-4
Alberto	2	3	+1	30	67.5	+37.5	28	48	+20

TABLE 4. Means and Standard Deviations for the Dependent Measures (by Group)

Group	Gates-MacGinitie						Comprehension Passages						Strategy Interview					
	Pre			Post			Pre			Post			Pre			Post		
	Median	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median	Mean	SD	Median	Mean	SD
Tutoring	4	5.77	4.82	9	9.08	6.46	17.5	23.08	16.74	50	51.15	22.99	36	32.92	14.03	64	54.33	17.84
Cooperative learning	4	3.85	2.34	4	8.77	11.57	22.5	22.31	14.59	42.5	41.73	25.44	24	28.31	14.09	36	44.00	17.96

NOTE.—Scores for the Gates-MacGinitie Reading Comprehension Test are national percentile scores; scores for the Passage Comprehension Tests and the Strategy Interview indicate percentages of correct answers. SD = standard deviation.

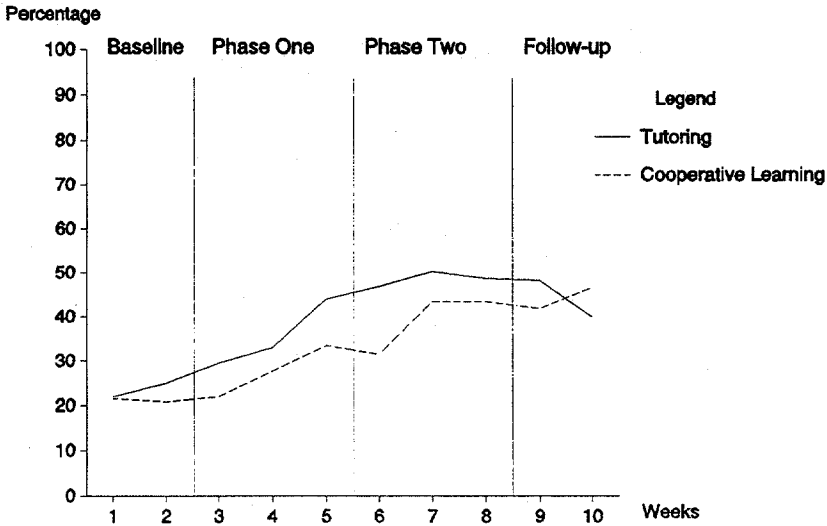


FIG. 1.—Mean percentage scores for tutoring and cooperative learning groups on the Passage Comprehension Tests.

up phase (see Fig. 2). Students achieved their highest mean score during the middle of the tutoring and cooperative learning phase (on the seventh test administration); subsequent scores were slightly lower.

An examination of individual performances showed that there was high variability in scores, both across subjects (with individual scores ranging from 0% to 95%) and within subjects, with many students showing much fluctuation across test administrations (for individual graphs of all subjects, see Klingner, 1994).

**Characteristics of Students Who Showed More and Less Growth**

We examined the data in two different ways to identify students who showed more and less improvement in reading comprehension. First, we inspected pre- to posttest difference scores on the Gates-MacGinitie (see Table 3). Students with percentile gains of 6 points or higher were considered to have demonstrated more growth, and students with gain scores of 0 or less were considered to have demonstrated no growth.

The second procedure involved visual inspection of the individual Passage Com-

prehension Tests graphs. Using this procedure, the five students who exhibited the most growth and the five students who showed no growth were identified and added to the lists that are summarized in Table 5. The entire process yielded final lists that included 10 "more-growth students" (about 40% of the sample) and 10 "less (or no)-growth students" (about 40% of the sample).

The descriptive data collected prior to the intervention, transcripts of interviews, and students' daily logs were evaluated by using the constant comparison procedure (Glaser & Strauss, 1967; Strauss & Corbin, 1990) to identify trends and draw tentative conclusions regarding the characteristics that distinguished more and less successful students. Two factors emerged that seemed to relate substantially to students' potential to profit from this intervention: initial reading ability (as assessed by the Woodcock-Johnson Tests of Achievement) and oral language proficiency (as measured by the Language Assessment Scales). Three factors that did not appear to relate strongly to performance were reading achievement as assessed by the Stanford Achievement Test,

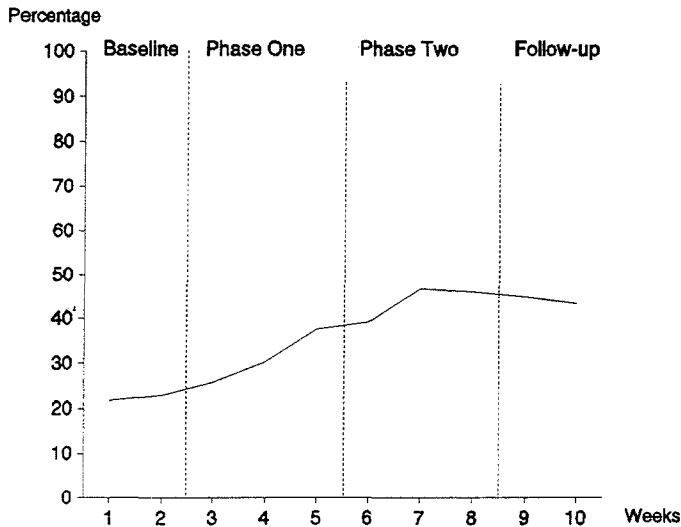


FIG. 2.—Mean percentage scores for all students on the Passage Comprehension Tests

intelligence as measured by the English Wechsler Intelligence Scale for Children-Reading, and treatment group membership (see Table 5).

**Initial reading ability.** Initial reading ability (as measured by the Woodcock-Johnson Tests of Achievement) was probably the most important factor in determining who benefited from comprehension strategy instruction. Students with low decoding skills (below a third-grade level) were the least likely to show improvement. And all of the students who showed the most growth (except for one) had *either* decoding or comprehension scores at a fourth-grade level or higher. Of the students who did improve, there were two distinct types of readers, those who began the intervention with adequate decoding skills but significantly lower comprehension and those who started with relatively low decoding ability and significantly higher comprehension.

The students who showed the most dramatic gains began with a combination of adequate decoding skills and low comprehension. In fact, reciprocal teaching was originally intended for this type of student (Palincsar & Brown, 1984). Of the five stu-

dents who began the study with decoding skills at least at a fourth-grade level and with lower levels of comprehension, four earned a place on the list of students showing more growth (Miguel, Manuel, Cecilia, and Jesse), and two, according to the Gates-MacGinitie, were the most successful. (Cecilia's initial grade-level scores were 6.7 in decoding and 2.8 in comprehension, and she improved by 27 percentile points on the Gates-MacGinitie; Jesse's grade-level scores were 6.2 in decoding and 5.1 in comprehension, and he improved by 26 percentile points.)

Students who began with comprehension grade-level scores at least 1 year higher than their decoding grade-level scores (and decoding grade-level scores ranging from 2.0 to 4.1) exemplified the other type of reader who showed substantial growth. This group somewhat surprisingly included eight students, five of whom made it to the more-growth list (Luis, Linda, Susana, Carmen, and Marcos). One of the most successful students, Susana, started with a 2.9 grade-level score in decoding but a 5.8 level in comprehension.

**Oral language proficiency.** Oral language proficiency also appeared to be re-

TABLE 5. Background Test Scores for Individual Students, by Reading Comprehension Growth and by Treatment Group

Student	English LAS	Spanish LAS	English WJ ID	English WJ Comp.	Spanish WJ ID	Spanish WJ Comp.	SAT Reading	English WISC-R
<b>More growth:</b>								
<b>Tutoring:</b>								
Miguel	4	5	6.2	3.6	4.2	3.9	1	70
Susana	5	5	2.9	5.8	1.9	1.9	...	98
Vicente	5	5	2.8	2.6	1.7	1.5	3	100
Manuel	5	4	4.7	4.2	2.3	3.2	6	92
Carmen	5	4	3.8	5.6	1.6	1.8	15	87
Luis	5	4	3.3	4.6	2.3	3.5	13	76
<b>Cooperative learning:</b>								
Marcos	4	3	4.1	5.1	1.7	1.4	7	88
Cecilia	2	2	6.7	2.8	4.5	3.5	6	77
Jesse	5	5	6.2	5.1	2.4	2.9	12	87
Yolanda	4	5	4.1	5.6	3.5	7.1	9	71
Median	5	4.5	4.1	4.9	2.3	3.1	7	87
Mean	4.4	4.3	4.5	4.5	2.6	3.1	8	84.6
<b>Less growth:</b>								
<b>Tutoring:</b>								
Betina	3	3	2.1	2.0	1.2	1.4	3	75
Linda	5	4	2.0	3.9	1.6	1.8	1	89
Omar	4	4	6.2	4.6	3.5	4.0	20	85
Marta	4	5	2.4	2.0	2.8	3.2	...	74
<b>Cooperative learning:</b>								
Roberto	2	1	2.1	3.0	1.0	1.4	...	79
Francisco	4	4	3.3	3.6	1.6	1.8	9	80
Azucena	2	5	2.0	1.7	1.5	1.4	1	74
Miriam	2	2	2.6	2.0	1.8	2.1	16	81
Luisa	3	2	2.8	2.4	1.9	1.8	7	81
Patricia	2	5	2.9	2.2	3.9	5.0	15	89
Median	3	4	2.5	2.3	1.6	1.8	8	80.5
Mean	3.1	3.5	2.8	2.7	2.1	2.4	9	80.7
<b>Other:</b>								
<b>Tutoring:</b>								
Jennifer	5	5	2.8	4.8	2.2	1.4	6	89
Trina	4	4	2.8	4.6	2.3	2.9	16	111
Raul	2	3	2.0	2.0	2.5	2.9	1	98
<b>Cooperative learning:</b>								
Juan	4	4	4.4	4.6	2.3	2.9	15	98
Erica	4	5	3.1	3.6	1.8	2.9	6	107
Alberto	4	3	2.0	2.8	1.0	1.0	3	98
Median	4	4	2.8	4.1	2.3	2.9	6	98
Mean	3.8	4	2.9	3.7	2	2.3	7.8	100

NOTE.—English WISC-R IQ scores may not accurately reflect students' actual abilities, because of less than fully developed cognitive/academic proficiency in English as a second language. LAS = Language Assessment Scales; WJ = Woodcock-Johnson Tests of Achievement; ID = Word Identification Subtest; Comp. = Passage Comprehension Subtest; SAT = Stanford Achievement Test; WISC-R = Wechsler Intelligence Scale for Children-Reading.

lated to success with this intervention. Of the eight students with English proficiency scores of 3 or lower on the Language Assessment Scales (indicating limited English proficiency), six qualified for the less-

growth list. Of these, four also obtained Spanish proficiency scores of 3 or lower, suggesting limited oral language proficiency regardless of language. The other two limited-English-proficient students were fully

proficient in Spanish. In light of the fact that English test passages were read, and instruction and discussions were conducted primarily in English, these students appeared to lack sufficient English proficiency to benefit from this intervention.

The one student who was clearly an exception to this pattern was Cecilia. Although her scores on the Language Assessment Scales were 2 in English and 2 in Spanish (indicating very low proficiency), Cecilia was one of the most successful students, gaining 27 percentile points on the Gates-MacGinitie. She was very different from the other students with low oral language skills in that she possessed close-to-grade-level decoding skills in English and the highest decoding skills in Spanish. All of the other limited-language-proficient students were quite low in decoding and comprehension in both languages. She was different from the other students on the more-growth list, who all obtained English language scores of 4 or 5 on the Language Assessment Scales. Perhaps Cecilia's sufficient decoding skills helped to override her weak oral language skills in affecting comprehension growth.

One student did not fit the patterns discussed so far. Vicente's 2.8 decoding and 2.6 comprehension grade-level scores were much more typical of students who showed less growth rather than more growth during this intervention. Yet Vicente improved on both the Gates-MacGinitie and Passage Comprehension Tests enough to earn a spot on the more-growth list. Vicente was different from the other students who were initially low in both decoding and comprehension in that he scored a 5 on the Language Assessment Scales in both English and Spanish, indicating full oral proficiency in both languages. His case was somewhat the opposite of Cecilia's. His strong oral skills possibly overrode weak reading skills.

## Discussion

Overall, this intervention appeared to improve the reading comprehension of ESL

students with LD. Key findings were that (a) a wide range of students benefited from strategy instruction; (b) initial reading level and oral language proficiency emerged as factors related to success; and (c) students in both the cross-age tutoring and cooperative learning groups continued to exhibit improvement in comprehension even when the researcher provided only minimal support.

### Benefits to a Range of Students

More students were successful with this intervention than would have been predicted on the basis of previous research (Lysynchuk et al., 1990; Palincsar & Brown, 1984). Not only did ESL students with LD who were adequate decoders but poor comprehenders improve (the subtype of reader most similar to the non-LD, non-ESL readers most successful in other reciprocal teaching studies), but ESL students with LD who demonstrated comprehension abilities substantially higher than their decoding skills also improved (although the standards used to measure success were somewhat different in this study than in previous research). In the Palincsar and Brown (1984) study, the criterion for success was attainment of at least 75% accuracy on the Passage Comprehension Tests (the level set by good comprehenders in their study). If we had applied the same criterion level in this study, seven of the 26 students would have achieved success by the end of the intervention. And, of these seven students, *five* were of the low-decoding/higher-comprehension subtype rather than the adequate-decoding/low-comprehension subtype. In other words, a subset of ESL students with LD who began the intervention with decoding grade levels ranging from 2.9 to 4.1 was able to answer comprehension questions about passages written at the seventh-grade level from memory *as well as average readers* by the end of the study.

This finding has important implications for classroom instruction. If a wider range

of students can benefit from comprehension strategy instruction than was previously believed, including some students with relatively low decoding skills and students who have not yet achieved full English proficiency, reading instruction in special education and English-for-speakers-of-other-languages classes should include more instruction in comprehension strategies. Further, because grade-level materials were used, this procedure could presumably be implemented with success in heterogeneous general education classrooms in which students with special needs are included for instruction.

#### Factors Related to Performance

Initial reading level and oral language proficiency were related to performance for the students in this study. Initial reading ability was probably the most important factor in determining who would benefit from comprehension strategy instruction. Students with decoding skills below a third-grade level were least likely to show improvement. However, one cannot conclude from the results of this study that the ESL students with LD who had very low decoding skills (second-grade level or lower) would not benefit from further strategy instruction because they failed to show substantial gains in this study. Grade-level materials were employed; perhaps if easier passages, written at a second- or third-grade level, had been used for instructional purposes, students of this subtype might have benefited more from instruction. Alternatively, perhaps an appropriate course of action for ESL students with LD who are emergent readers would be to teach the strategies as tools to aid listening comprehension while concurrently providing intensive literacy instruction. This approach would build on Palincsar's efforts (Palincsar, 1986; Palincsar & Klenk, 1992) to teach listening comprehension strategies to at-risk first graders through the reciprocal teaching model. Future research should explore this method.

Oral language proficiency (as assessed by the LAS) also affected students' ability to profit from this intervention. With a few exceptions, students tended to be either high in both English and Spanish oral language proficiency or low in both. Students with high proficiency showed more improvement than students with weak oral language skills. Perhaps the students who were relatively proficient in both their native language and English improved in reading comprehension in part because they were able to draw on skills in both languages to enhance their understanding of new concepts. And conversely, perhaps students who were low in both languages showed little improvement in part because they had difficulty understanding the nuances of the comprehension strategies and the social studies passages.

#### Continued Student Improvement

Another important finding was that students in both the cross-age tutoring and cooperative learning groups continued to exhibit improvement in comprehension even when the researcher was providing only minimal support. Several reasons might explain why these gains in comprehension were realized. First, task engagement was high among both groups. Even students who had not contributed to discussions while part of a group of seven students during the reciprocal teaching phase of the intervention participated frequently during tutoring or cooperative learning sessions. For example, observational notes document that two students, Azucena and Raul, participated infrequently during teacher-facilitated reciprocal teaching sessions. In fact, Azucena privately asked the researcher not to call on her. Yet during phase 2 of the intervention, when placed in a cooperative learning group with only girls (at her request, because the boys "bothered her too much"), Azucena contributed regularly. And in his role as tutor, Raul was compelled to read and implement all of the strategies on a daily basis to a younger student.

Second, both interventions were structured so that students negotiated meaning while reading expository text passages, applying the strategies, and assisting one another.

Third, although text passages were read in English and discussions were conducted primarily in English, students used Spanish during cross-age tutoring or cooperative learning sessions to clarify or emphasize important points. By providing a format that enabled students who speak the same language to communicate with each other regarding content material, the instructional procedures implemented in this study were consistent with practices recommended by Cummins (1984, 1989), Diaz et al. (1986), Hakuta (1990), and Hudelson (1987).

That students can implement comprehension strategies while working in peer groups has important implications for classroom instruction—teachers do not need to sit constantly with a group for learning to occur. Once students have learned the strategies, a class can divide into several groups operating simultaneously while the teacher moves from group to group, facilitating progress.

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