*RELATIVE EFFECTS OF WHOLE-WORD AND
PHONETIC-PROMPT ERROR CORRECTION ON THE
ACQUISITION AND MAINTENANCE OF SIGHT WORDS BY
STUDENTS WITH DEVELOPMENTAL DISABILITIES*

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We used an alternating treatments design to compare the effects of two procedures for correcting student errors during sight word drills. Each of the 5 participating students with developmental disabilities was provided daily one-to-one instruction on individualized sets of 14 unknown words. Each week's new set of unknown words was divided randomly into two groups of equal size. Student errors during instruction were immediately followed by whole-word error correction (the teacher stated the complete word and the student repeated it) for one group of words and by phonetic-prompt error correction (the teacher provided phonetic prompts) for the other group of words. During instruction, all 5 students read correctly a higher percentage of whole-word corrected words than phonetic-prompt corrected words. Data from same-day tests (immediately following instruction) and next-day tests showed the students learned more words taught with whole-word error correction than they learned with phonetic-prompt error correction.

DESCRIPTORS: error correction, remedial trials, developmentally disabled children

The importance of providing feedback to students when they make errors is well documented (e.g., Anderson, Evertson, & Brophy, 1979; Becker & Carnine, 1981; Brophy, 1986; Christenson, Ysseldyke, & Thurlow, 1989; Deshler, Farrell, & Kass, 1978; Stallings & Kaskowitz, 1974; Stevens & Rosenshine, 1981; Stromer, 1975). Despite support for correcting student errors, relatively little

experimental research on error correction exists, and that which does exist is far from conclusive (Brophy, 1986). Much of the literature on error correction consists of large-group correlational studies, and the experimental literature typically involves the simultaneous investigation of multiple instructional variables. As a whole, the literature on error correction yields mixed and often contradictory results (Rose, McEntire, & Dowdy, 1982; Rosenshine & Stevens, 1984). Teachers are left in the unsettling position of being aware of the importance of correcting student errors but receiving little in the way of empirically supported guidance in how to do so.

Although characterized by Hoffman and Clements (1984) as too "infrequent and limited in scope" (p. 424), a small number of experimental studies have attempted to isolate and analyze individual components of corrective feedback of oral reading errors. This research has focused primarily on the effects of various remedial feedback strategies

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following word recognition errors (Jenkins & Larson, 1979; Jenkins, Larson, & Fleisher, 1983; Meyer, 1982; Pany, McCoy, & Peters, 1981; Rose *et al.*, 1982). There is considerable research showing word recognition skills to be a major correlate of reading comprehension, which is the ultimate goal of reading instruction (Curtis, 1980; Juel, 1988; Juel, Griffith, & Gough, 1986; Stanovich, 1985, 1986; Stanovich, Cunningham, & Freeman, 1984).

In the present study, whole-word modeling and phonetic prompting by teachers following student errors during sight word instruction were compared for several reasons. First, although whole-word modeling and phonetic prompting are two of the most commonly used error-correction strategies with beginning or low-skilled readers (Hoffman & Clements, 1984; Rosenberg, 1986), research comparing the effectiveness of these two strategies has yielded conflicting results. For example, in a comparison of whole-word and phonetic-prompt error correction on sight words read in isolation by 9 preschool students without disabilities, Carnine (1980) found phonetic prompting to be more effective. In contrast, Espin and Deno (1989) found that elementary students with learning disabilities read more sight words in isolation when their errors were corrected with whole-word rather than with phonetic feedback.

Second, systematic feedback, including whole-word correction of word recognition errors, is a component of the direct instruction model (Engelmann & Carnine, 1982), and there is a positive correlation between direct instruction and student achievement (Gersten, Carnine, & White, 1984; Leinhardt, Zigmond, & Cooley, 1981; Reith, Polsgrove, & Semmel, 1981; Sindelar, Smith, Harri-man, Hale, & Wilson, 1986). In particular, direct instruction has been found to produce higher academic gains than do traditional approaches when educating children with disabilities (Bateman & Carnine, 1977; Gersten & Maggs, 1982; Stevens & Rosenshine, 1981). However, insufficient research has been conducted to evaluate individual direct-instruction program components (Englert, 1984; Gersten, 1985). Whole-word feedback is also a component of the systematic error-correction procedures used in several successful peer and cross-

age tutoring programs (Barbetta, Miller, Peters, Heron, & Cochran, 1991; Delquadri, Greenwood, Stretton, & Hall, 1983; Greenwood *et al.*, 1987; Heron, Heward, Cooke, & Hill, 1983). Again, because whole-word error correction was part of a multiple-component instructional package, it is not clear what role it had in the effectiveness of the various peer-tutoring programs.

This study was designed to replicate and extend the findings of Espin and Deno (1989). Although the data reported by Espin and Deno clearly show whole-word prompts to be more effective than phonetic prompts, several features of their study combine to make interpretation difficult. First, only one set of 20 unknown words (10 in each error-correction condition) was used. Second, students were asked to read the unknown words without prior modeling by the teacher, a typical classroom practice. Failure to introduce students to unknown words at least once would seemingly reduce the likelihood of phonetic prompting occasioning correct responses.

The two error-correction procedures and the same-day testing procedures used in the present study were identical to those used by Espin and Deno (1989). The present study differed from that of Espin and Deno in that (a) the students were developmentally disabled and read at lower grade levels, (b) multiple word sets were used, (c) students were exposed to a correct model of all words through an initial prepractice trial, and (d) additional data were obtained on student performance during instruction and on next-day tests.

METHOD

Participants and Setting

Three female and 2 male students, aged 8 to 9 years, enrolled in a self-contained class for students with developmental disabilities, served as participants. Each student was mainstreamed for music and physical education classes, and Student 4 was also mainstreamed into a first-grade general education classroom for reading and math.

Full-scale Stanford-Binet IQ scores ranged from 58 (Student 1) to 76 (Students 3 and 4). Based on the Wide Range Achievement Test-Revised

(Jastak & Wilkinson, 1984), Students 2 and 3 were reading at the primer level, and the remaining 3 students were reading at the first-grade level. Assessment information on specific phonics skills was available for Students 1 and 4 (Brigance Inventory of Basic Skills, Brigance, 1983). Student 1 was assessed on initial consonant sounds only and correctly pronounced 21 of 21 sounds. Student 4 also correctly pronounced 21 of 21 initial consonant sounds, all short vowel sounds, all final consonant sounds, and 58 of 58 common endings (e.g., *ipe*, *ink*, *ust*).

The students were selected to participate in the study by their teacher (the third author) based on their need for additional sight word instruction. All 5 students had experienced similar histories of reading instruction, consisting of one-to-one and small-group remedial reading lessons that included both phonics and sight word instruction. The text used in the students' classroom was part of a phonics-oriented reading program, and the students also participated in 30 min of daily phonics instruction designed to teach letter sounds, blends, and digraphs. Additional sight word instruction was provided through a classwide sight-word peer tutoring program using whole-word error correction (Cooke, Heron, & Heward, 1983). The teacher typically provided whole-word correction when her students erred on sight words.

Instructional and testing sessions were held 5 days per week. Three fourths of the sessions were conducted in the special education classroom with the teacher serving as experimenter. Other students in the classroom participated in ongoing individualized and group lessons with teacher assistants. The other one fourth of the sessions were conducted by the first author in a nearby computer laboratory. All instructional and testing sessions were conducted individually, with the teacher and student sitting across from one another at a small table.

Sight Words

Each week, an individualized set of 14 unknown words was generated for each student from a pool of words identified by the teacher. The words were printed by hand on cards (3 in. by 5 in.). No students received instruction on words from this

list other than during experimental sessions. To develop the sets of unknown words, a two-step pretesting method was conducted individually with each student. The teacher asked the student to read words on cards presented individually until at least 14 incorrect responses were recorded (using the definitions described below). During the second pretesting step, the teacher presented words missed in the first step, using the same presentation procedure. Pretesting continued with each student until 14 words were missed twice.

Each of the 14 unknown words in a set was grouped by number of syllables, and the words were then randomly assigned to either the whole-word or the phonetic-prompt condition. An equal number of one-, two-, and three-syllable words was assigned to each error-correction condition. A code on the back of each card identified the assignment of the word to the whole-word or the phonetic-prompt condition. The specific phonetic prompts to be used for correcting errors committed on each phonetic-prompt word were written on the back of each card.

Procedure

Instructional sessions were conducted 5 days per week, except for Student 4, who received three sessions per week, and Student 5, who received three to five sessions per week. A new set of 14 words was used each week. Each session lasted 10 to 12 min and consisted of (a) an initial presentation of all words in a new set or a next-day test, (b) instruction with whole-word and phonetic-prompt error correction, and (c) a same-day test.

Initial presentation or next-day test. On the first day of instruction for each word set, the teacher read each of the preshuffled unknown words as she presented it to the student. After all the sight words were presented, the teacher praised the student for attending. Each of the following instructional sessions for a given set began with a next-day test on the sight words practiced the previous day.

Instruction with error correction. Instruction began immediately after the initial presentation or next-day test. The teacher shuffled the 14 sight word cards and then presented a practice trial on each word in the set, one word at a time. Each

practice trial began with the teacher holding up a card and saying, "What word?" Correct responses were followed by brief praise (e.g., "good!" or "right!"). Incorrect responses were followed by either whole-word or phonetic-prompt error correction.

Whole-word error correction consisted of the teacher modeling the word and having the student repeat it. When a student erred on a sight word, the teacher said, "No, this word is _____. What word?" If the student correctly read the word within 3 s, the teacher praised the student and presented the next card. If the student did not respond correctly after the first whole-word prompt, the teacher provided a second whole-word prompt exactly like the first prompt. If, however, the student did not read the word correctly after the second whole-word prompt, the teacher said, "No, we'll try this word later," and presented the next word.

Phonetic-prompt error correction consisted of the teacher providing phonetic prompts determined by the number of syllables in the word. The initial phonetic prompt for one-syllable words was the first sound (e.g., *t* for *toad*, *cl* for *clean*, *w* for *warm*), the second prompt was the first two sounds (e.g., *toa* for *toad*, *clea* for *clean*, *war* for *warm*). Consonant blends and digraphs were considered to be one sound, and words were never distorted in their presentation. The initial prompt for two-syllable words consisted of the first two sounds of the word in combination (e.g., *ka* for *camel*, *be* for *better*, *gra* for *grateful*), and the second prompt was the first three sounds (e.g., *kam* for *camel*, *grat* for *grateful*). For the three-syllable words, the first syllable was the initial prompt, and the second prompt consisted of the first two syllables presented together.

The teacher provided phonetic prompts by saying, "No, this word begins with _____. What word?" Correct responses were followed by praise and presentation of the next card. If the student erred after the first phonetic prompt, the teacher presented the second phonetic prompt. If the student then responded correctly, praise was provided and the next card was presented. If the student erred following the second phonetic prompt, the teacher said, "No,

we'll try this word later," and presented the next card.

The teacher presented each of the 14 words (seven per error-correction condition) three times (rounds) per session, shuffling the 14 cards between each round. At the end of each round, she praised the student for following directions.

Same-day test. Immediately following the third and final round of practice trials, the teacher shuffled the 14 word cards and presented each individually. No feedback was provided for correct or incorrect responses. The session ended with the teacher praising the student for following directions.

Maintenance test. Maintenance tests were given 1 and 2 weeks after the final session of instruction on a word set. Procedures for maintenance tests were identical to next- and same-day tests.

Dependent Measures

For each of the two error-correction procedures, data were collected on (a) number of words read correctly on same-day tests, (b) number of words read correctly on next-day tests, (c) percentage of words read correctly during instruction (three trials per word), (d) percentage of corrected words read correctly on their next presentation during instruction, (e) percentage of missed words read correctly following each of two remedial prompts during instruction, and (f) percentage of words read correctly on 1- and 2-week maintenance tests (total number of words read correctly on maintenance tests divided by the number of words read correctly on the last same-day test for each set). A response was scored correct if the student correctly pronounced the word within 3 s. Self-corrections within 3 s were also scored as correct. (The 3-s time limit was used because for sight word skills to be functional, words must be identified quickly.) An incorrect response was scored if the student mispronounced the word, said "I don't know," or made no response within 3 s.

Interobserver Agreement

A second trained observer independently recorded each student's performance on all dependent measures at least once per sight word set. Percentage

agreement was calculated by dividing the total number of agreements by the total number of disagreements and multiplying by 100%.

Interobserver agreement measures were taken for a total of 34 of the study's 119 (29%) same-day tests, resulting in an overall mean agreement score of 99.8% (range across students, 92% to 100%). Agreement measures were taken on 19 of the 86 (22%) next-day tests, yielding 100% agreement. The second observer independently recorded student performance on 1,786 practice trials over 34 sessions (21% of the total sessions), yielding interobserver agreement of 98% for each of the 5 students. Interobserver agreement was calculated for 21 of the 51 (41%) individually administered maintenance tests, yielding a mean agreement of 99.6%.

Treatment Integrity

A trained observer recorded the occurrence or nonoccurrence of critical instructional procedures on 1,786 practice trials (a mean of 357 practice trials per student). The observer recorded whether or not the teacher (a) waited for 3 s before delivering error correction when a student made no response, (b) provided verbal praise for all correct student responses, and (c) delivered either whole-word or phonetic-prompt error correction, as appropriate, for each word on which a student erred.

When students did not initially respond to a sight word card, the teacher waited for 3 s before providing error correction on 100% of all practice trials observed under both error-correction conditions. The teacher praised 99.4% of all correct responses in the whole-word condition and 96.8% in the phonetic-prompt condition. The teacher provided whole-word error correction on 99.9% of the 721 student errors observed, and she delivered phonetic-prompt error correction following 99% of the 1,064 student errors observed.

Experimental Design

An alternating treatments design was used to assess the effects of whole-word and phonetic-prompt error correction on the acquisition and maintenance of sight words. In each session, seven

sight words were taught with whole-word error correction and seven sight words were taught with phonetic-prompt error correction. The order of presentation of the two conditions was determined randomly and was changed quickly by shuffling the entire set of 14 word cards after each practice round and testing session.

RESULTS

Same-Day Tests

Figure 1 shows each student's performance on same-day tests. Although students learned words under both error-correction conditions, whole-word error correction consistently produced higher scores for 4 of the 5 students. For Students 1, 2, 4, and 5 combined, 79 of 92 (86%) same-day test scores were higher on words instructed with whole-word error correction, and only 2 (3%) of 92 same-day tests produced higher scores on words instructed with phonetic-prompt error correction. The same-day test results for Student 3 were equivocal: Her scores overlapped for two sets, were higher for whole-word error correction on one set, and were higher for phonetic-prompt error correction for two sets. A set-by-set summary of same-day test results for all 5 students shows that whole-word error correction was clearly superior to phonetic-prompt error correction for 21 of the 28 (75%) word sets, whereas phonetic-prompt error correction produced higher scores on only two sets (7%).

Next-Day Tests

Figure 2 shows each student's performance on next-day tests. Again, Students 1, 2, 4, and 5 performed better on next-day tests on words instructed with whole-word error correction: On 50 of 68 (74%) next-day tests, their scores were higher on words instructed with whole-word error correction, and on only 4 of 68 (6%) next-day tests were their scores higher on words instructed with phonetic-prompt error correction. The next-day test results for Student 3 were mixed: Her scores overlapped for three sets, and whole-word and phonetic-prompt error correction each resulted in higher scores for one set. A set-by-set summary of next-day test

Figure 1. Number of sight words read correctly on same-day tests given immediately after instruction as a function of whole-word or phonetic-prompt error correction. Breaks in data paths separate word sets.

Figure 2. Number of sight words read correctly on next-day tests as a function of whole-word or phonetic-prompt error correction. Breaks in data paths separate word sets.

Table 1
Percentage and Number of Correct Responses during Practice Trials and Corrected Sight Words Read Correctly on Their Next Presentation

Student	Practice trials		Next trial correct	
	Whole word	Phonetic prompt	Whole word	Phonetic prompt
1	50.3% ^a 387/770 ^b	30.6% 235/770	35% 41/116	9% 24/265
2	59.5% 279/469	38.4% 180/469	27% 58/214	10% 31/308
3	33.9% 261/770	27.8% 214/770	23% 58/248	16% 45/282
4	87.8% 344/392	65.1% 255/392	53% 40/76	28% 46/163
5	60.2% 253/420	45.2% 190/420	32% 62/194	18% 51/281
Group	54.0% 1,524/2,821	38.0% 1,074/2,821	31% 259/848	15% 197/1,299

^a Percentages of correct responses during practice trials (two left columns) and next-trial correct (two right columns).
^b Numerators represent the total number of correct responses during practice trials (two left columns) or total number of next-trial correct (two right columns); the denominators are the total possible.

results for all 5 students shows that whole-word error correction was clearly superior to phonetic-prompt error correction for 16 of the 28 (57%) word sets, whereas phonetic-prompt error correction produced higher scores on only one set (4%).

Performance during Instruction

The two left columns of Table 1 show the total number and percentage of correct responses on practice trials throughout the study. All 5 students made more correct responses during instruction on words taught with whole-word error correction than they did on words taught with phonetic-prompt error correction. Whole-word error correction produced an average of 16% more words read correctly (range, 6.1% to 22.7%).

The two right columns of Table 1 show that all 5 students read correctly more just-corrected words on their next presentation (NTC) following whole-word error correction than they did following phonetic-prompt error correction. As a group, the students had an overall NTC mean of 31% during instruction with whole-word error correction (range, 23% to 53%), whereas phonetic-prompt error correction resulted in a mean NTC of 15% (range, 9% to 28%).

Table 2 shows the total number of errors and

number of corrected errors read at first and second prompts, and practice trials that ended without correct responses. The first prompt with whole-word error correction produced correct responses for 99% of all errors, with the remaining 1% of errors being corrected by the student following the second whole-word prompt. No practice trials ended without a correct response under whole-word error correction. Phonetic-prompt error correction was less effective in remediating errors. With phonetic prompts, correct responses followed 19% of the first phonetic prompts and 21% of the second prompts. With phonetic-prompt error correction, 60% of all practice trials (range across students, 37% to 80%) ended without the student emitting a correct response.

Maintenance Tests

Table 3 shows the number of words learned and number and percentage of words maintained on 1-week and 2-week maintenance tests. Students 1 and 2 maintained a high percentage of words from both conditions (90% or above in both conditions). However, because 24 more whole-word than phonetic-prompt words were learned by Students 1 and 2, more were maintained. Students 3 and 4 learned and maintained more whole-word than

Table 2

Total Number of Errors and Number of Corrected Errors Read at First and Second Prompts and Practice Trials that Ended without Correct Responses

Student	Whole-word corrective feedback				Phonetic-prompt corrective feedback			
	Number of errors	First prompt correct	Second prompt correct	Trials without correct response	Number of errors	First prompt correct	Second prompt correct	Trials without correct response
1	130	129 (99%)	1 (1%)	0 (0%)	278	32 (12%)	25 (9%)	221 (80%)
2	216	215 (99%)	1 (1%)	0 (0%)	308	32 (10%)	39 (13%)	237 (77%)
3	221	218 (99%)	3 (1%)	0 (0%)	298	100 (34%)	89 (30%)	109 (37%)
4	76	74 (97%)	2 (3%)	0 (0%)	166	35 (21%)	55 (33%)	76 (46%)
5	194	191 (99%)	3 (1%)	0 (0%)	283	53 (19%)	68 (24%)	162 (57%)
Group	837	827 (99%)	10 (1%)	0 (0%)	1,333	252 (19%)	276 (21%)	805 (60%)

Note. When a student erred after the first prompt, the teacher implemented the second prompt. If the student erred following the second prompt, the teacher presented the next word.

phonetic-prompt words. Student 5's 1-week maintenance performance was 75% in both conditions, and on the 2-week maintenance tests he maintained 75% of whole-word words and 85% of phonetic-prompt words (however, because he learned more whole-word words than phonetic-prompt words, he maintained more).

DISCUSSION

Our comparison of the effects of whole-word and phonetic-prompt error correction on the acquisition and maintenance of sight words by stu-

dents with developmental disabilities systematically replicates and extends the findings of Espin and Deno (1989). Our findings support those of Espin and Deno and stand in contrast with those of Carnine (1980), who found phonetic feedback to be more effective.

The variance with Carnine's (1980) results may be because of differences in the reading instruction histories of the target students and/or how the phonetic prompts were provided. Although the students in the Carnine study had no prior training in any formal reading program, the initial phase of the study consisted of sound-identification pretrain-

Table 3

Number of Words Learned and Number and Percentage of Learned Words Maintained

Student	Whole-word feedback			Phonetic-prompt feedback		
	Number learned	1 week	2 weeks	Number learned	1 week	2 weeks
1	31	30 (97%)	30 (97%)	19	19 (100%)	17 (90%)
2	29	26 (90%)	26 (90%)	17	16 (94%)	16 (94%)
3	24	20 (83%)	14/20 ^a (70%)	23	13 (57%)	10/20 ^a (50%)
4	48	48 (100%)	41/41 ^b (100%)	41	32 (78%)	28/36 ^b (78%)
5	36	27 (75%)	15/20 ^c (75%)	26	15 (75%)	11/13 ^c (85%)
Group	168	151 (90%)	126/141 (89%)	126	99 (79%)	82/104 (79%)

Note. Learned words were those words read correctly on the last same-day test in each word set. Maintenance scores were determined by comparing word-by-word performance from last same-day test to maintenance probes. All students took 1-week maintenance probes on all of their word sets. However, only 2 of 5 students took 2-week probes on all word sets; therefore, 2-week probe scores for 3 students were determined only from performance data from the word sets in which 2-week probes were taken.

^a Student 3 took 2-week tests on four of five sets.

^b Student 4 took 2-week tests on six of seven sets.

^c Student 5 took 2-week tests on three of six sets.

ing. The students in our study had a shared history of typical beginning reading instruction that included both phonics and whole-word instruction, although the teacher regularly provided whole-word error correction more often than phonetic-prompt error correction when students erred on sight words. Whereas Carnine's (1980) study was designed to address the question of how to react to student errors made while learning a phonic strategy, the present study was designed to evaluate error-correction strategies on sight word learning by beginning readers whose ongoing reading program included both phonic and whole-word instruction. Our results support Carnine's (1980) suggestion that the relative strength of an error-correction procedure is likely to be related to the instructional procedures most commonly used.

Another difference between the two studies is that Carnine (1980) used only phonetically regular words that were constructed from the nine letters the students had learned during the sound-identification pretraining phase. Both phonetically regular and irregular words were included in the present study. In addition, the strategies for providing phonetic prompts or cues following student errors in Carnine's study, although similar, were not identical to the method used in this study, making comparison more difficult. In Carnine's study, whenever a student failed to read a word correctly, the teacher said, "Sound out this word," and then pointed to each letter. The student was then asked to say the word. After two failed attempts to sound out a word correctly, the teacher sounded it out along with the child until the child could sound it out alone and then identify it. In the present study, if the student could not pronounce the word after two phonetic prompts, the teacher moved on to the next word.

Several reasons for the superior effects of whole-word over phonetic-prompt error correction can be suggested. First, the former increased the probability of correct student responses. Overall, students read words correctly on 41% more practice trials during instruction with whole-word error correction. Furthermore, 100% of the practice trials in which errors occurred during instruction with whole-

word error correction ended with a correct response. With phonetic-prompt error correction, however, only 40% of all practice trials in which a student initially erred ended with a correct response. Relatedly, during whole-word error correction, students were guaranteed exposure to the correct response on every instructional trial, via either their own correct response or the teacher's model. However, the students never heard the correct response on 60% of the instructional trials in which they erred on phonetic-prompt words. In sum, instruction with whole-word error correction provided more exposure to correct responses and enabled students to emit a higher frequency of correct responses.

These results have several implications for classroom practice. Whole-word error correction represents a low-cost, simple-to-use tactic that can easily be incorporated into teacher-led classroom instruction using either traditional methods of one-student-at-a-time responding or group-response methods (Carnine, 1976; Heward, Courson, & Narayan, 1989). Whole-word error correction can be taught to parents, paraprofessionals, and students for use in home-based instruction or peer and cross-age tutoring programs (e.g., Barbetta & Heron, 1991; Barbetta *et al.*, 1991; Cooke *et al.*, 1983; Delquadri *et al.*, 1983). In addition, it may prove to be more efficient than providing phonetic prompts (which after several additional incorrect responses by the student often end with the teacher providing whole-word prompts anyway), which would allow instruction to progress at a faster pace (Carnine, 1976).

Several limitations of this study should be recognized. It is unclear whether students had the prerequisite skills needed to benefit from the phonetic-prompt procedure. It is important to note, however, that each student learned words corrected with phonetic prompts (although at a slower pace than words taught with whole-word error correction), suggesting that they had the prerequisite skills to benefit, at least in part, from phonetic prompting. Nevertheless, future research should include detailed prior reading assessments to identify how current reading skills influence the relative effects of various error-correction procedures.

In the context of this study, whole-word prompts provided students with an echoic prompt that simply required imitation (Skinner, 1957). The fact that the students learned more words and maintained a higher overall percentage of learned words with whole-word error correction suggests that stimulus control shifted from the echoic prompts to the printed words. Phonetic prompts provided students with supplementary stimuli in the form of a partial echoic prompt designed to evoke the correct response when combined with the visual stimulus of the printed word. Whole-word error correction may be better suited for sight word learning because the instructional and functional unit of analysis for sight words is the complete word. A sight word repertoire is not intended to provide students with skills for decoding novel words. When teaching students to develop a repertoire of phonetic responses that can be emitted in various combinations to pronounce untaught words, phonetic-prompt error correction would be more directly related to the desired outcome of instruction. From this perspective, the findings of Carnine (1980) in favor of phonetic prompts and the results favoring whole-word prompts found in this study and by Espin and Deno (1989) can be seen as supporting the use of an error correction that is directly related to the skill being taught.

More research is needed to analyze the various components and behavioral mechanisms comprising different error-correction procedures (Rodgers & Iwata, 1991). For example, is it important to correct errors as they occur on a trial-by-trial basis, or is it more effective to provide concentrated practice on missed words at the end of the lesson, as teachers sometimes do? Must the error-correction episode end with the student emitting the correct response, as was done in this study? Or are hearing and watching the teacher make the correct response equally effective?

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