The Effects of Sentence-Combining Instruction on the Writing of Fourth-Grade Students With Writing Difficulties

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One area of writing that may be particularly problematic for less skilled writers and writers with learning disabilities is constructing well-formed sentences. In this single-subject design study, sentence-combining practice with a peer-assistance component was used to improve the writing ability of 6 fourth-grade students with and without learning disabilities. The results support the use of sentence-combining practice to increase sentence construction ability. Furthermore, sentence-combining instruction led to gains in story quality and writing complexity.

Keywords: sentence combining; learning disabilities; writing disabilities; peer assistance

Writing is an important tool for learning. In fact, academic progress in school depends on an adequate degree of writing fluency (Martlew, 1983). Although many students struggle occasionally with writing, for less skilled writers and writers with a learning disability, writing is especially difficult (Graham & Harris, 1989). One area of writing that may be particularly problematic for a less skilled writer and a writer with a learning disability is constructing well-formed sentences. In comparison to their more skilled counterparts, these students may produce sentences that are generally less syntactically complex, and their sentences typically contain more grammatical errors (Myklebust, 1973). These writers also produce sentences that are shorter; have higher percentages of capitalization, punctuation, and spelling errors; and are lower in overall quality than those of their more skilled peers (Graham & Harris, 1989; Houck & Billingsley, 1989; Newcomer & Barenbaum, 1991).

Overcoming problems in sentence construction is important to young writers for several reasons. First, problems with sentence production skills may interfere with other processes such as planning, content generation, and revising because attention devoted to lower level skills depletes available cognitive resources that could be applied to higher level processes (Graham, 1997; Scardamalia & Bereiter, 1986; Strong, 1986). Second, lack of knowledge of effective writing formats at the sentence level hinders a writer’s ability to translate his or her thoughts into text (Hayes & Flower, 1986), affecting the complexity and coherence of the communication. Finally, difficulties constructing well-designed, grammatically correct sentences may make the material the student writes more difficult for others to read.

To mitigate such problems, Graham, Harris, MacArthur, and Schwartz (1998) suggest that less skilled writers need to develop proficiency in framing text within a variety of sentence formats, for example, by expressing their thoughts in the context of a complex sentence instead of a series of simple ones. To accomplish this, Andolina (1980) recommends that teachers provide direct, stimulating language experiences to accelerate the development of syntactical patterns throughout the school years. One instructional method that provides direct practice with sentence construction skills is sentence combining. Sentence-combining practice requires the manipulation of

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ideas by a writer through rewriting and transforming basic, or kernel, sentences (Strong, 1976). For example, if a student characteristically composes simple kernel sentences such as “My dog is short. My dog is brown,” the student can learn through sentence-combining practice to change these sentences into more syntactically complex and mature sentences such as “My dog is short and brown” or “The short brown dog is mine,” depending on what facet of the sentence the writer wishes to emphasize.

Many studies involving sentence-combining research have been conducted, and with few exceptions, sentence combining has been shown to be an effective method for helping students produce more syntactically mature sentences (e.g., Gale, 1968; Hunt, 1965; Mellon, 1969; O’Hare, 1973). In addition, sentence combining has positively influenced the quality of student writing across various modes of discourse (e.g., Combs, 1975; O’Hare, 1973; Saddler & Graham, 2005). There is also some evidence suggesting that sentence combining has a positive effect on regularly achieving students’ revising skills (Horstman, 1989). Despite the evidence that sentence combining can be used to improve students’ sentence construction skills (Hillocks, 1986; O’Hare, 1973), sentence-combining instruction is not currently included as a component in popular approaches to writing instruction, such as Writers’ Workshop (Pritchard, 1987).

A recent study by Saddler and Graham (2005) is particularly relevant to this investigation. These researchers assessed the effects of a sentence-combining procedure involving peer-assisted practice with more and less skilled young writers. Forty-two students in the fourth grade received either sentence-combining instruction or grammar instruction. Students were paired for instruction and received 30 lessons, 25 minutes in duration, three times a week for 10 weeks outside of their regular classrooms. The results indicated that in comparison to peers who received grammar instruction, students in the experimental treatment condition became more adept at combining simpler sentences to create more complex sentences. In addition, for the experimental students, the sentence-combining skills they were taught transferred to a story-writing task, resulting in improvements in writing quality and revising ability.

The Present Investigation

This study replicates and extends the Saddler and Graham (2005) investigation. In this study, sentence-combining practice with a peer-assistance component was used to improve the abilities of young students with weak writing skills to construct sentences and compose stories higher in overall quality than stories written at pretest. However, we extended the Saddler and Graham study in two ways. First, we wanted to improve the generalization of the sentence-combining skills to story writing. Campbell, Brady, and Linehan (1991) suggested that if generalization is to occur, training for generalization should be incorporated as an integral part of the instructional program and should be implemented either during instruction or directly after the objective criterion has been reached. In addition, Strong (1986) recommended the use of parallel writing tasks, using the application of target skills to create connections in the writer’s mind that may increase generalization. Therefore, we included two additional sentence-combining practice exercises recommended by Strong that were not used by Saddler and Graham. Both exercises focused on paragraph production. The first prompted the students to combine a series of kernel sentences into a paragraph from a series of kernel sentences. The second required the students to combine phrases into sentences and the sentences into a paragraph (these components are fully explained in the General Procedure section). We believed these additional practice components would better facilitate generalization of the sentence-combining skills to story writing.

Second, we modified the instructional pairings. Whereas in the Saddler and Graham (2005) study a more skilled writer in terms of sentence construction ability was paired with a less skilled writer during instruction in a peer-assisted framework (e.g., Fuchs, Fuchs, & Thompson, 2001), in this study, all of the writers were considered less skilled and demonstrated similar writing abilities. This pairing was used to ascertain how less skilled writers might complete sentence-combining tasks without the benefit of immediate support from a more skilled student.

Method

Participants

Teachers in the fourth grade at an urban elementary school in the Northeast were asked to nominate students in their classrooms who met the following criteria: (a) identified by the school as having a learning disability and (b) showed evidence of weak writing skills. Only 3 children met both requirements; therefore, 3 children who did not have an identified learning disability but
who had weak writing skills nonetheless were included in the study. The 6 students were randomly assigned to pairs for instruction. Names have been changed to protect the students’ identities.

Pair 1 consisted of Bob and Carol. Bob was 10 years 6 months and Caucasian; he had been identified in the second grade as having a learning disability. He had a Wechsler Intelligence Scale for Children–Revised (WISC-R; Wechsler, 1974) performance standard intelligence quotient (IQ) score of 98 and the equivalent of a second-grade reading level according to the Wide Range Achievement Test (WRAT-3; Wilkinson, 1993). His individualized education program (IEP) included several goals in written expression. Carol was 9 years 1 month and African American; she had also been identified in the second grade as having a learning disability. Her WISC-R performance standard score was 95, and her WRAT-3 reading level was second grade. Her IEP also included written expression goals.

Pair 2 consisted of Pete and Joni. Pete was 9 years 8 months and African American. He had been identified 2 years prior as having a learning disability. His WISC-R performance standard score was 84, and he had a second-grade reading level according to the WRAT-3. He had goals on his IEP in written expression, and his teacher reported that his stories were very short and uninteresting. Joni was 9 years 4 months and Caucasian. Because she was not identified as needing any special services, no intelligence information was available. Her teacher nominated her for this study because she had demonstrated weak writing abilities on in-class assignments and on a statewide assessment of writing. Her in-class stories were very short and her sentences very simple, and her score on a writing sample from the state writing examination indicated that she was below average in her writing ability.

The third pair was Tom and Sam. Tom was 9 years 9 months and African American. Sam was 9 years 5 months and African American. Neither student was currently being served under any special education category but had been nominated to participate in this project by their teachers because of weak writing ability. The teachers reported that neither student enjoyed writing nor invested themselves in planning or revising. In addition, the stories they wrote were short and lacking in details. Finally, both had achieved scores on a writing sample from the state writing examination that indicated they were below average in their writing abilities.

To provide additional evidence of the participants’ writing abilities, each student was administered the story-writing probe from the Test of Written Language–3 (TOWL-3; Hammill & Larsen, 1996). The writing sample was analyzed using the TOWL-3 Story Construction subtest criteria. This subtest measures story-writing quality as revealed by plot, prose, development of characters, interest to the reader, and several other compositional aspects (coefficient alphas ranged from .88 to .90 for 9- to 11-year-olds). The stories were scored by two graduate students in educational psychology who were unaware of the research questions. To determine interrater reliability between the scores assigned by the two raters, a Pearson product moment correlation coefficient was calculated. Interrater reliability between the two scorers was .95. The overall scores for each examiner were then averaged. For the purpose of data analysis, raw scores were converted to standard scores (M = 10, SD = 3) using the normative tables in the test manual. Three students, Bob, Pete, and Joni, achieved a standard score of 6 points. Carol achieved a standard score of 7 points, and Tom and Sam achieved a standard score of 8 points.

Instructional Environment

The elementary school had a total population of 685 students in Grades K through 5. The population was diverse, with 51.3% of the students being White; 36.2% African American; 6.2% Hispanic; and 6.2% American Indian, Alaskan, or Pacific Islander. In addition, 4.0% of students received services in English as a second language. Approximately 37.0% of the students received free lunch, and 12.0% received reduced-price lunch. The three classes participating in this study had a general education teacher and a special education coteacher available during the school day. The general education teachers, who were primarily responsible for delivering instruction, had an average of 13 years of teaching experience. The students received between 3 and 4 hours of writing instruction per week, arranged in a writing workshop approach.

General Procedure

Each student pair received 18 lessons, 25 minutes in duration, separated into three units of instruction, three times a week for 6 weeks, for a total of 450 minutes of instruction and practice. Instruction took place in the hallway near their classrooms, and students were told that they were receiving special instruction by a writing coach to help them with their writing. Instruction was delivered by the second author. Before the start of the study, the second author was trained by the first author to implement instruction. The second author was
provided a notebook that contained detailed directions for implementing each activity and lesson (this included a space to check off each step as it was completed).

The sentence-combining treatment was adapted from the curriculum used in the Saddler and Graham (2005) study. Instruction was segmented into three units consisting of six lessons each. Each unit taught a particular type of sentence construction. In the first unit, students combined kernel sentence clusters of three or more sentences by using adjectives. In the second unit, students combined sentences by inserting phrases, and in the third unit they used the connectors but and because to combine sentence kernels. See Figure 1 for examples from each unit of instruction.

**Lessons 1 and 2 procedures.** The first lesson of each unit began with the instructor introducing and explaining the sentence-combining strategy practiced in that unit. The instructor introduced sentence combining to the students as a trick good writers use to make their sentences and stories easier to understand and more interesting. Following the introduction, there was a brief oral warm-up portion during which the instructor read a set of kernel sentences to the students. The instructor then modeled combining the first sentence pair. The students were asked to take turns completing the remaining sentence pairs. If neither student suggested a solution, the instructor provided an answer and then moved to the next set of sentences. After the warm-up sentences were completed, the instructor asked the students to explain how they knew to put the sentences together. The instructor then stated what operations the students needed to carry out in order to combine the sentences, namely, using a connecting word (if appropriate), getting rid of words they did not need, moving words around, changing words if needed, or adding words.

A written guided practice portion followed the warm-ups. This practice consisted of the students combining sets of kernel sentences into a single sentence. The students were asked to combine the first set of sentences individually and then write out their answers on the worksheets. They were instructed to stop after finishing each set of sentences and read their answers to each other out loud. While one student was reading his or her response, the other student used hand signals to rate the sentence. Ratings for each sentence were established through discussion about the sound of the sentence. If the sentence sounded great the student would give a thumbs up, if it sounded okay the student placed his or her thumb parallel to the ground, and if the sentence did not sound right the student gave it a thumbs down. If a sentence was a thumbs-down sentence, then the partner and the instructor discussed how it could be improved.

**Lesson 3 procedures.** The purpose of the third lesson in each unit was to transfer the skills the students were practicing via the sentence-combining exercises to a revision task. The lesson started with an oral warm-up time identical to that in Lessons 1 and 2. After the warm-up, the students assisted each other in producing a revised paragraph from a series of kernel sentences that did not contain any combination cues. This exercise was not included in the Saddler and Graham (2005) study.

**Lesson 4 procedures.** The fourth lesson in each unit was not included in the Saddler and Graham (2005) study. This lesson was designed to promote story planning and to provide additional practice with the sentence combination skills. The lesson began with the same oral warm-up activity as in the previous lessons with one minor change; this time, both students attempted each of the warm-up problems to ascertain if each student could create a different solution for each problem.

Next, each student was given a copy of a practice sheet that included random facts about a given topic. The facts were not written as whole sentences but instead were short phrases. The students were instructed to pick out different sentence parts that made sense together and then combine the parts into a sentence.
Next, they were instructed to write out the combined sentences into a paragraph about that topic.

**Lesson 5 procedures.** Lesson 5 in each unit consisted of a sentence-combining progress-monitoring probe created by the first author to measure the acquisition of the skills presented during the unit. The test included 10 kernel sentence clusters ranging from 3 to 6 kernels long. Students were given 20 minutes to complete the test.

**Lesson 6 procedures.** During Lesson 6 of each unit, the students each wrote a story from pictures similar to the pictures used at pre- and posttest to further facilitate transfer of the sentence-combining skills to connected writing.

**Fidelity of Treatment Implementation**

To ensure that the treatment was delivered with documented fidelity (R. H. Horner et al., 2005), the following safeguards were implemented. First, the instructor received intensive practice with the first author in applying the instructional procedures. Second, the instructor met with the first author weekly to discuss any problems that occurred in implementing procedures. Third, the instructor was provided with a checklist that contained step-by-step directions for each lesson. Each step was checked off when completed. Examination of the checklists by the first author showed that the instructor completed 100% of the steps in the sentence-combining treatment. Fourth, to reduce the possibility of instructional contamination, each classroom teacher was asked to not discuss the intervention with their students who were participating in the study until the study ended. Furthermore, the teachers were not explained the particular objectives of the study or the details of the intervention until the study concluded. Finally, each teacher was observed twice by the first author during the time allocated for writing. No evidence of any sentence-combining instruction was evident during these observations.

**Dependent Measures**

Four measures were used to document progress: sentence-combining ability, story quality, writing complexity, and instances of taught sentence-combining constructions in connected text. Students were tested in pairs. All of the measures were rated by two graduate students in educational psychology who did not know the purpose of the study. To determine interrater reliability between the scores assigned by the two raters, a Pearson product moment correlation coefficient was calculated for each measure. The overall scores for each examiner were then averaged.

**Sentence-combining measure.** To assess changes in students’ sentence-combining skills, each student completed Form A of the Sentence Combining subtest from the TOWL-3 (Hammill & Larsen, 1996) before the start of the study. After instruction was completed, students were administered the alternate form (Form B) of this subtest. Forms A and B both contain 20 items that require students to produce increasingly complex and grammatically correct written single sentences by combining and integrating the meaning of two or more sentences together. Interrater reliability between the two scorers was .93. For the purpose of data analysis, raw scores were converted to standard scores ($M = 10$, $SD = 3$) using the normative tables in the test manual.

**Writing connected text.** Before instruction, immediately following instruction, and after 3 weeks, students were asked to write stories. These compositions allowed us to examine how sentence-combining instruction influenced quality of writing, T-unit length (a writing complexity measure), and the instances of sentence-combining usage in connected text. Students wrote their stories in response to picture prompts. To increase motivation, students were provided with a choice of two prompts for each story written during baseline and posttest. The picture prompts were line drawings depicting one or more characters involved in an activity (i.e., a rabbit lecturing other rabbits about carrots and a girl pulling a dog in a wagon).

When writing a first draft, students were given the two pictures and directed to write a story about one of them. They were given 20 minutes to write their stories, which was consistent with the amount of time provided during the Saddler and Graham (2005) study. Instructors provided no assistance, nor were students prompted to use any of the skills they were taught. Prior to scoring, compositions were typed (errors were not corrected), and identifying information was removed.

To examine treatment effects on the quality of students’ writing, each story was scored using a holistic quality-rating scale originally developed by Graham and Harris (1989). Examiners were asked to read the paper attentively to obtain a general impression of overall writing quality. Stories were then scored on an 8-point scale, with 1 representing the lowest quality
of writing and 8 representing the highest quality. Examiners were told that ideation, organization, grammar, sentence structure, aptness of word choice, and mechanics should all be taken into account in forming a judgment about overall quality and that no one factor should receive undue weight. Examiners were provided with a representative paper (or anchor point) for a low-, middle-, and high-quality score. These papers were the same used in the Saddler and Graham (2005) study. By discussing the distinguishing features of each of the anchor points, the first author trained the examiners to use the quality-rating scale. Next, the examiners practiced applying the scale to a series of compositions that varied widely in quality. After independently scoring each practice story, examiners compared their scores and resolved any differences through discussion. Training continued until the examiners’ scores differed by no more than 1 point on 10 consecutive compositions. Interrater reliability was .85 between the two examiners.

To quantify writing complexity, a ratio based on seminal work by Hunt (1965)—mean words per T-units—was used. Hunt defined each main clause along with its subordinate and nonclausal elements as a T-unit. Therefore, any simple sentence would be considered a T-unit, but a compound or complex sentence would consist of two or possibly more T-units. Interrater reliability was .75 between the two examiners.

To evaluate the extent the writers used the sentence-combining skills they were practicing while composing their stories, the examiners counted the number and type of sentence-combining constructions in each story. The author trained the examiners by practicing scoring papers that included examples of each type of sentence-combining skill found in the treatment. Training continued until the examiners’ scores differed by no more than 1 point on five consecutive compositions and the examiners agreed completely on the type of sentence-combining skill demonstrated (i.e., adjective, phrase insertion, connection). Interrater reliability was .85 between the two examiners when they independently scored drafts from pretest and posttest.

### Experimental Design

To demonstrate experimental control, the intervention effects on the dependent measures were assessed via a multiple baseline across-subjects design with multiple probes during baseline (R. D. Horner & Baer, 1978). Prior to the introduction of treatment, each student’s writing performance was measured over time to establish a baseline of typical ability. The following conditions existed during the study: baseline (pretest), during which each student wrote a story to establish pretreatment skill level; treatment, during which instruction began for each pair of students after each child established a stable baseline for story quality followed by 18 lessons; posttreatment (posttest), when students wrote three stories immediately following instruction under the same conditions as during baseline; and maintenance, during which each student wrote a story 3 weeks following the posttest under the same conditions as during baseline.

### Results

Examples of a pretest and a posttest story from a participant are provided in Figure 2. Figure 3 summarizes story quality, and Figure 4 shows average length of the T-units in the stories written at pretest, posttreatment, and maintenance. Finally, Figure 5 reveals the amount of constructions (phrase embeddings, adjectives, connectors) included. In addition to the visual analysis of level and trend, the data were also analyzed using the percentage of nonoverlapping data (PND) procedure outlined in Scruggs, Mastropieri, and Casto (1987). The following guidelines recommended by Scruggs et al. were used: 90% of the posttreatment and maintenance points exceeding the extreme baseline value indicated a very effective treatment, 70% to 90% an effective treatment, 50% to 70% a questionable treatment, and less than 50% an ineffective treatment.

### Sentence Combining

All of the students improved their ability to combine sentences. On average, the group achieved a standard score of 6.3 at baseline and improved to an 11.5 average at posttest. Pete’s improvement was the most robust, as he climbed from a baseline score of 7 to a posttest tally of 13; however, all of the students improved by at least 5 points. The PND for this variable was 100%; therefore, the intervention was very effective in increasing sentence-combining ability, as was expected. Interrater reliability was .93.

### Story Quality

As can be seen in Figure 3, all of the students improved the quality of their stories. Carol’s stories were particularly improved, as she increased from a low of 2 quality points at baseline to a high of 6 during
posttest. The PND for this variable was 87.5%, indicating that the intervention was effective in increasing story quality. Interrater reliability was .85.

**Sentence Complexity**

Figure 4 reveals that the T-unit length per sentence did increase for all of the writers. This indicates that in terms of T-unit length, the sentences they wrote became more complex following instruction. The PND for this variable was 91.6%, indicating that the intervention was effective in increasing the complexity of the sentences. Interrater reliability was .75.

**Taught Constructions**

As reported in Figure 5, several of the students increased their use of the constructions included in the sentence-combining curriculum. Interrater reliability for number and type of sentence-combining construction occurring in each story was .85.

The PND for this variable was 71%, indicating the intervention was effective in increasing the number of taught constructions in the stories. Although the intervention did not have as strong of an effect in this area as hoped, the results were interesting. Of the three constructions, the use of adjectives was the most prevalent during pretest and posttest. However, the effectiveness of adjective use seemed to improve during the posttest for several of the writers. For example, in one pretest story, Tom included a string of adjectives to describe a dog falling from the sky (the big, hairy, mean, dumb-looking, fat dog). According to the scorers, this style did nothing to improve the quality of his stories. At posttest, Tom’s overall use of adjectives declined, but the adjectives present were used to enhance the descriptions of the characters in a way that added value to the story in terms of overall quality.

**Discussion**

Identifying if sentence combining is a useful area to develop more automated and fluent composers has great importance for our field. Ironically, unlike reading, where we have outstanding early interventions for phonological and phonemic skills, few empirically validated interventions on the sentence level exist in writing. This research helps advance an evidenced-based approach for a potentially important writing subskill and represents a balanced approach to writing instruction that combines bottom-up and top-down approaches.

In this research, two questions were asked. First, would sentence-combining practice with a peer-assistance component improve the ability of young students with weak writing skills to construct sentences and compose
stories higher in overall quality and longer than stories written at pretest? Second, when working in a peer-assistance format, could less skilled writers effectively complete sentence-combining tasks without the benefit of immediate support from a more skilled other?

Several outcomes were consistent with the Saddler and Graham (2005) study. As expected, supplementary practice in sentence combining led to increased ability to combine sentences for each of the students and more complex sentences in terms of T-unit length. Sentence-combining instruction has proven in this and other studies to be an effective method of increasing skill in one critical component of writing: sentence construction. In addition, in this study there were some improvements in the overall quality of all of the stories written.

Unlike the Saddler and Graham (2005) study, in this study the taught sentence-combining constructions did appear in the posttest writing task to a greater degree than at pretest. However, although this result was encouraging, there was actually little gain in the number of constructions from pretest to posttest. There may be several reasons for this. First, the participants may not have had enough practice opportunities during the intervention to internalize the constructions to the point where they could be fluently recalled during the actual writing process. Second, the generalization activities may not have emphasized the transference of these skills effectively. During Lesson 3, the participants revised kernel sentences into a paragraph by using the taught constructions, and in Lesson 4, the students combined phrases into whole sentences. Although both of these activities represented extensions of the exercises presented in Lessons 1 and 2, they may have still been too far removed from the actual writing process to be valuable during connected writing.

Furthermore, even if the constructions had increased to a greater degree, it is less clear what actual impact their presence may have on the overall holistic rating of the stories. Although it is tempting, it would be unwise to suggest that the inclusion of more adjectives, embeddings, or connecting words by themselves would account for an improvement in overall story quality. In addition, the measure of use of sentence-combining skill while writing may in itself only be an indirect measure of linguistic features that might reasonably be expected to change after sentence-combining instruction.

If taught constructions did not markedly increase, yet story quality improved, some other aspects of the sentence-combining treatment must have contributed to these improvements. Several explanations are possible. First, perhaps while practicing the construction and revision of sentences, the writers began to attend to
the options found in our language to a greater degree. Second, it may be that by practicing making decisions about the various ways sentences could be combined and the relative merit of particular combinations during the exercises the students became more aware of the decision-making process writers engage in when creating and revising prose. Finally, researchers (e.g., Mellon, 1969; Saddler & Graham, 2005) have suggested that sentence-combining instruction may make the process of sentence construction more automated and less effortful, thereby freeing up cognitive resources for use in other writing processes such as planning and composing (the hypothesis of cognitive load reduction). Furthermore, wise use of these cognitive resources will result in a better written product. Because of the limited time of the intervention, the research design did not allow exploration of this theory to a great degree.

We also investigated the effect of pairing two writers with similar abilities within a peer-assisted learning format. In prior research (Saddler & Graham, 2005), a more skilled writer was partnered with a less skilled writer. This type of pairing allowed the more skilled writer to provide support and grammatically correct solutions to the less skilled partner when needed. Because much of the current intervention consisted of the partners crafting solutions together, this design allowed an examination of how two writers with limited skill in writing would approach these tasks.

It is interesting that in each pairing one of the students acquired the target skill in each unit before the other and then proceeded to offer verbal and written support to the partner. The nature of the support changed depending on the need. In one instance, for example, a student read difficult words to his partner. In another case, a student spelled words for her partner.
In a third case, a student offered words his partner could use as adjectives. Often during the warm-up exercises, one partner would offer alternatives to the other partner if the partner was struggling with a particularly difficult combination. Thus, in this study, the pairings led to supportive relationships and successful outcomes.

Limitations

There are several limitations to this study. First, no peer discourse during instruction was collected; therefore, no formal analysis of the peer-to-peer interactions between students during instructional settings, which may help to explain the results, is possible. Second, the sample size was small and only represented one grade level; therefore, the effects of these instructional activities on children in other grade levels without learning disabilities or with disabilities who may present different areas of weakness is unknown. Third, only one writing genre was used. Fourth, fidelity of treatment was not collected by an independent person. Fifth, one student’s (Bob’s) baseline story quality was trending upward during a phase change from baseline to instruction.

Future Research

Research in sentence combining presents a unique opportunity to explore the potentiality that what may be needed in effective writing instruction research are interventions that connect several different theoretical approaches. In other words, writing research that
employs principles of direct and explicit instruction in the skilled aspects of writing (such as sentence combining), while embedding this instruction within strategy frameworks that are built on cognitive and sociocultural theories employing a cognitive apprenticeship approach to teaching, may be efficacious. To explore this possibility, extended research in sentence combining is needed in several areas.

First, although we know that sentence-combining instruction can improve the ability to write more varied and syntactically complex sentences, we do not know yet how best to transfer this skill to connected writing. Therefore, future studies need to explore generalization as a primary goal. Second, in exploring the generalization issue, researchers need to investigate the metacognitive aspects of this instruction. We know very little about how a student approaches a sentence-combining task cognitively or how such instruction may help reorganize existing ideas about sentence construction. This information is crucial in designing activities that may foster generalization. Third, future studies should record and distill the interactions between pairs of writers as they approach sentence-combining tasks. Such information is vital in understanding the cognitive impact of sentence-combining skill as it is being acquired and also the effects of peer interaction on this process. Fourth, curriculums taught over a longer time period or longitudinal studies may strengthen the results of this intervention. Fifth, because this instruction was not taught by the classroom teacher, nor was it part of the normal classroom instruction, contextual studies of this instruction under normal classroom conditions is warranted. Sixth, multiple grade levels should be used to discern when such instruction might be implemented most effectively. Seventh, the context for developing sentence-combining skills should be explored. Specifically, future studies could examine if sentence-combining activities taught in a less decontextualized, more interactive manner, wherein students are co-constructing texts and utilizing sentence-combining skills within these texts with more knowledgeable others, would be more efficacious than more direct instruction approaches. Eighth, future research should include participants with varying manifestations of learning disabilities. Ninth, interventions could include vocabulary instruction and a measure of vocabulary knowledge, as vocabulary is an important component of writing and could affect sentence-writing ability. Finally, because writing is partially a social activity, the role of audience and purpose in a created story should be examined.

## Conclusion

Although there has been much attention given by researchers to cognitive strategy instruction, text structures, and process writing over the past several decades, little research has focused on one of the fundamental building blocks of good writing, namely, the ability to write effective and complete sentences. This study represents an important contribution in this area. Combined with recent work on the role of handwriting and spelling in developing writing fluency and more effective composition skills, sentence combining and other fundamental interventions are in some ways parallel concepts to the role of efficient decoding and fluency on comprehension processes in reading.

Furthermore, this study has potential to add to our understanding of what counts as effective writing intervention. The need for evidenced-based interventions for improved sentence construction is warranted, especially as part of a balanced writing program. The findings from this study replicate and extend previous research by showing that a peer-assisted sentence-combining treatment can improve the sentence construction skills of young writers with weak writing skills. It also extends this research by showing that such instruction can promote young students’ use of sentence-combining skills as they write and can positively affect the quality of young students’ writing. Finally, these results suggest that less skilled writers can support one another effectively during peer-assisted practice.

Although sentence-combining exercises have proven effective in increasing the syntactical fluency of writers, they only represent one component in a writing program. These exercises cannot be a panacea for every challenge writers will face when composing; therefore, teachers should not rely on them exclusively. They cannot replace other validated writing instruction practices, nor are they a quick fix. However, sentence-combining exercises are valuable as a component of a well-rounded writing program that includes ample time for writing, conferencing between peers and teachers, minilessons to increase skills, teacher modeling, and choice in assignments.

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