

# Using Sentence Combining Instruction to Enhance the Writing Skills of Children With Learning Disabilities

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*One area of writing that may be particularly problematic, causing both academic and behavioral challenges for writers with learning disabilities, is constructing sentences. Sentences are the building blocks of coherent and effective writing and constructing syntactically correct and complex sentences is a critical skill characterizing expert writing. Unfortunately, many students with learning disabilities struggle with this critical skill. These students may produce sentences with fewer words, less syntactical complexity, and more errors of spelling and grammar than their regularly achieving peers. For researchers and teachers of children with learning disabilities, improving sentence construction ability with empirically based interventions is imperative. In this review of literature a method to teach sentence construction, called sentence combining, is presented and current research providing support for the use of sentence combining as a method to improve sentence construction ability, overall writing quality, and quantity of revisions is summarized. Finally, future directions for sentence combining research are discussed.*

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## INTRODUCTION

Writing is one of the most important forms of human communication and one of the most difficult to do well. Writing provides a wonderfully flexible tool for acquiring, recalling, and disseminating knowledge with others while also offering an artistic medium for creative self-expression (Durst & Newell, 1989).

Writing is an essential skill for children to learn in school, as it can be an instrument for helping children explore, organize, and enhance ideas. While in school, teachers often use writing as the primary means to document student knowledge and evaluate academic performance (Graham & Harris, 2004). Because of this academic progress largely depends on an acceptable degree of writing fluency (Graham & Hebert, 2011). Writing's importance continues outside of the classroom through the growing emphasis on written expression in federal and state-mandated accountability testing and college entrance examinations. Writing is also a key to success when making the transition to the workforce. In practical terms, most jobs require a basic written language facility to gain employment and to advance once hired.

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However, there are indications that even professionals' writing skills are not what they should be (Lenz, 2013). In fact, many employers are utilizing spelling and grammar tests as part of the application process for potential employees while other companies are discovering their personnel unable to communicate clearly and concisely in writing (Dillon, 2004) with problems noted in a wide spectrum of writing skills including: (a) effectively organizing sentences and paragraphs; (b) writing clearly and precisely; (c) spelling correctly; (d) preparing concise, accurate, and supportive documents; (e) documenting work completely and accurately; (f) using correct grammar; (g) conscientiously editing and revising documents; and (h) effectively using email (Jones, 2011, p. 263).

Perhaps employers' dissatisfaction with their employees' writing skills is not that surprising, given that writing can be so difficult to do well that even professional writers struggle. In fact, stories of how successful professional writers grapple with writing could be enough to scare many would-be writers off. For example, the American fiction writer Harlan Ellison once wrote "*people on the outside think there's something magical about writing, that you go up in the attic at midnight and cast the bones and come down in the morning with a story, but it isn't like that. You sit in back of the typewriter and you work, and that's all there is to it.*" Even the great Charles Dickens lamented the struggles he experienced during composing when he said that writing involved "*prowl[ing] about the rooms, sitting down, getting up, stirring the fire, looking out the window, teasing my hair, sitting down to write, writing nothing, writing something and tearing it up...*"

If adult professional writers struggle with writing, it is likely that children do as well. And they do. In fact results from the 2011 National Assessment of Educational Progress (NAEP) at grades 8 and 12 produced by the U.S. Department of Education indicate that many students in the United States struggle with writing (NCER, 2012). According to the NAEP report, 20% of students performed at or below what they considered a basic level of proficiency in 8<sup>th</sup> grade and 21% in twelfth. Not only did many students not do well on this test, findings also indicated that a good number of students did not enjoy writing with only 58% of students performing above the 75<sup>th</sup> percentile in 8<sup>th</sup> grade and 55% in 12<sup>th</sup> grade feeling that writing was one of their favorite activities. Whereas for those students performing below the 25<sup>th</sup> percentile only 34% of 8<sup>th</sup> and 12<sup>th</sup> graders indicated enjoying writing (NCER, 2012).

Although it is apparent that many students struggle occasionally with writing and do not enjoy composing, for students with a learning disability, writing can be even more difficult (Graham & Hall, 2016). In fact, in a recent meta-analysis of the writing characteristics of students with LD, Graham and colleagues (2017) found that, when compared with their classmates, students with LD produced writing samples that were overall of poorer quality than their typically achieving peers.

Writing is often a challenge for students with LD for several reasons. First, writing is demanding, and students with LD may exhibit challenging behaviors that interfere with instruction in the classroom, particularly when presented with complex academic demands (McKenna, Flower, Kim, Ciullo, & Harin, 2015). Second, they may have difficulty executing and monitoring many of the basic cognitive processes that writers need to successfully manage during the writing process (Saddler, Moran, Graham, & Harris, 2004). They may engage in the writing process in an ineffective

manner exhibiting little to no planning in advance of writing (Gillespie & Graham, 2014) instead employing what Scardamalia and Bereiter (1986) have termed a “knowledge telling” behavior where content is generated by writing down any information they can recall about a topic without regard for the purpose or goal of the assignment. This approach minimizes planning and contributes to their compositions being brief, poorly organized, with few details (Graham, Collins, and Rigby-Willis, 2017). In addition, they may not include the most basic story elements such as an ending or premise and may engage in few effective revisions of their work (Graham & Harris, 1989; Graham & Harris, 1993). Finally, they exhibit low self-efficacy toward their ability to write well and may lack motivation to write (Graham et al., 2017). Displaying low levels of motivation for writing can make it an even more daunting task since motivation is vital in sustaining engagement in drafting and revising (Adkins & Gavins, 2012). Motivational dispositions affect what writers do as those possessing a positive attitude are more likely to plan, set challenging goals, and persist as writers (Graham et al., 2017). If a writer lacks motivation to persevere through the writing process, he or she may become frustrated, and engage in inappropriate behaviors (Bak & Asaro-Saddler, 2013). This may be a particular concern for young students with LD as these students are at a greater risk for developing behavioral difficulties that can make access to instruction designed to improve academic performance more difficult than for their nondisabled peers (Gresham & MacMillan, 1997).

One area of writing that may be particularly problematic for a writer with a learning disability is constructing well-formed sentences. The sentence is a vehicle of communication; the structure words are placed into. Sentences are the building blocks of coherent and effective writing. The ability to construct syntactically correct and complex sentences is a critical skill that characterizes expert writing (Beers & Nagy, 2009; Berninger, Nagy, & Beers, 2011). Depending on a writer’s intent and ability, a composition could contain a very wide variety of different sentence types. As the writer chooses words within each sentence that precisely and clearly conveys an idea, they make the composition more understandable to the reader. Since sentences are the vehicles for the writers’ ideas, the ability to construct complex and varied sentence structures can facilitate a writers’ ability to communicate those ideas to a reader.

In comparison to their more skilled counterparts, students with learning disabilities struggle with this critical skill. These students may produce sentences that have fewer words, are less syntactically complex, and include more errors of spelling and grammar, less diverse vocab vocabulary, and less legible handwriting (Graham et al., 2017), making their work harder to understand and less enjoyable.

Although time and maturation generally improves the control of sentence level syntax so important for a writer to create a variety of effective and engaging sentences (cf. Hunt, 1965; O’Donnell, Griffin, & Norris, 1967), differences between the syntactical maturity of writers with disabilities and without increases with age (Andolina, 1980) and often does not improve with typical school interventions (Christenson, Thurlow, Ysseldyke, & McVicar, 1989; Newcomer & Barenbaum, 1991). What this means in many classrooms is that as written language becomes more important to school success and more syntactically complex, the syntactic maturity

of the writings of children with disabilities stagnates, remaining very simple and less effective (Morris & Crump, 1982).

For researchers and teachers, then, improving sentence writing ability with empirically based interventions is imperative for several reasons: First, problems with sentence production skills may interfere with other processes such as planning, content generation, and revising because the attention the writer must commit to lower level skills depletes accessible cognitive resources that could be applied to higher level processes (Graham, 1997; Scardamalia & Bereiter, 1986; Strong, 1986). Second, if a writer does not have knowledge of effective writing formats at the sentence level it may hinder their ability to translate their thoughts into text (Hayes & Flower, 1986), which could subsequently diminish 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 these difficulties, Graham, Harris, MacArthur, and Schwartz (1998) suggest that less skilled writers need to develop proficiency in framing their ideas within a variety of different sentence formats, for instance, a complex sentence vice a series of simple ones. Instructionally, teaching children to do this should involve direct, motivating and stimulating language experiences to accelerate the development of syntactical patterns throughout the school years (Troia, 2014). One instructional method that provides direct practice with sentence construction skills is sentence combining.

Although the need to teach sentence construction skills has been consistent over the years, how to teach these skills has changed over the years. During the 1960's and 1970's grammar was the preferred instructional method to increase students' sentence writing ability in the United States. Often this instruction focused on explicitly teaching parts of speech, sentence types, and the diagramming of sentences to identify relationships between constituent elements. However, although widely embraced, a seminal writing meta-analysis by Hillocks (1986) revealed that the study of grammar did not contribute to the quality of a student's writing, nor did grammar instruction have a significant impact on the use of proper mechanics. In addition, grammar taught in a formal manner and removed from actual writing had the unfortunate effect of boring writers and reducing their desire to write with many finding grammar instruction as at best a necessary evil (Jean & Simard, 2011). Dissatisfaction with the outcomes of grammar instruction led researchers to seek alternative methods to improve sentence level writing ability, such as sentence combining.

Sentence combining involves explicitly teaching students how to rewrite short, syntactically simple sentences into ones that are more varied in terms of style, length and syntactic structure (Saddler, 2009). For example, a series of simple sentences a young writer might produce such as: "The ball was red. The ball was big. The ball bounced when I dropped it." could be combined in multitude of ways depending on the author's style, for example: The big red ball bounced with I dropped it.

Teaching writers to combine simple sentences into more complex sentences that are more syntactically mature and varied through these types of activities can help students create richer writing pieces that properly exhibit their developing thinking processes. By combining sentences in frequent sessions where the exercises

are carefully modeled and openly discussed can expose writers to a variety of syntactic structures they can utilize while composing or revising to convey their ideas more effectively. Such practice can provide writers with a systematic method to explore language without the need to generate content/ideas thus reducing some of the cognitive burden typically associated with the composing process. The exercises can also provide a venue for testing out words and ideas through focused and interesting language experiences. The benefit of this type of practice is that it parallels behaviors writers typically engage in while writing, as all writers change their sentences constantly as they revise their compositions.

Sentence combining has a well-established research base. In fact, over 85 studies conducted during the last 55 years have demonstrated that sentence combining is an effective method for helping students produce more syntactically complex sentences (cf. Gale, 1968; Hunt, 1965; Mellon, 1969; O'Hare, 1973) and may improve the overall quality of compositions (cf. Combs, 1975; Perron, 1974).

Along with the individual studies, two high-profile reports underscore sentence combining's effectiveness. First, an extensive meta-analysis of the effect of grammar teaching on writing development by Andrews and colleagues (2006) found little evidence supporting the effectiveness of grammar, whereas sentence combining was determined to have a much more positive effect on writing. The report concluded that sentence combining has been proven to work and should be considered as an important element in a repertoire of activities, especially for 7–14 year olds, where most of the research has been conducted. In addition, in *Writing Next: A Report to the Carnegie Corporation* (Graham & Perin, 2007), sentence combining had a consistently positive and moderate effect on writing and was listed among the practices recommended for inclusion within effective writing programs.

Unfortunately, most of the research of sentence combining as an instructional method is rather dated – from the 1960s and 1970s – and limited to the upper grade levels. Additionally, few studies have examined this technique specifically for students who struggle with writing or those diagnosed with a learning disability. More recently there have been important attempts to update and expand the sentence combining literature base. Therefore, we conducted a review of the literature to explore the effects of sentence combining of the writing of students with LD and less skilled writers.

## METHOD

We searched using the keyword “sentence combining” coupled with the following: “learning disabilities” “learning disabled” “less skilled writers” and “struggling writers.” We searched the following databases: Ebsco, Education Source, ERIC, Psych Articles, Psychological and Behavioral Science Collection, Teacher Reference Center, and Web of Science. Thirty-five articles were found. An article was included if it met the following criteria: was an empirical study; included a sentence combining intervention; and included participants identified with learning disabilities or described as struggling/less skilled writers. Three studies met this criteria.

## RESULTS

Saddler and Graham (2005) was the first study that investigated the effects of sentence combining practice using a peer assisted grouping arrangement versus

traditional grammar instruction. In this study 22 student pairs were chosen from all fourth-grade students in 9 classrooms in three schools in the Washington D.C. Metropolitan Area. The students were identified as skilled or less skilled writers based on the Test of Written Language, 3<sup>rd</sup> edition (TOWL-3) and teacher report. Forty-four students were assigned to two instructional conditions: sentence combining or grammar. Participants in each condition received 30 lessons, 25 minutes in duration, three times per week for 10 weeks.

Instruction was scaffolded via explanation and modeling of each of 4 sentence combining procedures or parts of speech in the grammar condition. The experimental group was first taught how to combine sentences using the conjunctions *and*, *but*, and *because*, then adjectives and adverbs, and finally adverbial and adjectival clauses. The instructor explained and modeled how to perform particular sentence combinations prior to the students participating in guided practice. During guided practice, the students were placed in dyads (one stronger writer, one weaker writer) and worked on writing their own responses. During the independent practice phase, the pair wrote a short story and revised pieces utilizing the sentence combining strategy. Using the peer assisted grouping arrangement; one student assumed the role of the coach while the other student applied the strategy during both the composition and revision process.

The grammar instruction component concentrated on skills associated with nouns, verbs, adjectives, adverbs, subjects, and predicates. The instructor modeled and explained how to appropriately apply a part of speech in a sentence. During guided practice, the students worked in pairs on focused exercises that required them to supply the missing part of speech in a sentence. Identical to the experimental group, the grammar instruction pairs also engaged in writing a short story and revising their pieces utilizing.

To assess the effects of the treatment, students were asked to write a story and then revise it immediately; sentence combining progress monitoring measures were given during the interventions; and administration of Form B of the TOWL test was administered to students after the instruction. The measures revealed a statistically significant effect of sentence combining instruction on all progress monitoring (effect size = 1.31) and standardized assessment (effect size = 0.81) measures. Participants in the sentence combining condition were twice as likely to combine two or more sentences into a semantically and syntactically correct single sentence than those students in the grammar instruction condition. Effects in the area of revision were more modest but moderate and still indicative of a higher level of achievement for the students in the sentence combining condition (effect size = 0.69). Additionally, for the students in the sentence combining condition, post-test story quality improved to some extent in this study (effect size = 0.64) whereas in the grammar condition it was unchanged.

A replication single subject design study was conducted in 2008 by Saddler, Behforoorz and Asaro. In this study, students with and without learning disabilities were provided with sentence combining instruction with a peer assistance component. Six students were included in the study: three had an identified learning disability and three were typically achieving, with all described as having weak writing skills. Students were randomly assigned to instructional pairings.



This study extended the 2005 study in two ways. First, parallel exercises were included to assist in generalization of the sentence combining skills from sentence creation to paragraph writing. Secondly, less skilled writers were paired with more skilled writers to assess the ability of the less skilled writer to learn the skills from a peer. 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.

Lessons contained similar procedures to Saddler and Graham's (2005) study, however two lessons in this study focused on generalization. In the third lesson, the students were asked to take the sentence combining skills that they had been learning in isolated exercises and transfer those skills to a paragraph revising task. The fourth lesson provided the students with a topic and several random facts written as phrases. The students were instructed to take those phrases and combine them into sentences to form a cohesive paragraph.

Four measures were used to document progress: sentence-combining ability, story quality (based on a rubric), writing complexity, and frequency of use of taught sentence combining constructions in connected text. Results indicated that the intervention was effective for each student. Specifically, percentage of non-overlapping data (PND) were calculated for all variables. According to Scruggs, Mastropieri and Casto (1987), 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. For this study PND were as follows: sentence-combining ability (100%), story quality (87%), writing complexity (91.6%), and frequency of use of taught sentence combining constructions in connected text (71%). According to Scruggs and colleagues (1987), this would indicate very effective treatment for sentence combining and writing complexity, and effective treatments for story quality and constructions used in connected text.

The authors suggest that these results were attained because sentence combining instruction may have guided students to become more aware of the decision-making processes writers engage in, and the options inherent within language during composition. In addition the sentence combining skill may have made sentence construction less effortful, thus freeing up mental energy for other aspects of the writing process.

In a third study conducted in 2008, Saddler, Asaro & Behforooz again replicated and extended the Graham and Saddler study (2005). As in previous studies, sentence-combining practice with a peer assistance component was used with an addition of a parallel writing task and a Peer-Editor Checklist to improve the transfer of the sentence-combining skills to story writing. Furthermore, anecdotal comments regarding the instruction was collected.

Four fourth grade students with learning disabilities and writing difficulties participated. Students were paired for instruction as in Saddler, Behforooz and Asaro (2008). Sessions lasting for 35 minutes occurred three times per week, with each pair of writers receiving 18 lessons. The sentence-combining curriculum was adapted from the Saddler and Graham (2005) study and involved rewriting short, kernel sentences using three units of six lessons each. Each unit included a particular

type of sentence construction including clusters of kernel sentences using adjectives, phrase insertions and the use of connectors, “but” and “because” to combine sentence kernels. In addition, each unit also included a parallel writing piece that was peer-revised using a checklist.

Five measures were used to document instructional effects: sentence-combining ability, story quality, number of revisions, quality of revising and instances of taught sentence-combining constructions in connected text. Students were tested in pairs. Results indicated that all students improved their sentence-combining ability and the quality of their stories. The number of revisions attempted improved, however the overall story quality did not improve as a result of attempted revisions. All writers included more of the taught sentence combining constructions in their compositions than were present at pretest. Percentage of non-overlapping data for all measures was 100%, indicating a very effective treatment.

Direct practice improved sentence-combining ability in this study as in previous sentence-combining studies, however, unlike previous studies, in this study the taught constructions appeared to a greater extent in the post test stories than at pretest. Researchers believed that this finding may support the use of the additional practice activities in generalizing the direct skill instruction. Additionally, the quality of the posttest stories improved for all of the writers and revising behavior increased, yet did not lead to improving quality of second drafts. Finally, in this study, unlike the previous two, anecdotal data collected about the students’ perception of the strategy revealed that the overall steps of making sure sentences made sense was seen as a benefit of the instruction and that the instruction in general was enjoyable. Student comments also suggested that the Peer-Editor Checklist increased their ability to identify the use of sentence-combining skills in each other’s writing, and make effective revising suggestions as they progressed through the intervention.

## DISCUSSION

The purpose of this literature review is to provide the reader with an overview of findings on the effectiveness of sentence combining instruction on writing performance for students with LD. The results of these three studies provide further support for the use of sentence combining as a method to improve sentence construction ability. Furthermore, these studies demonstrate that sentence combining is effective with young writers at various ability levels, including writers with disabilities, and may favorably impact the quality of compositions and quantity of revisions. This finding is especially significant since early intervention using effective instruction may maximize the writing development of all children, reduce the number of students who develop writing problems from poor instruction, and lessen the difficulties and motivational challenges experienced by children with writing disabilities (Graham & Harris, 2004). These studies also reveal that peer grouping can be an effective instructional arrangement during sentence combining practice.

Although these studies are a good first step in updating and expanding the research base supporting sentence combining, there is still much work left to do. First, investigators have not examined the possibility of the cognitive load reduction hypothesis for sentence combining instruction. If this hypothesis is valid, a reduction in cognitive load should follow sentence combining instruction. For example, the



amount of time students might take to react to a secondary-task (e.g., an audible signal) occurring while they construct sentences should be reduced. Likewise, as students improve their fluency with combining sentences, a proportional increase in time committed to other writing processes should occur (see Rijlaarsdam & van den Bergh, 1996). Secondly, we do not know yet how best to transfer sentence combining skills to connected writing. Therefore, future studies need to explore generalization as a primary goal. Thirdly, the meta-cognitive aspects of this instruction need to be explored since we don't know how a student approaches a sentence combining task cognitively, or how such instruction may help reorganize their existing schema regarding the act of constructing sentences. Fourthly, the interactions between pairs of writers as they approach sentence combining tasks should be recorded and analyzed to gain an understanding of the cognitive impact of the acquisition of sentence combining skills and in what ways peer interaction impacts that process. Fifth, studies of this instruction under normal classroom conditions to increase the ecological validity is warranted since to date, the research has not been taught by the classroom teacher as part of typical classroom writing instruction. Sixth, future research should include participants with other disabilities, including emotional and behavioral and autism spectrum disorders. Finally, interventions could include reading and vocabulary instruction, since both could impact sentence writing ability.

We are aware that interventions that increase engagement play an integral role in maximizing instructional time for students with LD (McKenna, Flower, Kim, Ciullo, & Harin, 2015). Sentence combining appears to be such an intervention. Despite the work that is yet to be done, the existing strong research base, including the studies reviewed in this article, indicates that sentence combining is a viable strategy to use in place of traditional grammar instruction, can be utilized with writers with different abilities, and can be practiced in peer learning structures with very young writers.

As one component of a writing program, sentence combining practice can help writers improve the quality, variety, and complexity of their sentences while also improving the quality of their prose. When these exercises are used as components of a comprehensive writing program, they can provide controlled, disciplined practice in constructing interesting, meaningful, and varied sentences which, though effective for individuals with learning disabilities, can potentially help all the writers in a classroom. As Charles Cooper best known for his thorough reviews of composition research writes about sentence combining: "No other single teaching approach has ever consistently been shown to have such a beneficial effect on syntactic maturity and writing quality." (1973, p. 72).

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