The Effects of a Modified Cover, Copy, Compare on Spelling Tests and in Written Compositions for Three Students with Specific Learning Disabilities

Ashley Manfred *T. F. McLaughlin* *K. Mark Derby y*
Gonzaga University

Mary Everson
Spokane Public Schools

Abstract

Spelling skills are vital in teaching students to read and write effectively. One method to help students learn to spell words correctly is called cover, copy, and compare (CCC). This study was designed to evaluate the effects of using CCC on the spelling and writing skills of three students with learning disabilities. These skills were measured both before and after implementation of CCC spelling intervention. When CCC was in effect, our participants spelled more words correctly on spelling test probes. Generalization of correct spelling on a writing samples was found. The students reported they enjoyed using CCC.

Spelling is an essential pre-skill to being able to express oneself through written communication (Erion, Davenport, Rodax, Scholl, & Hardy, 2009). It is also a vital skill for reading fluency (Erion et al., 2009) and consequently, learning to spell is fundamental for success in general academics (Kosmac, 2009). While it is such an important skill for students to build, it is also one of the most difficult skills for students with learning disabilities to obtain (Bos & Vaughn, 2002). Because writing is one of the most complicated academic tasks for both children and adults (Troia & Graham, 2003), difficulty with spelling frequently leads students with learning disabilities to have difficulty putting ideas into writing. Consequently, those students may be limited to using words that are most often used or most easily

spelled (Berninger, Vaughan, R. Abbott, Brooks, S. Abbott, Rogan, Reed, & Graham, 1998; Graham, Harris, & Fink-Chorzempa, 2002; MacArthur, Graham, Haynes, & DeLaPaz, 1996). Therefore, effective intervention to help students with learning disabilities increase spelling skills in order to improve writing ability, and thus improve writing ability is essential.

The impact of spelling abilities on reading and writing skills in addition to general education language arts curricula has been well documented in previous research (Cates, Dunne, Erkfritz, Kivisto, Lee, & Wierzbicki, 2007; Erion et al., 2009; Nies & Belfiore, 2006). According to Deno, Marston and Mirkin (1982), "students with learning disabilities typically misspell two to four times more words in their writing than their normally achieving peers" (as cited in MacArthur et al., 1996). Additionally, research has shown that spelling skills have a direct impact on a person's reading and literacy skills (Cates et al., 2006). Students with lower spelling skills typically have more difficulty with phonological awareness, word attack, and word recognition skills (Graham, Harris, & Fink-Chorzempa, 2002), thus causing a negative impact on overall literacy. Reading is one of the most critical skills students learn, because they will use it throughout their education and through their lives (Peterson, Marchand-Martella, & Martella, 2008). Reading ability not only impacts other areas of education but can also contribute to a student's overall enjoyment of academics and learning (Shippen, Houchins, & Steventon, 2005). Research has widely shown that a lack of reading skills can have long-term and wide-reaching consequences for students (Shippen et al.). In fact, illiteracy is a common characteristic in students who drop-out of school as well as adolescents in the juvenile justice system (Joseph & Schisler, 2009; Krezmien & Mulcahy, 2008; Scarlato & Asahara, 2004). Taking the impact of low reading skills on academic and lifelong achievement into consideration, the importance of implementing spelling

practice that effectively helps improve spelling, reading, and writing ability is clear.

Spelling interventions that utilize components of direct instruction have been proven to be highly effective in teaching students to spell (McLaughlin, Weber, & Barretto, 2004). Two of the most effective elements of direct instruction include systematic error correction and distributed practice (Kosmac, 2009). One method of spelling instruction that makes use of these elements is called cover, copy, and compare (CCC) (McLaughlin & Skinner, 1996; Kosmac, 2009; Erion et al., 2009; Nies & Belfiore, 2006). CCC has been able to help increase accuracy and fluency in not only spelling but also in mathematics, geography (Codding, Eckert, Fanning, Shiyko, & Solomon, 2006; Erion et al., 2009; Hubbert, Weber, & McLaughlin, 2000; McLaughlin & Skinner, 1996; Poncy, Skinner, & Jaspers 2007) and science (Smith, Ditmer, & Skinner, 2002). Specifically, this straight-forward method has been shown to produce increased spelling accuracy and fluency that students are able to maintain over time (McLaughlin & Skinner, 1996). According to McLaughlin and Skinner, CCC is best used for tasks that call for recognition, memorization, and automatic responding (McLaughlin & Skinner, 1996). Additionally, this method is effective for students both with and without learning disabilities (Hubbert et al., 2000; Skarr, McLaughlin, Derby, & Meade, in press) in a variety of settings including the home, general education classroom (Schermerhorn & McLaughlin, 1997), and special education classroom (McLaughlin et al., 1991; Cieslar, McLaughlin, & Derby, 2008). A meta analysis of CCC with its variations (Joseph, Konrad, Cates, Vajener, Eveligh, & Fishley, 2012) found that CCC was an effective and efficient procedure to teach students to lean and become fluent in various basic skills.

The CCC method of spelling intervention utilizes self-management by students along with repetition and

immediate error correction to help students master spelling skills (Kosmac, 2009; McLaughlin & Skinner, 1996; Nies & Belfiore, 2006). Steps to implementing this method of intervention are defined by McLaughlin & Skinner (1996) and include having the student: a) look at an academic stimulus (i.e. spelling list word), b) cover the academic stimulus, c) make an academic response (i.e. write the spelling list word), d) uncover the original stimulus, and e) compare student's own response to the original stimulus. When the student response is correct, the student typically moves on to the next item or task on the list and repeats the procedure. When the student responds incorrectly, the student completes an error correction procedure, typically repeating the CCC steps, before moving on to the next item or task (McLaughlin & Skinner, 1996; Nies & Belfiore, 2006).

The purpose of this study was to employ CCC in spelling to increase the written communication skills for three students with learning disabilities. Another purpose was to assess the generalized accuracy of their spelling performance to writing composition. The first author hypothesized that student writing ability and spelling within a writing sample would increase as spelling skills increased, ultimately allowing students to improve communication through writing. Examining the effect of increased spelling skills on spelling within written communication allowed for an examination of skill generalization. Our final purpose was to extend and replicate prior research showing CCC was an effective method of increasing skills in spelling.

Method

Participants and Settings

There were three participants in this study. Each was selected by his/her special education teacher due to low performance in the general education classroom end of the week spelling

tests. The study took place across 12 weeks during the regular school year.

Student 1 was a nine-year-old girl who was in the third grade. Student 1 qualified for special education services under the category of specific learning disability. She received support in the resource room in the subjects of reading, writing, and mathematics. The resource room served students to remediate their issues in basic skills. Students came to this classroom for 60 to 90 minutes each school day. According to a complete evaluation in 2010 using the *Woodcock-Johnson III Test of Achievement* (Woodcock, McGrew, & Mather, 2001), she performed broad spelling skills at first grade fifth month (1.5) and broad written language skills at first grade first month (1.1). Broad written language included writing fluency, writing samples, and spelling skills. Student 1 often displayed difficulties keeping her attention on her school work; however, she had not ever been diagnosed with attention deficit disorder (ADD). According to her classroom teacher, motivation to complete an assignment was often a problem in the classroom.

Student 2 was an eleven-year-old sixth grade boy who received one hour per day of special education services. Student 2 qualified for services under the category of specific learning disability. He received assistance in areas of reading, written communication, and mathematics. He was an extremely verbal and enjoyed school. He performed math skills near late fifth grade level. His spelling and writing skills were near late fourth grade level when he was assessed in the fall.

Student 3 was an eleven-year-old sixth-grade boy who received one hour a day of special education services in special education. He qualified for services under the category of specific learning disability. He received services in the subject areas of mathematics, reading, and writing. Student 3 took medication for Attention Deficit/

Hyperactivity Disorder (ADHD). However, frequently he was not given his medication at home. His spelling and writing skills were near the third grade level when assessed with the *Woodcock-Johnson III Test of Achievement* (Woodcock et al., 2001)

For all three students, the study took place in a resource room at a public elementary school located in the Pacific Northwest. Instruction in the resource room included the areas of reading, writing, math, and social skills instruction. The students came into the resource room at a designated time each day and attended general education classes for a majority of the school day. Student 1 spent one-and-a-half hours in the resource room each day. Student 2 and Student 3 spent between 30 and 45 minutes in the resource room each day. On a typical day there would be one to ten students in grades two through six and three adults (master teacher, instructional assistant, and the first author) providing instruction.

Materials

Materials needed for this study were pre- and posttests consisting of grade level spelling words derived from the general education curriculum. Other materials included student generated free writing samples on a topic of their choice. During these probes, the first author provided a prompt for the students to write. For the writing samples, the teachers prompted the students as to the minimum number of sentences they needed to write and provided no additional assistance or instruction while they were writing. CCC practice sheets for each student were developed. Data collection sheets were developed to record the results of each pre- and posttest as well as writing sample results for each participant (see Appendix A).

Dependent Variables and Measurement

Two dependent variables were measured in this study. The first dependent variable was the percent of spelling words spelled correctly on a spelling pre- and posttests. For all students, correct answers were defined as words spelled with all letters in the correct place and/or correct punctuation. Incorrect words were defined as words spelled with one or more letters out of sequence lacking correct punctuation. For example, it's had to be spelled with an apostrophe and if was spelled it's the word was scored as an error. The number of correct or error words was then divided by the total number of words possible and multiplied by 100 to obtain a percent.

The second dependent variable was the use of current and past spelling words found in writing samples from participants. A correct response was defined as a spelling list word included in the writing sample with all letters in correct place and with correct punctuation. An incorrect response was defined as a spelling list word included in the writing sample with one or more letters out of place or with incorrect punctuation.

The first author completed data collection after every pre- and posttest. The first author kept every pre- and posttest (or a Xerox copy) that each participant completed. Correct responses were indicated on the data collection sheet with a "C". Incorrect responses were indicated on the data collection sheet with an "E". The first author scored each pre- and posttest after the participants completed the test.

Experimental Design and Conditions

A modified multiple baseline and ABAB reversal design (Kazdin, 2011) was employed for all three participants. Because participants were engaging in weekly spelling pre- and posttests prior to the start of this study, the first author began the study by obtaining baseline data from the participants' earlier spelling tests that were kept by the fourth

author. After establishing baseline scores, CCC was used to teach correct spelling of current spelling words. Words appearing on the CCC worksheets varied and were determined by student performance on the pretests. All words missed on the pretest appeared on the first CCC worksheet. Words that students spelled correctly on the pretest appeared on subsequent CCC worksheets to give students additional practice on those words. After several weeks of implementing CCC, the first author returned to baseline to eliminate the possibility that other variables were affecting student performance.

Data collection and implementing CCC took between 10 and 20 minutes with all three participants. Time spent on CCC worksheets depended on the number of incorrect responses students made on the pretests. When students made more errors, more time was spent on CCC worksheets.

Baseline and pre- and post-testing

Students were given pretests every Monday or their first day of the week in the resource room. Each participant in this study was given the grade level spelling test as indicated by the general education curriculum. Students were given posttests each Friday, or their last day of the week in the resource room. The order in which students were given words was always varied to ensure that students were not memorizing words in order but rather were actually learning the spelling.

Prior to implementing CCC, the first author conducted baseline. For Student 1, baseline was conducted for three weeks. For Student 2 and Student 3, baseline was conducted for two weeks.

CCC

The teacher taught the participants how to do CCC. During the initial training, the first author explained the new practice

worksheet and explained why the students would be using this new format. The first author then modeled how to complete the CCC worksheet. The steps required to complete the worksheet included: a) look at the word modeled, b) write the word while looking at it, c) cover the modeled word, d) write the word from memory, e) uncover the modeled word, f) compare the newly written word to the modeled word, g) repeat two more times for each word on the list. The students were then asked to demonstrate how to complete the worksheet to ensure they had an understanding of the task they were assigned. When students made errors on a word using the CCC worksheet, they were required to spell the word correctly. The participants had to to write each word from memory three times rather than only once or until they mastered the word when they made an error. The first author added this procedure because all three students were unable to spell some words correctly on the posttest even if they had been able to spell the word correctly on the pretest.

Since Students 1 and 3 consistently made more errors on pre-tests, they had more words to learn to spell each week. So that the students would feel the CCC worksheets were equitable and to prevent too much instructional time from being spent on the worksheets, the first author only presented eleven words at a time. The eleven words included the words that the students wrote either correctly or incorrect on the pretest. If a student missed less than eleven words, each word missed was included. The remaining words on the CCC list included other words that the student had spelled correctly. If a student missed 11 or more words, the CCC list words were composed of only incorrectly spelled words. Inclusion of all words on the spelling list was used to ensure that students received sufficient practice for all words and to eliminate the possibility that a student would get a word correct on the pretest and then incorrect on the posttest.

CCC + modified spelling list

During the eighth week of instruction (after the first reversal), the first author implemented a change in the method of testing Student 3. Because of issues with dispensing of his medication at home, the first author began to modify the spelling list so that he was better able to learn his spelling list words. He still received appropriate grade level words; however, the number of words he was tested on each time was reduced by one half.

Generalization probes

Generalization probes were conducted to determine if the participants were able to generalize their spelling skills across tasks. In order to conduct these intermittent probes, the person administering the posttest was changed to the general education classroom teacher. When these probes were conducted, the spelling list words contained the same words that the students had practiced throughout the week.

Inter-observer Agreement

This was done to establish the accuracy of the spelling data.. Interobserver agreement was assessed for 95% of the data across 100% of sessions. The first author conducted an assessment independently by scoring each pre- and posttest after the test was administered. She recorded the correct and error responses on the data collection sheet for pre- and posttests. Student spelling tests were scored independently by one of two other observers. To record agreement, the secondary observer recorded data on correct and error responses from each student. This information was recorded on a data collection sheet. The primary observer then compared that secondary data to the primary observer's data. The percent of interobserver agreement was calculated by dividing the number of agreements by the number of agreements plus disagreements multiplied by 100

[(agreements/agreements + disagreements) x 100]. The overall reliability quotient for this study was 96% with a range of 86 to 100%. .

Results

Results of this study from the baseline phase through implementation, reversal, and second implementation of CCC are displayed in Figures 1 through 3.

Student 1

Baseline

Baseline data for Student 1 showed a variable trend indicating that she was able to correctly spell 35 to 70% of her spelling list words on pretests. Baseline data for posttests for Student 1 were somewhat consistent with baseline data for pretests. The posttest data showed a static trend compared to pretests, where she was able to correctly spell from 45 to 70% of her spelling list words on posttests after typical classroom spelling practice. Baseline data for Student 1 showed that she included one previous spelling word in her writing sample and was able to spell that word correctly.

CCC

Data for Student 1 showed a gradual trend indicating that she was unable to correctly spell 50 to 60% of her spelling list words on pretests. Data for posttests for Student 1 showed an increasing trend in comparison to the pretest scores. After intervention was implemented, she was able to correctly spell 80-100% of spelling list words correctly on posttests, showing an upward trend against the baseline data.

Reversal

Data for the reversal overlapped with the first baseline condition and showed that Student 1 was able to spell 70% of her spelling words correct on her pretest. Data also indicated

that she was able to correctly spell 62% of her spelling words on a posttest.

CCC

Data for the second phase of CCC showed an upward trend for the percent of words that Student 1 was able to spell correctly on posttests compared to her pretests.

Data for generalization probes for Student 1 showed that she was able to correctly spell 60 to 85% of her spelling list words during probes (Panel 2) employing different classroom teachers.

Writing Sample Probes

Data for writing samples from Student 1 are shown in Panel 3 of Figure 1. These data showed no change from baseline and she was still able to spell 1 of her past spelling words correctly in her writing sample.

Student 2

Baseline

Baseline data for Student 2 showed a static trend where he was able to correctly spell 46 to 50% of spelling list words on pretests. Baseline data for Student 2 indicated an upward trend from the pretests where he was able to correctly spell 62 to 69% of spelling list words on posttests after the typical classroom spelling practice. Baseline data on Student 2's writing sample showed that he was able to use and correctly spell two spelling list words—one previous spelling word and one current spelling word.

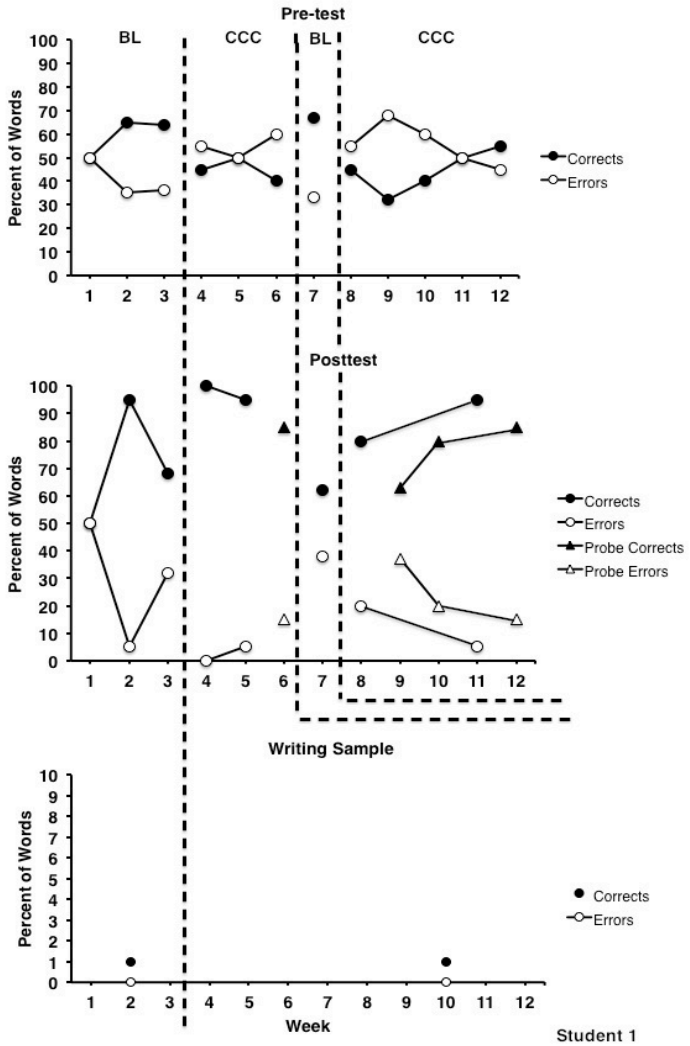

Figure 1. Results of baseline and CCC Spelling Instruction for Student 1 including generalization probes, along with results for writing sample probes. The first panel displays pretest results; the second panel displays posttest results; and the third panel displays writing sample results.

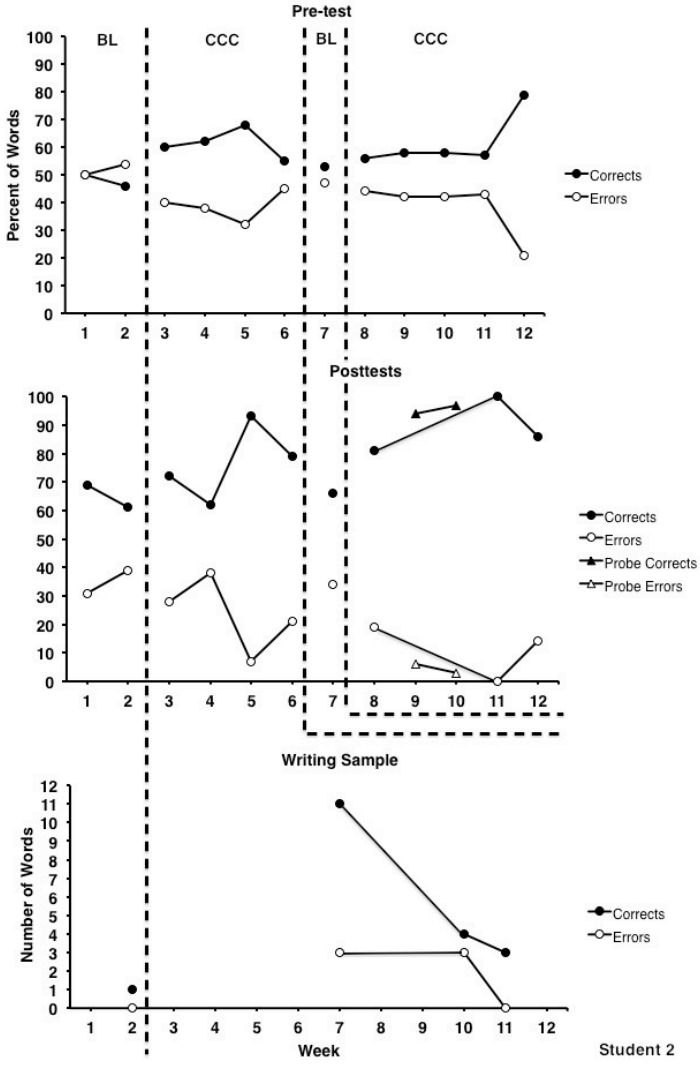

Figure 2. Results of baseline and CCC Spelling Instruction for Student 2 including generalization probes, along with results for writing sample probes. The first panel displays pretest results; the second panel displays posttest results; and the third panel displays writing sample results.

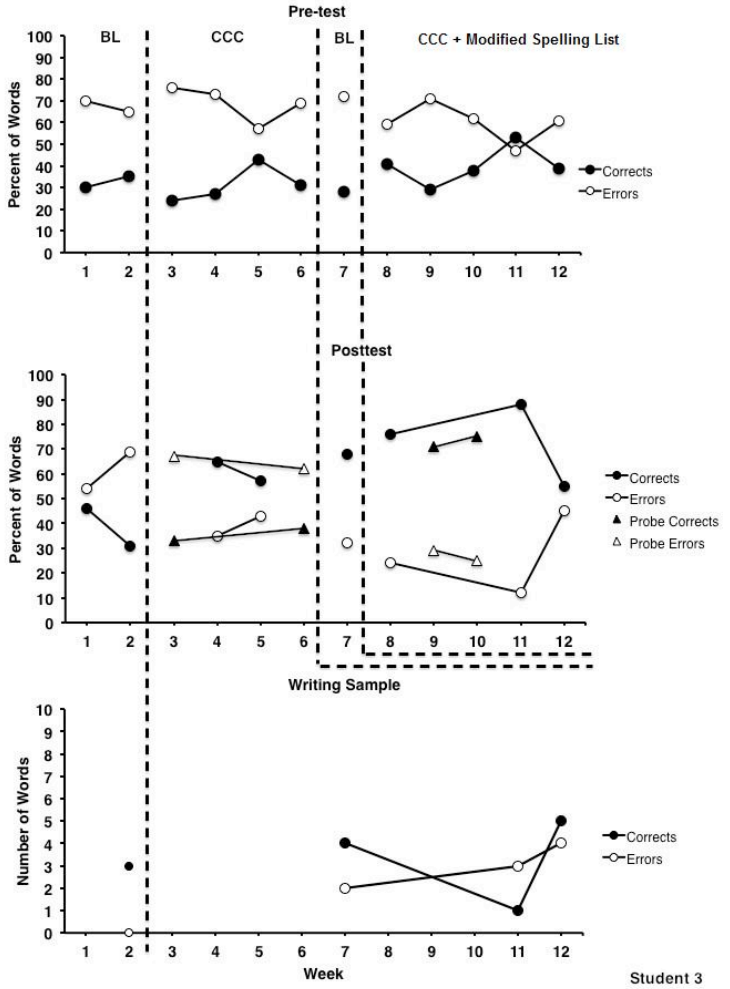

Figure 3. Results of baseline and CCC Spelling Instruction for Student 3 including generalization probes, along with results for writing sample probes. The first panel displays pretest results; the second panel displays posttest results; and the third panel displays writing sample results.

CCC

Data results for Student 2 across each of the content sets as well as the generalization probes follow. Data on pretests for Student 2 showed a gradual upward trend from baseline pretests. He was able to correctly spell 55 to 68% of spelling list words on pretests after CCC spelling was implemented. Data on posttests for Student 2 showed an upward trend compared to his pretests and compared to baseline data. After CCC spelling practice was implemented, he was able to correctly spell 63 to 93% of spelling list words correctly.

Data taken during spelling posttests using different teachers continued to show an upward trend with Student 2 being able to spell 93 to 97% of spelling list words correctly on posttests.

Reversal

Data for the Reversal part of this study on Student 2 showed that he was able to correctly spell just 53% of spelling list words on a pretest and 66% of spelling list words on a posttest after using typical classroom spelling practice. With the exception of one week during implementation of CCC, these results showed a downward trend compared to using CCC spelling practice.

CCC

Data for the second phase of CCC showed an upward trend on posttests compared to his performance on pretests. Student 2 was able to spell between 80 to 100% of his spelling list words correctly on each posttest during the second phase of CCC.

Writing Sample Probes

Data on writing sample probes for Student 2 showed that his use of current and prior spelling list words did increase. Additionally, the data show that he was able to spell more

spelling words correctly in writing samples after the implementation of CCC spelling practice.

Student 3

Baseline

Baseline data results for Student 3 across each of the content sets as well as the generalization probes follow. The results of baseline data for Student 3 pretests showed a static trend that he was able to correctly spell 31 to 35% of spelling list words on a pretest. The results of data for Student 3 posttests showed a variable trend similar to baseline data that he was able to correctly spell 31 to 46% of spelling list words on a posttest. Baseline data for Student 3 showed that he was able to use and correctly spell three prior spelling list words in his writing sample.

CCC

The results of data for Student 3 pretests after implementation of CCC spelling practice showed a variable trend similar to baseline data that he was able to correctly spell 24 to 43% of spelling list words on a pretest. Data results for Student 3 posttests showed an upward trend from baseline that he was able to correctly spell 62 to 65% of spelling list words on a posttest.

Results of the data for spelling test probes across teachers showed a static trend that he was able to spell 33 to 38% of words correctly on posttests.

Reversal

Reversal data results showed a similar trend as the first baseline phase. Student 2 was able to correctly spell 28% of spelling list words on his pretest and 41% of spelling list words on his posttest.

CCC + Modified Spelling List

After the reversal phase of this study, the spelling list for Student 3 was modified to include fewer grade level appropriate words in order to help him be successful using the CCC method of spelling practice.

Baseline data for Student 3 after he began using a modified spelling list was similar to original baseline data. Results showed he was able to correctly spell 29 to 53% of spelling list words on a pretest. Posttest data for Student 1fter he began using a modified list showed a static trend that he was able to correctly spell 72 to 75% of spelling list words on a posttest. Results of data for spelling test probes across teachers showed a consistent, static trend that he was able to spell 71 to 75% of words correctly on posttests.

Writing Sample Probes

Writing sample results for Student 3 showed a downward trend from baseline. In his writing samples after the implementation of CCC spelling practice, he wrote more prior spelling list words, but spelled fewer of these words correct.

Discussion

The results of this study demonstrate that the CCC method of spelling practice is an effective way to teach these students with learning disabilities. We also found that CCC had variable effects with the in -lass writing skills of our participants. This finding warrants further analysis.

These outcomes replicated a great deal of our classroom spelling research with CCC (Carter, McLaughlin, Derby, Schuler & Everman, 2011; Ciesler et al., 2007; Hubbert et al., 2000; McLaughlin, Reiter, Mabee, & Byram, 1991; Murphy, Hern, Williams, & McLaughlin, 1984; Schermerhorn & McLaughlin, 1997) and of others (Cates et al., 2006; Erion et al., 2009).

The variability in the data across writing samples indicated that the length of time and frequency that a student used CCC should be determined by student progress on the writing samples. It also indicated that students who have more difficulty with spelling skills should have additional instruction on writing skills in order to promote using the correct spelling of words in writing samples. Use of CCC should continue to employed until students are able to generalize correct spelling into their writing. Another option would be to use CCC to teach words that students misspelled during creating writing (Pratt-Struthers, Williams, & Struthers, 1983).

The results of using CCC for Student 1 showed a clear trend that when implemented, CCC was effective in teaching her to correctly spell her spelling words. Data from her pretests showed that she consistently spelled fewer words correct than she spelled incorrect. Additionally, as the baseline phases of the study document, the typical method of spelling practice was effective at raising the number of words she was able to spell correctly on posttests. However, using this typical method, she was still only spelling a mean of 69% of the words correctly. After implementation of CCC spelling practice, Student 1 increased her mean number of correct words on posttests from 65% to 85%. During the week of CCC where she spelled 65% of her words correctly on the posttest, Student 1 had been absent for two days. Thus, she was unable to use CCC on those days. Had she been at school and able to use CCC to practice her spelling, she likely would have spelled more words correctly on her posttest. The variation in her spelling scores during this week compared to weeks where she had more spelling practice shows the value of using the CCC method of spelling practice to improve students' spelling abilities.

In the district in which this study took place, grades are assigned on a scale from 1-4 with 4 showing that a

student was performing above grade level. A score of 3 indicated a student was performing at grade level while a score of 1 or 2 were not passing scores and indicated a student was performing well below grade level. Prior to the start of this study, Student 1 had earned a mode of 2 on her spelling tests during the current school year. After the implementation of CCC, she earned a mode of 3 on her spelling tests. This change showed Student 1 moving from below grade level performance in spelling to being able to spell at her appropriate grade level.

Writing sample probes for Student 1 were only administered twice throughout this study. Writing fluency was her lowest scoring area within Reading and Written Expression on the *Woodcock-Johnson III Test of Achievement* (Woodcock, McGrew, & Mather, 2008). There were concerns about her general ability to complete a writing sample because of her scores on the WCJ and also because of her performance on the baseline writing sample. In addition to these scores, reading comprehension presented concerns about her ability to complete a writing sample. When given the instruction to write on a given topic with a minimum of four sentences Student 1 would label four lines on her paper. Using the evidence of her writing sample, she considered each line to be one sentence. Even after receiving instruction to write the sample in paragraph format, she was unable to complete a writing sample without labeling her lines. Consequently, she was only given two writing sample tasks throughout this study: one during the baseline phase and one toward the end of the intervention. She showed little improvement in her writing; however, she was still able to incorporate one spelling list word and she spelled that word correctly. Before assessing whether she was able to generalize her spelling skills across spelling and writing tasks, Student 1 needed more instruction and practice on writing fluency in general.

The results of implementing CCC spelling practice showed more variability for Student 2. Part of this was due in large part to the frequency with which Student 2 came to resource room by his classroom teacher. During the first phase of implementing CCC spelling practice, his attendance in the resource room was sporadic because his classroom teacher infrequently sent him. However, even with intermittent attendance, he showed growth in his spelling skills. After the teacher was asked to send the student everyday and after the parent was made aware of the student's participation in this study, he began to attend the resource room more frequently. Thus, the results of using CCC during the second phase of intervention show even greater gains in his spelling skills.

During the baseline phases, Student 2 spelled a mean of 65% of his spelling words correctly. During the first phase of intervention, he spelled a mean of 77% of his spelling words correctly. This made the difference between scoring a 2 and a 3 on the district rubric. Additionally, during the second phase of CCC implementation, Student 2 showed even greater growth, spelling a mean of 92% of his words correctly. This reflects a score of 4 on the district rubric. Prior to implementing CCC spelling practice for this student, he earned a mode of 3 (with a mean of 2.3) on his spelling tests. Though he most frequently performed at grade level, he often performed below grade level. This showed an inconsistency in his spelling scores that were had hoped to be corrected by his participation in this study. After implementation of CCC spelling practice, he earned a mode of 4 on his spelling tests (with a mean of 3.2). However, he still showed inconsistencies that were determined by his classroom and resource teachers to be primarily due to motivational factors. However, his scores did show a shift from performing below or at grade level to performing at grade level or above.

Results of writing sample probes for Student 2 showed variable results, as well. In his baseline writing, he used one current or previous spelling word and was able to spell that word correctly. During subsequent writing sample probes, he increased the number of current and previous list words he used in his writing. In his second writing sample, he used a total of fourteen current or previous spelling words and was able to spell eleven of those words, or 79%, correctly. His use of current and previous spelling list words did vary; however, each of his writing samples after the start of using CCC included more of his list words than his sample during baseline. This showed that while he was not necessarily able to generalize the correct spelling into his writing, he was able to use a wider variety of words in his writing after using CCC spelling instruction.

The effect of using CCC spelling practice also had variable results for Student 3. In the first stage of CCC, positive results were seen. However, he was still only spelling 36-65% of his spelling list words correctly. While this was a gain over the number of words he was able to spell correctly on his pretests, his achievement scores still indicated he was performing below grade level. When he started to be tested on only half of the grade level spelling words, he was able to make significant increases in the number of words he was able to spell correctly on spelling posttests. During baseline and the first phase of using CCC, he was able to spell a mean of 45% of his spelling list words correctly with a range of 31 to 65%. After implementation of a modified spelling list along with CCC, he was able to spell a mean of 73% of his spelling list words correctly, with a range of 55-88%.

The positive effect of using CCC spelling practice to improve spelling skills for Student 3 was also reflected by his achievement scores on spelling posttests. Prior to implementation of CCC, he had earned a mode of 1.5 on the district rubric, indicating he was performing well below grade

level in spelling. After using CCC spelling practice to help him improve his skills, Student 3 earned a mode of 3 on his spelling posttests. These results show that using CCC and a modified spelling list, Student 3 was able to perform at grade level in spelling.

Results of writing sample probes for Student 3 were variable, showing that he was not able to consistently generalize his spelling skills into his writing. However, after using CCC spelling practice, he did begin using more of his spelling words in his writing samples. Additionally, as his spelling skills increased, he began writing more words overall in his writing samples. Previous research suggests that reading and writing fluency is a positive predictor of future academic success (Graham et al., 2002). These results indicated that while he did not always spell the words correctly, by increasing his spelling skills, his writing fluency also increased. While the ability to spell the words correctly did not generalize for Student 3, CCC still had a positive effect on his overall writing skills.

The overall conclusion that can be drawn from this study is that CCC does help students improve their spelling skills when implemented on a schedule that meets the student's present level of performance in spelling. A difficult skill for students to build, spelling skills can affect a student's ability to both read and write fluently (Cates et al., 2006). Increasing the spelling skills of students with learning disabilities can have positive and wide reaching implications for the academic skills of those students.

Study Strengths

Based on the success of using CCC to increase the spelling skills of students with learning disabilities, this study had several strengths. The study showed positive results for each of the participants, extending the research showing that CCC

is effective for providing spelling practice for students. Furthermore, the study was designed in such a way to promote generalization of spelling skills into writing. Lastly, because CCC spelling practice replaced the typical classroom spelling practice, the data truly reflect the effect of using CCC on student spelling ability.

Study Limitations

While the study did show positive results for each of the participants, there were also some limitations. Four of these limitations will be discussed in relation to how they affected the outcomes of the study.

The first limitation was that student participation in the study and use of CCC spelling practice was dependent on classroom teachers sending their students to the resource room. As Students 2 and 3 were in the same class, the teacher not sending students was a challenge for both of those students' participation.

The second limitation was that this study took place during the same time of year as mandatory high-stakes state testing. Because of absences due to testing over a two-week period, student participation and practice using CCC was limited during that time.

A third limitation was when the number of words was adjusted for Student 3, this produced a confound in the outcomes. This is true even though the data resulted in a clear example how CCC can be individualized, this issue should be addressed in future research.

Fourth, the generalization probes were only given to students in the resource classroom. In order to have a more powerful demonstration of generalization spelling performance should have been assessed across classrooms as well as across tasks. Generalization probes should have been given to students within the general education classroom as well. However, this would have required the general

education to administer the spelling test to the entire class. While this was a part of the weekly class routine at the beginning of the study, as state testing neared, the teachers stopped providing weekly spelling tests to the entire class.

Recommendations for Future Research

Future research on the use of CCC worksheets should focus on the ability of students to generalize their skills into other classroom and functional skills. For example, future research may seek to determine the effect of using CCC spelling practice in relation to both reading and writing fluency. Because spelling skills are such a vital part of reading and writing, it would be important to analyze the effects of increased spelling on those skills.

One of the most important goals of special education is to prepare students to be as independent as possible using the skills they have. Teaching spelling skills is an academic skill that can affect a person's ability to function outside of the classroom by affecting their reading and writing skills. By using CCC spelling instruction, students may increase their spelling skills. Consequently, they may generalize this skill to such functional skills as reading and writing as these are the skills they will use well beyond their school years.

References

Baker, S., Gersten, R., & Graham, S. (2003). Teaching expressive writing to students with learning disabilities: Research-based applications and examples. *Journal of Learning Disabilities*, *36*, 109-123.

Berninger, V. W., Vaughan, K., Abbott, R. D., Brooks, A., Abbott, S. P., Rogan, L.,. . .Graham, S. (1998). Early intervention for spelling problems: Teaching functional spelling units of varying size with a multiple-connections framework. *Journal of Educational Psychology*, *90*, 587-605.

Bos, C. S., & Vaughn, S. (2002). *Strategies for teaching students with learning and behavior problems* (5th ed.). Boston: Allyn & Bacon.

Cates, G. L., Dunne, M., Erkfritz, K. N., Kivisto, A., Lee, N., & Wierzbicki, J. (2007). Differential effects of two spelling procedures on acquisition, maintenance and adaption to reading. *Journal of Behavioral Education*, *16*, 70-81.

Carter, M., McLaughlin, T. F., Derby, K. M. Schuler, H., Everman, J. (2011). Differential effects of cover, copy, and compare in spelling with four high school students with severe behavior disorders. *Academic Research International, 1*, 44-52, Retrieved from http://www.journals.savap.org.pk/issue.html

Cieslar, W., McLaughlin, T. F., & Derby, K. (2008). Effects of the copy, cover, and compare procedure on the math and spelling performance of a high school student with behavioral disorder: a case report. *Preventing School Failure*, *52*, 45-51.

Codding, R. S., Eckert, T. L., Fanning, E., Shiyko, M., & Solomon, E. (2007). Comparing mathematics interventions: The effects of cover-copy-compare alone and combined with performance feedback on digits correct and incorrect. *Journal of Behavioral Education*, *16*, 125-141.

Deno, S. L., Marston, D., & Mirkin, P. (1982). Valid measurement procedures for continuous evaluation of written expression. *Exceptional Children*, *48*, 368-371.

Erion, J., Davenport, C., Rodax, N., Scholl, B., & Hardy, J. (2009). Cover-copy-compare and spelling: One versus three repetitions. *Journal of Behavioral Education*, *18*, 319-330.

Graham, S., Harris, K. R., & Chorzempa, B. (2002). Contribution of spelling instruction to the spelling,

writing, and reading of poor spellers. *Journal of Educational Psychology, 94*, 669-686.

Joseph, L. M., Konrad, M., Cates, G., Vajcner, T. A., Eveleigh, E., & Fishley, K. M. (2012). A meta-analytic review of the cover-copy-compare and variations of this self-management procedure. *Psychology in the Schools, 49*, 122-136. : 10.1002/pits.20622

Joseph, L. M., & Schisler, R. (2009). Should adolescents go back to the basics? A review of teaching word reading skills to middle and high school students. *Remedial and Special Education*, *30,* 131-147.

Kazdin, A.E., (2010). *Single case research designs: Methods for clinical and applied settings* (2nd ed.). New York: Oxford University Press.

Kosmac, A. M. (2010). Cover, copy, and compare: The analysis of a self-managed intervention to increase spelling accuracy across task and time. *Dissertation Abstracts International ,* 71 A.

Krezmien, M., & Mulcahy, C. (2008). Literacy and delinquency: Current status of reading interventions with detained and incarcerated youth. *Reading & Writing Quarterly*, *24*(2), 219-238.

MacArthur, C. A., Graham, S., Haynes, J. B., & DeLaPaz, S. (1996). Spelling checkers and students with learning disabilities: Performance comparisons and impact on spelling. *The Journal of Special Education*, *30*, 35-57.

McLaughlin, T. F., Reiter, S. M., Mabee, W., & Byram, B. J. (1991). An analysis and replication of the add-a-word Spelling Program with mildly handicapped middle school students. *Journal of Behavioral Education*, *1*, 413-426.

McLaughlin, T. F., & Skinner, C. H. (1996). Improving academic performance through self-management:

Cover, copy, and compare. *Intervention in School & Clinic*, *32*, 113.

Murphy, J. F., Hern, C. L., Williams, R. L., & McLaughlin, T. F. (1990). The effects of the copy, cover, and compare approach in increasing spelling accuracy with learning disabled students. *Contemporary Educational Psychology, 15*, 378-386.

Nies, K. A., & Belfiore, P. J. (2006). Enhancing spelling performance in students with learning disabilities. *Journal of Behavioral Education*, *15*, 162-169.

Peterson, J. L., Marchand-Martella, N. E., & Martella, R. C. (2008). Assessing the effects of *Corrective Reading Decoding B1* with a high school student with intellectual and developmental disabilities: A case study. *The Journal of Direct Instruction*, *8*, 41-52.

Pratt-Struthers, J. P., Struthers, T. B. & Williams, R. L. (1983). The effects of the Add-A-Word spelling program on spelling accuracy. *Education and Treatment of Children, 6*, 277-283.

Scarlato, M. C., & Asahara, E. (2004). Effects of corrective reading in a residential treatment facility for adjudicated youth. *Journal of Direct Instruction*, *4*, 211-217.

Schermerhorn, P. K. & McLaughlin, T. F. (1997). Effects of the add-a-word spelling program on test accuracy, grades, and retention of spelling words with fifth and sixth grade regular education students. *Child & Family Behavior Therapy*, *19*, 23-35.

Shippen, M. E., Houchins, D. E., Steventon, C., & Sartor, D. (2005). a comparison of two direct instruction reading programs for urban middle school students. *Remedial and Special Education*, *26*, 175-182.

Smith, T. J., Dittmer, K. I., & Skinner, C. H. (2002). Enhancing science performance in students with learning disabilities using cover, copy, and compare: A

student shows the way. *Psychology in the Schools*, *39*, 417-26.

Troia, G. A., & Graham, S. (2003). Effective writing instruction across the grades: What every educational consultant should know. *Journal of Educational & Psychological Consultation*, 14, 75-89.

Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock Johnson Psycho-educational Battery*. Reading Meadows, IL: Riverside Publishing.