

DIFFERENTIAL EFFECTS OF COVER, COPY, AND COMPARE IN SPELLING WITH FOUR HIGH SCHOOL STUDENTS WITH SEVERE BEHAVIOR DISORDERS

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ABSTRACT

The purpose of this study was to evaluate the effects of cover, copy, and compare (CCC) for teaching spelling of commonly used words with four high school students with behavior disorders. CCC is a self-tutoring and managed practice procedure where known and unknown spelling words are taught using CCC worksheets, error correction, small individualized word lists, and frequent testing. Practice typically involves students copying a word from a list, and then copying the same word from memory. If the student makes an error, they are required to correctly spell the word again three times before moving to the next word. The effectiveness of CCC was evaluated with combination multiple baseline and reversal design. The results indicated that CCC was effective in increasing the spelling accuracy of 240 commonly used words. However, the reversal procedure generated differential effects between the participants. Specifically, the return to baseline was not replicated for two of the three participants. The CCC procedure required little teacher time or training and was an overall success in a special education high school classroom setting.

Keywords: cover, copy, and compare, high school students, spelling, behavior disorders, single case research designs, action research

INTRODUCTION

Being able to spell commonly used words is a prerequisite skill for academic success, especially in written communication as well as in reading. A student's ability to spell words correctly shows a sophisticated understanding of the letters, sounds, and syllable patterns that make up the English language; as well as other languages (Bear & Templeton, 1998). As a result, spelling is a very complicated and tasking subject to teach students in an efficient manner (Wanzek, Vaughn, Wexler, Swanson, Edmonds, & Kim, 2006). A serious deficit in spelling commonly used words suggests that a student is lacking the prerequisite language skills; which form the basis of nearly all academic disciplines. Skills associated with successful reading, such as phonological knowledge, also play a role in spelling (Abbot & Berninger, 1993).

For high school-aged students, spelling is an important skill across various curricula, grade levels, and

subject-matter areas (Graham, Morphy, Harris, Fink-Chorzempa, Saddler, Moran, & Mason, 2008). High school students are required to spell words correctly whether they are in a biology, history, or English class. As a result, learning to spell words correctly can be a key component of a student's academic success (Graham, Harris, & Fink-Chorzempa, 2002). Additionally, students with learning and behavioral disabilities often come into classrooms with lower skill sets than the average student. It is extremely important that these students are provided with the skills they are lacking (Graham et al., 2008; McLaughlin, Weber, & Barretto, 2004; Nies & Belfiore, 2006; Templeton, 1986).

With the importance of spelling for academic success, it is particularly important that educators utilize teaching tools and methodologies which have been proven to empirically result in academic success (Graham, Harris, Fink-Chorzempa, & Adkins, 2004). In order to reach the highest level of success in the classroom, teachers need to utilize interventions which are both efficient and can be employed with a whole class. One intervention that reduces the necessity for one-on-one instruction, and has been shown to be effective in increasing spelling performance across a wide range of academic tasks, is cover, copy, and compare or copy, cover, and compare (CCC) (Cates, Dunne, Erkfritz, Kivisto, Lee, & Wierzbicki, 2006). CCC is an inexpensive self-managed and self-tutoring intervention which does not require extensive training to implement (McLaughlin & Skinner, 1996; Neis & Belfiore, 2006; Skinner, McLaughlin, & Logan, 1997). Cover, copy, and compare has been employed across a wide range of classroom settings ranging from resource rooms (McLaughlin, Mabee, Reiter, & Byram, 1991) to self-contained special education classrooms (Hubbert, Weber, & McLaughlin, 2000; Cieslar, McLaughlin, & Derby, 2008). In addition, CCC has been effective across a diverse range of students ranging from typically developing (Schermerhorn & McLaughlin, 1996) to students with a wide range of disability designations (Ceislar et al., 2008; McLaughlin et al., 1991; Pratt-Struthers, Bartalamay, Williams, & McLaughlin, 1989; Skinner, Belfiore, & Pierce, 1992; Skinner, Turco, Beatty, & Rasavage, 1989; Smith, Dittmer, & Skinner, 2002). Finally, cover, copy, and compare has been employed in elementary school (Hubbert et al., 2000), middle (McLaughlin et al., 1991), high school (Ceislar et al., 2008), and home settings (Stading, Williams, & McLaughlin, 1996).

The purpose of this study was to increase the correct spelling of commonly used words of four high school students enrolled in a special education self-contained classroom for students with behavioral disorders. Another purpose was to extend previous work with cover, copy, and compare (Hubbert et al., 2000; McAuley & McLaughlin, 1995; Pratt-Struthers et al., 1989; Struthers et al., 1994) and that of Skinner and his colleagues (Skinner et al., 1992; Smith et al., 2002) to high school students with severe behavior disorders.

METHOD

Participants and Setting

There were four participants in the investigation. Participant 1 was a 15-year-old-male student enrolled in the ninth grade at a high school in the Pacific Northwest. He was diagnosed as having both a learning disability and a behavior disorder by the school psychologist, and the school IEP team. At the time of the study, the participant was enrolled in a behavior intervention (BI) class for five out of his six classes per day. He had IEP goals in reading and writing, in addition to behavioral goals. Participants 2 through 4 were all 16 years of age and high school juniors. Each had been diagnosed with behavior disorders by the school IEP team and were attending the behavior intervention classroom. Three of the four were below grade level (6 months to 3 years) in spelling from testing using the *Woodcock Johnson Psycho-educational Battery IV Form A* (Woodcock, McGrew, & Mather, 2001). When each participant was tested during baseline to determine how many commonly used words they could spell correctly, Participant 3 made the most errors followed by Participant 1 and then Participant 2. Participant 4 made only a few errors.

The setting for this study was a self-contained behavior intervention high school classroom. The classroom was housed in a large urban high school located in the Pacific Northwest. The high school was located in a low-income area of the city, and 89% of the students qualified for free or reduced

lunch students. The class provided educational services for ten 9th through 11th grade students, who ranged in age from 15 to 17 years. The classroom had three rows of desks all facing forward and a desk facing the wall that was designated as the “time out” area. The school office was across the hall from the classroom and students would sometimes be asked to wait in the office when their behavior became highly inappropriate. The classroom employed a modified token economy (McLaughlin & Williams, 1988). The token system utilized classroom points that were part of a school-wide discipline plan in the high school. These points could be exchanged from such items as free time, computer games, or improved daily classroom grades. Each of our participants usually exchanged their points for improved daily grades. The classroom personnel consisted of a lead teacher, two instructional assistants, and the first author.

Materials

The CCC work sheets and testing materials can be seen in Figures 1 and 2. The materials employed were a word list of 240 commonly used words, CCC worksheets and posttest and reversal test print-outs, and writing materials. Additional samples of CCC worksheets and materials can be found in McLaughlin and Skinner, (1996) or Schermerhorn and McLaughlin, (1997) for additional examples.

Dependent Variable and Measurement Procedures

The dependent variable was the percent correct for 240 of the commonly used words. A correctly spelled word was defined as a word that exactly matched the spelling of the word on the spelling list. The percent correct was obtained by dividing the number of correct words by the total words possible. During baseline this consisted of 240 words and for the CCC and reversal condition, a total of 10 words were scored each session

Data Collection

Data collection was part of the cover, copy, and compare intervention, including baseline and reversal. A permanent product was created each time a participant completed a baseline test, a CCC worksheet, each CCC posttest, or the tests used during the reversal. These data were gathered after lunch during all of the participant’s study skills class. These scores were taken either in the first or last five minutes of the class, depending on the objectives the classroom teacher for that particular day. Participant 3 consistently took the longest to complete his CCC worksheets and tests, but would never take longer than 10 minutes. Data for all participants were taken over a ten-week period. One data point was marked on a scatter plot for each day of data collection.

Experimental Design and Conditions

A combination multiple baseline with a reversal design (Barlow, Nock, & Hersen, 2008) across participants was used. The second participant had two sessions of baseline while the other three participants only completed one session of baseline. The limited number of baseline data points was completed at the suggestion of the two certified master teachers (fourth and fifth authors)

Baseline. During baseline, the first author tallied the number of correctly spelled commonly used words for all four participants. The participants were not provided with any feedback on whether or not the words they wrote were correct or incorrect. Based on the recommendations of the classroom teachers, this condition was in effect for one to two sessions.

Cover, copy, and compare. This consisted of presenting CCC worksheet to the participants (see Figure 1) in which the participants: spelled the word, copied the word from a sample, wrote down the word from memory, compared the written word to the sample, and spelled the word again. If a participant misspelled a word during any portion of the worksheet they were asked to write the word three times in a space provided below. Each participant was given two previously missed words and

three previously correct words to review. For post testing (see Figure 2) and reversal tests, the participants were asked to spell the words given to them orally by the first author.

Reversal. For the reversal, the participants were asked to spell the words given to them orally by the researcher and the CCC worksheet was not employed. This condition was in effect for two sessions.

Reliability of Measurement and Fidelity of the Independent Variables

Inter-observer agreement was taken for each session. Reliability was completed by regarding the student spelling tests from baseline, CCC worksheets, CCC posttests, and the reversal. An independent observer (the regular classroom teacher) rescored the spelling tests. Inter observer agreement was calculated by dividing the number of agreements by agreements plus disagreements and multiplying by 100. An agreement was scored if both scored the word in the same manner. A deviation in scoring was noted as a disagreement. Inter observer agreement was 100% for all sessions. Fidelity as to the implementation of the various experimental conditions (Horner, Carr, Halle, McGee, Odom, & Wolery, 2005) was established by having the second and third authors observe the procedures and determine which experimental phase was in effect. These data were taken on 28 separate occasions. Fidelity for implementing the various experimental conditions was 100% across conditions and participants.

RESULTS

The results for each participant can be seen in Figure 3. During baseline, the percent correct in spelling for Participant 1 was 82% (range 80% to 84%). Participant 2 scored 87% in baseline. Participant 3 scored 67% for baseline while Participant 4's baseline score was high (96%). When CCC was employed, the spelling scores increased for each of our participants (range 80% to 100%). All participants decreased their overall spelling performance during the reversal period, when no CCC review worksheets were employed. Participant 3 had the lowest scores ($M = 60\%$) while Participant 2's performance declined the least during the reversal. Participant 1's performance decreased to 80% and then improved to 100%. The fourth student withdrew from the study before the second baseline could be implemented. All participants except Participant 4, who left the program early, had at least five consecutive sessions at 100% accuracy.

DISCUSSION

The use of CCC increased the percent of words spelled correctly for all participants in the study. Importantly, the words in this study were all high use words for each participant. The present outcomes extended previous research using cover, copy, and compare (Bolich, Kavon, McLaughlin, Williams, & Urlacher, 1995; Hubbert et al., 2000; McAuley & McLaughlin, 1992; McLaughlin et al., 1991; Murphy, Hern, Williams, & McLaughlin, 1990; Skinner et al., 1991, 1992) and high school students with behavioral disabilities (Cieslar et al., 2008). These outcomes further broaden and replicate the work of Skinner and his colleagues within a high school setting (Skinner et al., 1992; Smith et al., 2002).

There were several strengths in this study. First, was the short amount of time that was needed by the instructional staff to implement the procedures during each session. We found that it was never the case that a student would need more than 10 minutes to complete a CCC worksheet and posttest. This is a crucial element of any intervention because time is a precious commodity for any teacher, particularly a high school special education teacher. Moreover, because of the format of the intervention, the first author could have all four participants work at the same time. This made implementing the intervention very efficient. Finally, the outcomes supported the use of CCC with our participants.

There were limitations in the present investigation. First, while the CCC worksheets took relatively little time to implement, at times it was a challenge for the first author to make sure that every day

there was five new words to be reviewed for each participant. To do this the first author had to track previously used words for each participant and make sure no word was presented more than once. While tracking of student words was not a major ordeal in terms of complexity, it did demand a constant diligence in creating CCC worksheets on a daily basis. Second, the failure of the first participant to decrease his spelling accuracy during the reversal may indicate that something other than the CCC procedure interacted to maintain his spelling. Another explanation would be that since spelling is an academic behavior, it may have generalized from some of his other classes (Stokes & Baer, 1977, 2003). It has been suggested that employing an academic behavior is less likely to reverse when the intervention is withdrawn than a social behavior (Horner et al., 2005). A more appropriate design to employ when one suspect that the behavior may not revert to baseline levels would have an alternating treatments design (Barlow et al., 2008)

Taking into account the large amount of research supporting CCC in multiple settings, it appears clear that this intervention falls under the category of evidence based practices. With evidence based procedures mandated in the most recent IDEiA (U. S. Department of Education, 2004) legislation, it is critical that evidence based interventions such as CCC be utilized to the highest extent possible; in both general and special education settings. In addition, it appears that CCC could be employed as either a Tier 1 or Tier 2 intervention to document a response to intervention with selected students. Given the straight-forward nature of CCC, it should be possible to have entire classrooms complete CCC worksheets on a daily or weekly basis without the assistance of instructional aides.

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Cover, Copy, and Compare Worksheet

Name: _____ Date: _____

1. Practice Words	2. Spelling Check	3. Copy Word	4. Cover/Copy And Compare	5. Spelling Check
1.				
2.				
3.				
4.				
5.				

Practice Sheet for Words Missed

1.			
2.			
3.			
4.			
5.			

Figure 1. Example of a cover, copy, and compare review worksheet.

Cover, Copy, and Compare Post test Form

Name: _____ Date: _____

1. _____
2. _____
3. _____
4. _____
5. _____

Figure 2. Example of a cover, copy, and compare post test form.

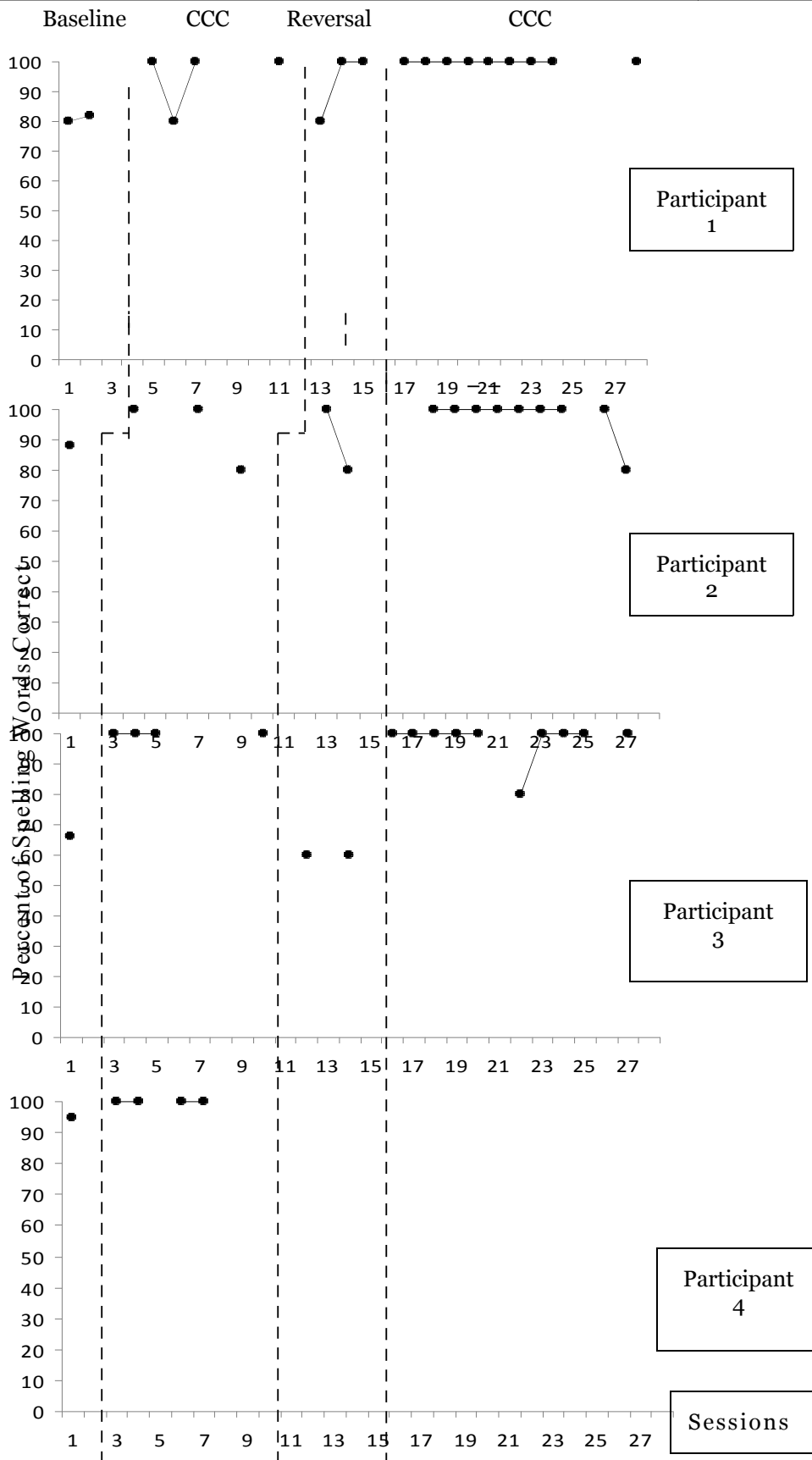


Figure 3. The percent correct for baseline using the 240 most commonly misspelled words, the first CCC procedure, a reversal without the CCC worksheet, and the last CCC condition for Participants 1 through 4. Omitted data points indicate student absences.