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THE EFFECTS OF SPELLING RACETRACKS ON THE SPELLING OF GRADE LEVEL CORE WORDS WITH FOURTH-GRADE STUDENTS WITH DISABILITIES**

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ABSTRACT

The purpose of the present study was to examine the effects of spelling racetracks on the spelling of grade level core words with three fourth-grade students with learning disabilities. Data were collected on the number or words correct during the daily exercise, as well as on the number of words spelled correctly during the end of the week spelling tests. These data were gathered in the elementary school resource classroom. The overall results indicated an increase from baseline scores on the spelling of grade level core words for each of the participants. The procedures were easily implemented and data collection was straightforward and took little teacher time. Recommendations for future research using racetrack-like procedures were made.

Key words: Spelling racetracks, Elementary students with disabilities

INTRODUCTION

The ability to spell is a critical skill in the educational process. Hubbert, Weber, and McLaughlin (2000) noted than difficulty in spelling has dire consequences for students both socially and academically. The incapacity to manipulate one's environment through writing also places limits on age-appropriate participation and future success. As children embark upon adolescence and early adulthood, a necessity for accuracy and fluency in writing arises (Kearney & Drabman, 1992; Shapiro, 2011).This correlation between spelling and school success has served as a catalyst for a large number of spelling intervention studies. Research has suggested that procedures for spelling are not equally effective (Arra & Aaron, 2001; Gettinger 1994; Gettinger 1985; Graham & Freeman, 1986; Kearney & Drabman, 1992), or efficient (Cates, Skinner, Watson, Meadows, Weaver, & Jackson, 2003) across students with regard to acquisition and maintenance of basic skills in spelling.

Furthermore, students with learning disabilities often struggle far more than that of non-learning disabled peers in regards to spelling acquisition and fluency. Darch, Kim, Johnson, and James support this when they state, "although most students with learning disabilities have difficulties with all forms of written expression, spelling problems rank at some of the most difficult to remediate, and common." Because students with learning disabilities struggle with spelling, it is important to provide formal instruction on both strategies and the spelling of words. Research supports that explicit spelling instruction proves to be the most effective when teaching spelling to students with learning disabilities. Wanzek, Vaughn, Wexler, Swanson, Edmonds, and Kim (2006) completed a synthesis of spelling interventions and their effects on students with learning disabilities. Their findings revealed that, "spelling outcomes were consistently improved following spelling interventions that included explicit instruction with multiple practice opportunities and immediate corrective feedback after the word was misspelled." Many strategies, which involve explicit instruction, have been used to teach spelling and are proving to be successful.

Reading racetracks is an explicit procedure that has been used to teach sight word fluency. It incorporates all important aspects notes by Wanzek, Vaughn, Wexler, Swanson, Edmonds, and Kim

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(2006). For example, this procedure is explicit; it provides multiple practice opportunities, and immediate corrective feedback. Reading racetracks have produced a great deal evidence supporting their efficacy (Alexander, McLaughlin, Derby, &Cartmell, 2008; Anthony, Rinaldi, Hern, & McLaughlin, 1997; Falk, McLaughlin, & Band, 2003; Green, McLaughlin, Derby, & Less, 2010; Kaufman, McLaughlin, Derby, & Waco, 2011; McLaughlin, Weber, Derby, Hyde, et al. 2011; Petersen, McLaughlin, Derby, & Higgins, 2008; Printz, McLaughlin, & Band, 2006; Rinaldi& McLaughlin, 1996; Rinaldi, Sells, & McLaughlin, 1997). Much of this research with elementary students with learning disabilities indicated that all of the participants more than doubled their correct rate in oral reading. Arkoosh, Weber, and McLaughlin (2009) were able to employ a spelling racetrack with a single general education student who was below grade level in spelling. Employing an ABAB single case research design (Kazdin, 2010), they found that employing a motivational system as well as a spelling racetrack improved his performance. However, the effects of employing a spelling racetrack by the addition of a classroom motivational system cannot be discounted.

The purpose of this study was to examine the effects of spelling racetracks on the spelling skills of grade-level core words with fourth-grade students with disabilities. This first author developed and created a procedure modeled after reading racetracks to teach elementary students spelling. These tracks were designed to improve spelling skills. The final purpose was to replicate the work of Arkoosh et al. (2009) with elementary students with a wide range of disabilities.

METHOD

Participants and Setting

The participants in this study were three fourth-grade boys at a Title 1 school in Eastern Washington. Participant 1 was a nine-year-old boy who was diagnosed with Developmental Delay and Attention Deficit Disorder (ADD). Though placed in a regular education classroom, he received 60 minutes of special education services per day in the resource room for reading, writing, and math. Participant 2 was a nine-year-old boy diagnosed with ADD. He also received 60 minutes of special education services in the resource room per day. Participant 3 was a nine-year-old boy diagnosed with a learning disability. He was spent 60 minutes at day in special education for reading, writing, and math.

The school that these participants attended was the lowest socio-economic school in a large urban city in the Pacific Northwest. Approximately 89.9% of the students received free or reduced breakfast and lunch. In addition, over half of the students had one or more parent in jail. Each of the participants lived with only one parent. This study was conducted in the resource room four times per week. The three participants were among 12 other students receiving services during the time that the study was conducted. All of the students present were included in the task; however data were collected for the three participants only. Also present was this researcher, the classroom teacher, and an instructional assistant. The study took place from the beginning of March until the end of May.

Materials

A variety of materials were used in during the implementation of this research: District grade-level core word lists, spelling racetracks for each grade-level core word list (created by the first author), a timer, pencils, and notebook paper for spelling tests.

The spelling racetracks were created from the grade-level core word lists used in the district. The spelling tracks were designed to resemble an automotive racetrack. The words placed on each track were chosen at random. We were also careful to prevent placing words that were visually or auditorily similar on the same racetrack.

Dependent Variables and Measurement Procedures

Two dependent variables were measured during this study. The first was the number of words spelled accurately on the daily spelling racetrack drill sheet during a one-minute timing. The second was the number of words spelled accurately on the spelling test at the end of the week in the resource room. A correct was scored if the word was spelled correctly, meaning all of the letters in the given word were in the appropriate order. Words were not marked as incorrect if the form of the letters was incorrect.

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For example, if the student wrote a backwards "e" or a capital "E" when it should have been a lowercase, they were not marked as incorrect.

Experimental Design and Conditions

A multiple baseline design across participants (Kazdin, 2010) was used to evaluate the effects of spelling racetracks. A description of the various conditions follows.

Baseline

Baseline was conducted on one day for Participants 1 and 3. Baseline was conducted across two days for Participant 2. To obtain a baseline measurement, this researcher tested the three participants on 25 words from three different grade level core word lists (Kindergarten, First Grade, and Second Grade). The words were selected at random from each list. Because there were only 12 words on the Kindergarten core word list, all 12 were tested. The students were told the word and then given the word in a sentence. They then had to write the word on a numbered piece of paper. The participants were required to spell the word with 100% accuracy in order to get it correct. Participant 1 received a score of 42% during his baseline testing (26 out of 62 words). Participant 2 scored a 69% during baseline testing (43 out of 62 words). Participant 3 received a score of 71% during baseline (44 out of 62 words).

Spelling racetracks

The participants were introduced to spelling racetracks. Each racetrack contained 15 cells, thus each track introduced 15 unknown words. The racetracks were copied on the front and backside of a piece of paper. Because the core word lists had more than 15 words on them, each grade level had multiple spelling racetracks (1^{st} – A, 1^{st} – B, etc.). Each cell contained the unknown word, and space below it to copy the word.

The participants were given one minute to move around the track. As they were going around the track, the participants were required to say the word aloud, then spell the word aloud, and then write the word in the given space. For example, if the first word was 'mom,' the student would say the word "mom," and then spell the word aloud, "m-o-m," and then they would write the word in the given space. They completed this process for each word on the track within the one-minute timing.

After the timing, students were paired for a partner practice. During partner practice, one participant would go around the track saying the word aloud and spelling the word aloud. The partner followed along to make sure the other person was saying and spelling the word correctly. Once the track was completed one time around, the other partner would go and follow the same procedure.

After completing the partner practice, the participants turned the papers over and prepared for a second one-minute timing. The participants followed the same procedure as they did for the first timing (say the word aloud, spell the word aloud, write the word). This second timing was the score used for daily data collection.

If the participants completed the track before the one-minute timing had stopped, they were instructed to continue going around the track as many times as possible. Data was taken daily on the number of words accurately completed during the second one-minute timing.

The participants were required to obtain at least 80% accuracy on the end of the week spelling test in order to move to the next racetrack. If the participants did not meet the 80% requirement, they remained on the same track for the next week. The participants were automatically moved to the next track after three weeks. This took place regardless of their performance.

After observing that the weekly spelling test scores were decreasing across all three participants, the procedure was altered. A motivations system was increased for the three participants. The participants created sticker charts, and based on daily performance (effort, handwriting, and correctly following the procedure), the participants were allowed to place a sticker on their individual charts. Student effort was determined by the first author. When the students earned a minimum of 12 stickers each, a party was given in the classroom. Further, Participant 1 and Participant 3 were given an additional 30 seconds to complete the daily racetrack, thus increasing the timings to one minute and

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thirty seconds. Participant 2 completed the racetrack one time immediately before the spelling test, which the others were not permitted to do. As indicated by the results, these were effective changes to the procedure.

Reliability of Measurement

Reliability was taken using the permanent products of either the spelling racetrack, for daily data, or the spelling test, end of the week data. The instructional assistant and the first author recorded the scores during every session. The inter-observer agreement for the daily scores on the racetracks was 100% for all three participants. Inter-observer agreement for the weekly scores was 100 % for Participant 1, 100% for Participant 2, and 100%, for Participant 3. Reliability as to the implementation of the spelling racetrack procedure was taken three times. The second author came to the classroom and monitored the implementation of the spelling racetracks procedure. The fidelity of implementation of the spelling racetrack procedure was 100% for the three classroom observations. From available data collection forms and student spelling racetracks (N = 48), the procedure was completed with 100% fidelity.

RESULTS

The overall results indicated an increase in the ability to spell grade level core words and this skill generalized to end of the week tests in general education. This was noted for each of the participants.

For Participant 1, the percent of words spelled correctly during baseline was 42%. His accuracy increased when spelling racetracks was employed (M = 79%; range 60% to 100%). During daily practice, the mean number of words completed on the racetrack was 19.2 (range 5 to 27) per session.

The mean percentage of words spelled correctly during baseline for Participant 2 was 70% (range 69% to 71%). The mean percentage of words spelled correctly during spelling racetracks increased (M = 91%; range 80% to 100%). During daily practice with spelling racetracks, the mean number of words completed per racetrack was 18.5 (range 15 to 27).

For Participant 3, the percentage of words spelled correctly during baseline was 71%. His accuracy for weekly tests increased with spelling racetracks was employed (M = 96; range 87% to 100%). The mean daily practice, the mean number of words completed on the racetrack was 26.7 with range 19 to 35 words).

The overall average percentage increase from baseline results for all three participants was 27%. As can been seen in Figure 1, changing the procedures during the last week to either increased time to go around the track or having the child complete a spelling track just before the test (Participant 3), improved the performance for each of the students.

DISCUSSION

The data collected during this procedure would indicate that the spelling racetracks were successful with students with disabilities. The increased ability to accurately spell core words was likely a direct result of the intervention. The use of spelling adds to the applicability of employing a racetracks type of procedure. We have reported positive outcomes in reading (Alexander et al., 2008; Falk et al., 2003; Printz et al., 2005; Rinaldi& McLaughlin, 1996; Rinaldi et al., 1997) and math (Beveridge, Weber, Derby, & McLaughlin, 2005). The present data set provide the second replication for using racetracks in spelling. It is the first replication with data as to the efficacy of spelling racetracks for students with mild disabilities.

Spelling racetracks, aside from being effective, can be easily implemented and at little or no cost to a teacher or school. The process only took the first five minutes of class to complete each day. The grading of the racetracks and weekly tests was also minimal. Also we feel these procedures could be implemented effectively with a large group of students; even with the different ability levels in spelling. The development of the materials is somewhat time intensive, but overall, the spelling racetracks were shown to be an effective and efficient way to teach spelling. Another benefit to using spelling racetracks in the classroom was that the participants truly enjoyed doing them every day.

There are some considerations to consider by educators when employing spelling racetracks as part of a spelling curriculum or program. First, a review lesson or track should take place at least monthly. This should be completed to ensure that the students are maintaining their improvements in spelling. The tracks themselves may not necessarily promote retention unless some form of systematic review was included. Another option would be to employ review tracks as we have employed in reading and math (Anthony et al., 1997; Alexander et al., 2008; Green, McLaughlin, Derby, & Lee, 2008, 2010; Rinaldi& McLaughlin, 1996; Rinaldi et al., 1997). Second, if students are having difficulty with a particular spelling racetrack, they will have to repeat that particular track. In the present research, one of our participants remained on the same track for three consecutive weeks. At this same time his classroom peers were having the opportunity to learn 45 different words. The tracks could be set up so that the teacher could make the spelling track for each week would contain only the words that the student missed on the previous track. In this way the words that he or she already know would not have to be repeated. This suggestion however, would require a lot of planning and monitoring, especially for large groups of students.

As noted, the amount of time the students have to complete the track need to be considered carefully and adapted as necessary. Some students may never be able to complete a spelling track during a one-minute timing. For such students, more time may be needed. In the present research we added 30 seconds for two of our participants. Finally, it may well be that certain students are different grade levels can do few words (i. e. first or second graders) while older students (fourth, fifth, or sixth graders) could need more words. Finally, the size of the spelling racetracks could be changed where more than just 15 words could be placed on a particular track. These and other questions regarding the efficacy and practicality of spelling racetracks will have to be answered in future research.

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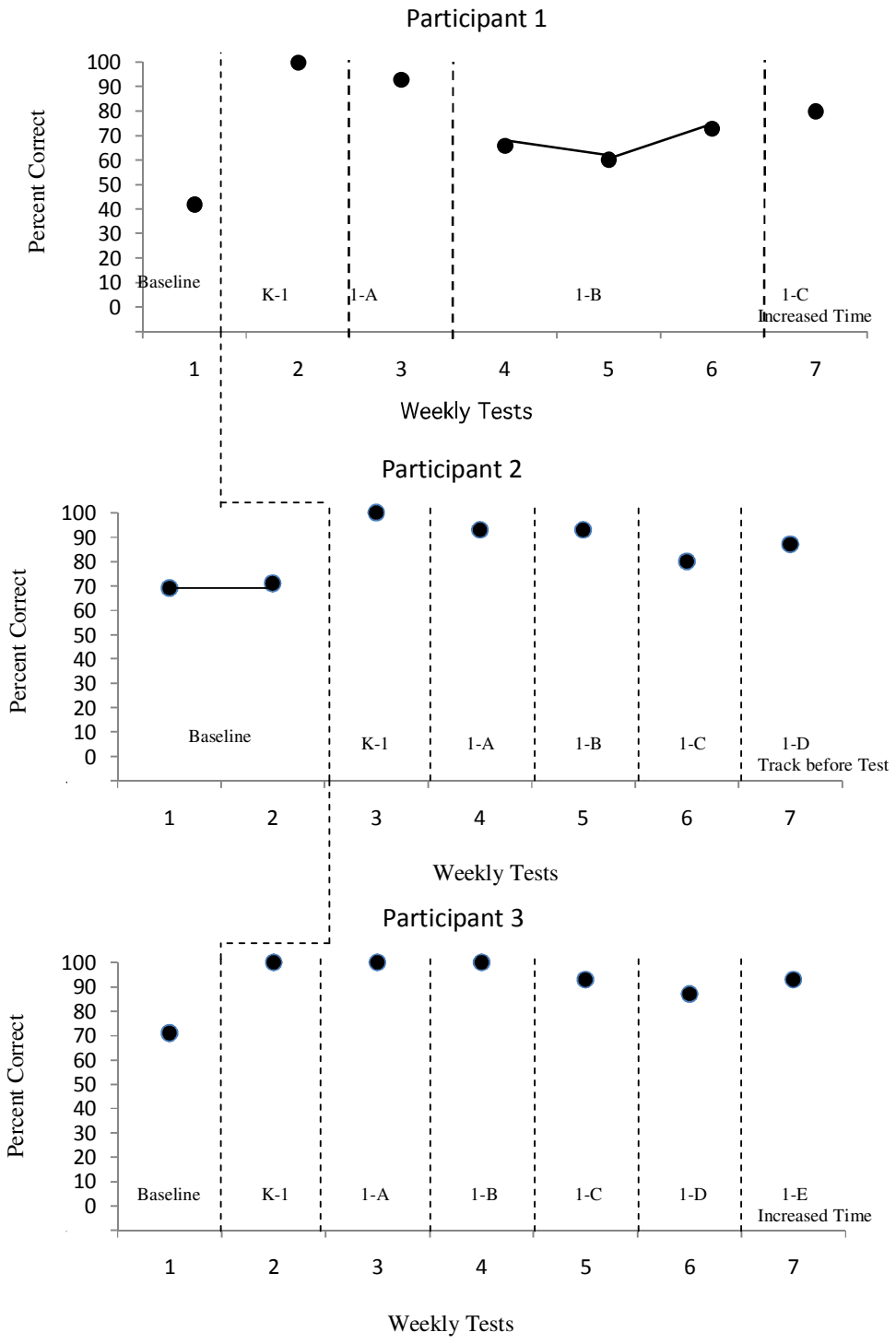

Figure 1. The percent correct on the end of the week spelling tests for baseline, differing spelling racetracks (k-1 through 1-e) and two modifications in procedures (increased time or completing a racetrack before the end of the week test).

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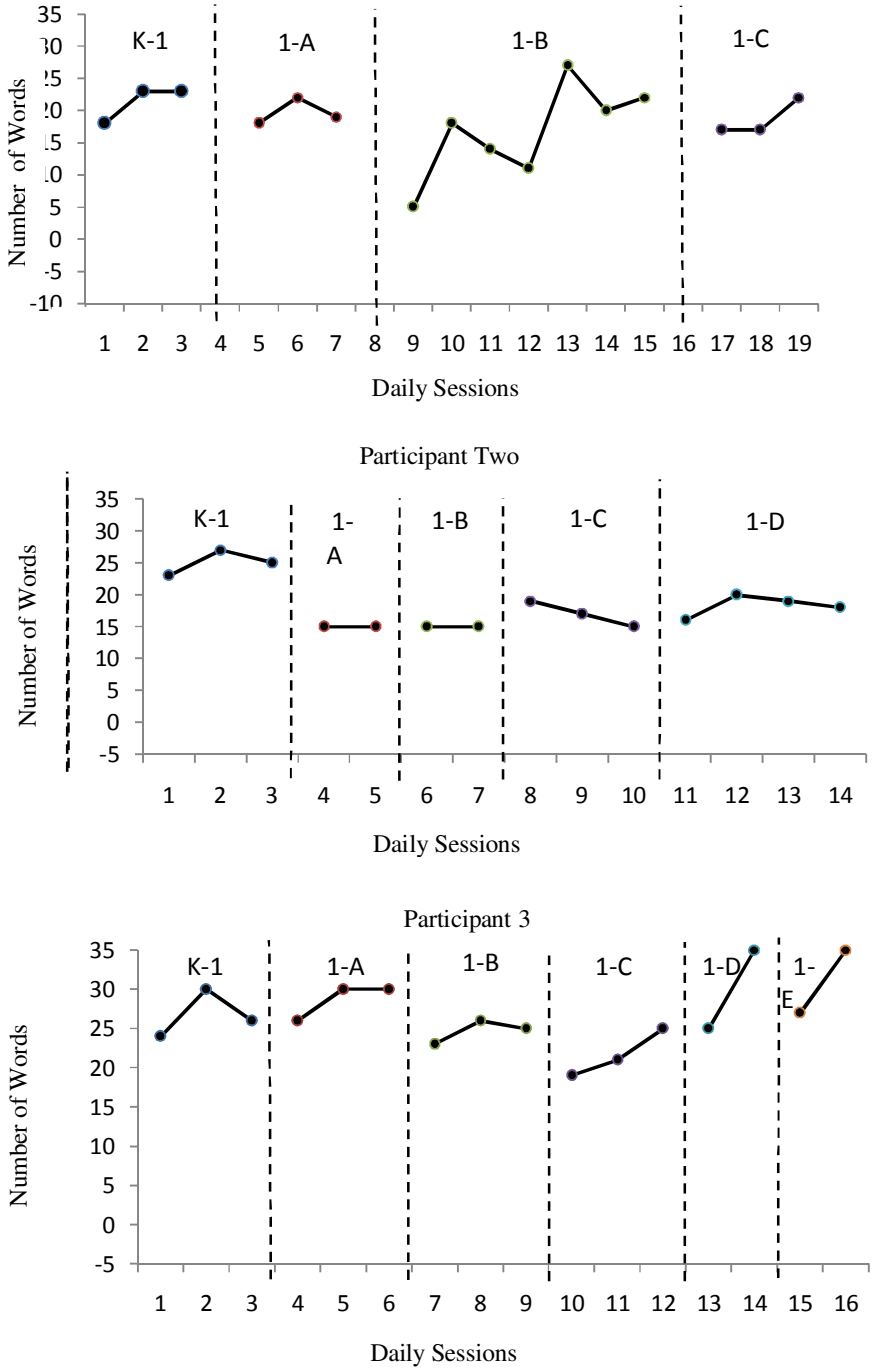

Figure 2. The number of words correct for daily testing sessions using spelling racetracks (K-1 through 1-E).