Reading Racetracks: A Direct Replication and Analysis with Three Elementary School Students

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We used "reading racetrack" procedure and Precision Teaching techniques to increase the accuracy and fluency that three fourth-grade students read Grade Two Priority Words in isolation. One participant received special education services for learning disabilities. School personnel viewed the other two participants as academically at risk. During the reading racetrack intervention, participants improved their accuracy and fluency in reading sight words. We discussed the applicability of employing reading racetracks as a drill and practice procedure for children academically at risk.

Children who read well usually achieve well in school (Slavin, 1996; Slavin, Madden, Dolan, Waski, Ross, & Smith, 1994). Children who do not read well have a greater instance of dropping out of school and have less success in work and other life skill. (Howard, McLaughlin, & Vacha, 1996). Unfortunately, educators continue to disagree as to how to improve their reading skills, so all the students will be literate when leaving our current educational system (Rinaldi & McLaughlin, 1996; Rinaldi, Sells, & McLaughlin, in press; Slavin, 1996).

We used the "reading racetrack" procedure and Precision Teaching techniques to improve the accuracy and fluency that students read Grade Two Priority Words in isolation. We also replicated and extended the findings of Rinaldi and McLaughlin (1996) with students with and without disabilities. In the present replication we used a more rigorous experimental design that Rinaldi and McLaughlin.

Method

Participant and Setting
The participants were three fourth grade elementary school students. One student was labeled as learning disabled and met the state and federal guidelines for that disability designation. That student received 60 minutes of instruction in the resource room for reading and written language. Accordingly, the other two students were achieving at the 2.2 grade level in reading. Each received 30 minutes of extra assistance each day in both in-class and pull-out models from the classroom teacher and the learning assistance (LAP) aide.

This study took place in the resource room of an urban elementary school in a low socioeconomic area in a large urban city. The first author, an undergraduate student at a local university, worked with the participants. The primary teacher in the resource room had five years of teaching experience and had an instructional aide. The first author worked with the child for five minutes two to three times per week.

Two pinpoints evaluated in the present study were the number of words read correctly and incorrectly per minute. An error was defined as a word read incorrectly, an omission or addition of a word, or any words read out of order. An error that was self-corrected before going on to the next word was counted as correct.

Upon the completion of each one-minute timing, the student counted the number of words that he read and self-recorded these data on the lines provided along the bottom of the data form (see Figure 1). The first author tallied the number of errors, gave this number along with specific feedback (e.g., "great job," "you missed apple today," "you were really working hard today," etc.) to the child, who would then record these
data. They were then collected and the first author rescored the students' reading from an audio-tape. Finally these data were displayed on the Standard Celeration Chart.

**Experimental Design and Experimental Conditions**

A multiple baseline design (Kazdin, 1982) across participants was used to analyze the effects of using the reading racetracks. By introducing reading racetracks at different points in time, changes in performance can be attributed to their use, not some other variable such as maturation, changes in word difficulty, time, etc.

**Baseline.** The baseline consisted of having the participant read the list of Grade Two Priority Words aloud. Each child was given the list of words and was told to read them as quickly and as accurately as he could. At the end of one minute the first author said "stop," praised the student for his hard work and cooperation and then recorded data. Baseline consisted of five one-minute timings over the course of 3 to 7 sessions.

**Reading racetracks.** A more complete description of data collection and teaching procedures can be found in Rinaldi and McLaughlin (1996) and Rinaldi et al. (in press). Briefly, each child's words were placed in the individual cells of the reading racetrack form. These words read from the racetrack were taken from the Second Grade Priority Word List (Spokane School District #81, 1996). The words taken from this list and put on the reading racetracks sheet were carefully selected to avoid having any two words on a particular racetrack that were either auditorily or visually similar. For example, "apple" and "zebra" could be used from the list on the same race track, but "ate" and "late" could not. The children were provided with their racetracks and were told to study them on their own. They raised their hand when they were ready to read their lists. The students were then taught by the "model, lead, test and retest" Direct Instruction procedure to teach or review the words that they just missed. This procedure consisted of first modeling the correct pronunciation of the word, then saying the word with the child, the child would then read the word independently, and finally, the child would be asked to reread the word correctly several more times. This teaching procedure took approximately one minute. At the end of the session, the children self-monitored and graphed their performance for both corrects and errors (See Figure 1). The reading racetrack intervention occurred for 9 to 10 data days (4 to 5 weeks of school).

**Reliability**

Interoobserver reliability checks were taken once during baseline and once during reading racetracks. The percent of interobserver agreement was calculated by dividing the smaller number recorded by the larger and multiplying by 100. The overall percent of interobserver agreement was 100%.

**Results and Discussion**

The number of words read correctly and incorrectly appear in Charts 1 through 3. The number of words read correctly during baseline was 36 for the three students (range 21 to 51). Median rates ranged from 32 to 45 words. The mean number of errors made during baseline was 6.0 (range 1-9) with medians from 4 to 7 errors.

With the implementation of the reading racetracks there was an immediate jump up for the number of words read correctly by each participant. The mean number of words read correctly during reading racetracks for all three students was 106 (range 45 to 86) and their median performance ranged from 103 to 119. The number of errors markedly decreased. The mean number of errors across participants made during reading racetracks was 2.0 (range 0 to 11) with a median error rate of 0.0.

The reading racetrack intervention was effective not only in terms of a jump up in frequency of correct words read, but also in the elimination of nearly all errors. The improved error performance produced an important change in accuracy of performance. Each of the participant's regular classroom teachers and the resource room teacher were impressed with their performance in reading see-say words in isolation during this program.

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32
COUNT PER MINUTE

SUCCESSIVE CALENDAR DAYS

Scott

MCLoughlin Anthony

Gonzaga University Anthony

Anthony

Anthony/ MCLoughlin

See-to-Say

Words
The use of a multiple baseline design suggested a functional relationship between the use of reading racetracks and changes in both correct and errors. These outcomes add further strength to prior outcomes (Rinaldi & McLaughlin, 1996). In that report, only one student was used and only an AB design was employed. Additional replications by other researchers using other students appears warranted. In the present replication, students with disabilities and those without disabilities served as participants. Future research could use younger or older students.

Reading racetracks are very attractive and practical because after the initial session, subsequent daily sessions were easy to implement and manage. This also occurred in the first study (Rinaldi & McLaughlin, 1996) and in an additional replication (Rinaldi et al., in press). This program in conjunction with classwide peer tutoring (CWPT) (Greenwood, Delquadri, & Carta, 1988) could offer individualized instruction for an entire classroom in less than 10 minutes of daily classroom time. This could be especially valuable in grades one and two when students are expected to learn and remember sight words that do not follow the phonetic rules.

References