**Enhancing an English Language Learning Fifth-Grade Student's Sight-Word Reading With a Time-Delay Taped-Words Intervention**

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A multiple-baseline design across word lists was used to investigate the effects of a modified taped-words intervention on Dolch word reading of a fifth-grade student who speaks English as a second language. The student completed a daily self-managed intervention in which he listened to lists of 30 sight-words while reading along, attempting to read the word before he heard it on the tape. As the word list was repeated, the word intervals were modified in accordance with time-delay procedures. Across three lists of 30 words, immediate and steady gains in words read correctly within 3 s were found after the time-delay taped-words intervention was implemented. The student maintained words that he learned from previous lists once he was no longer listening to those tapes. The discussion calls attention to the need for the development and empirical validation of reading interventions for students who are English language learners and provides directions for future research.

For students who have immigrated to the United States from non-English-speaking countries, English literacy skills are often fundamental for success in the American education system (Fitzgerald, 1995). Although many students are able to adjust, when English is not their primary language some students have difficulty developing basic English literacy skills. As reading and related literacy skills are critical for learning across content areas, English language learning (ELL) students who do not acquire these skills may rapidly fall behind with respect to skill development and academic achievement (August & Hakuta, 1997; Fitzgerald, 1995).

Various authorities have suggested that educators should use a phonemic approach to teach reading (see the National Reading Panel, 2000). The phonemic approach to reading instruction (e.g., teaching children letter-sound relationships, segmenting, and blending) is effective but time-consuming. Learning to discriminate and/or express specific letter-sound combinations may be particularly difficult for some ELL students (McBride-Chang & Treiman, 2003). Unfortunately, there is a tendency for educators to overlook or delay addressing ELL students' difficulties with worddecoding or language-processing skills (Limbos & Geva, 2001). Thus, in some instances, supplementing phonemic instruction with whole-word instruction to teach ELL students how to read commonly used words may enhance their reading skills and their attitude toward learning to read English (Harris & Sipay, 1985).

The taped-words intervention is a selfmanaged procedure that has been shown to enhance sight-word reading in students with learning disabilities, emotional-behavioral disorders, and mental retardation (Freeman & McLaughlin, 1984; Shapiro & McCurdy, 1989; Skinner & Shapiro, 1989; Sterling, Robinson, & Skinner, 1997). During these studies, students were given a list of words and asked to read them along with a tape recorder. Researchers then assessed students' sight-word reading fluency by having students read a different version of the same list of words aloud and calculating words correct per minute. The studies resulted in rapid and steady improvement in words read correctly per minute. Because modeling and neurological impress theories suggested that rapid rates of presentation would enhance students' speed of reading, during initial taped-words studies, tapes were constructed so that words were read at a very rapid rate (e.g., Freeman & McLaughlin, 1984). In subsequent studies, researchers found that the speed of reading on the tapes was not important, because the increases in reading performance were caused by the high rates of active, accurate, academic responding occasioned by the tapedwords intervention (Belfiore, Skinner, & Ferkis, 1995; Shapiro & McCurdy, 1989; Skinner, Logan, Robinson, & Robinson, 1997; Skinner & Shapiro, 1989; Skinner, Smith, & McLean, 1994).

Recently, researchers have adapted the taped-words intervention to mathematics (McCallum, Skinner, & Hutchins, 2004; McCaIlum, Skinner, Turner, & Saecker, 2006). In these studies, problems were presented via a tape recorder and on assignment sheets. However, rather than reading the problems and answers at a steady rate (i.e., constant delay; see Koscinski & Gast, 1993), researchers used varying time-delay procedures, manipulating the interval between the problem being read and the correct answer being read and instructing students to attempt to provide the correct answer before the tape. Problems were read several times. To reduce inaccurate responding, the interval between the problem and answer being read was very brief (e.g., little time delay) the first time problems were presented. The delay was gradually increased to provide opportunities for independent responding and then made brief again to encourage rapid or automatic responding. Researchers found that the taped-problem intervention was effective both individually and classwide (McCallum et al., 2004; McCallum et al., 2006).

Researchers have conducted few studies empirically validating interventions designed to enhance reading skills of ELL students, especially those struggling with English literacy skills (Gersten & Baker, 2003). The purpose of the current study was to extend the research on the taped-words intervention by determining if the procedure could be used to enhance sight-word reading fluency in a fifthgrade student whose primary language was Russian. In addition, we extended the research on the taped-words intervention by incorporating the varying time-delay procedure used during the taped-math studies.

Method

Participant

The participant was a 13-year-old boy, whom we will call Dimitri. He and his family had emigrated from the Ukraine to the United States 2 years prior to the implementation of this study. Dirnitri lived with his parents, two older brothers, and a younger sister. At home, the primary language spoken was Russian. Dimitri speaks his native language fluently, but his parents reported that his ability to read Russian was poorly developed. At school, Dimitri consistently demonstrated the ability to verbally communicate in English with peers and teachers.

At the time the study began, Dimitri was enrolled in a general education fifth-grade classroom and received additional instruction from a teacher specializing in ELL. Both teachers requested the primary investigator's assistance with enhancing Dimitri's basic reading skills. Although the ELL teacher was working to develop Dimitri's phonemic skills (e.g., phonemic awareness, segmenting, and blending), both teachers were concerned that Dimitri (a) was making slow progress in acquiring and mastering these skills, (b) still could not read commonly used simple words, and (c) was becoming more and more frustrated when asked to read English language text. Thus, both teachers asked the primary researcher, a school psychology PhD student completing a consultation and intervention practicum rotation, to develop an efficient procedure that could be used to enhance Dimitri's ability to read common English language words.

Materials

Materials used for the current study included 120 Dolch (www.proteacher.com) sight words (Grades K-3), a cassette player/ recorder, experimenter-constructed intervention, and assessment tapes and printed word lists. Stratified random assignment (stratified by word grade level) was used to divide the 120 Dolch words into four sets of 30 words. Six assessment sheets for each set of 30 words were developed by randomly sequencing the 30 words. Next, four intervention sheets were constructed for each set of words. The intervention sheets contained the 30 words in random order three times for a total of 90 words per intervention sheet. The 90 words were numbered. A corresponding audiotape was made for each intervention sheet.

Tapes were constructed by reading the item number and word into a recorder with the time between item number and word varying. The first time the word was read (i.e., first 30 words), there was a 1-s delay between the number and the word. The second time a word was read (Items 31-60) this delay was increased to 3 s. There was no delay between reading the number and the word on the final reading (i.e., Items 61-90). Across all three readings, there was a 2-s delay between the word being read accurately and the beginning of the next trial (i.e., the number of the next word). An assessment tape was constructed by reading the numbers 1-30 with a 3-s delay between the numbers.

Design and Procedures

A multiple-baseline design across word lists was used to evaluate the effects of the time-delay taped-words (TDTW) intervention on Dimitri's sight-word reading. This design is useful for demonstrating experimental control in applied settings when (a) there is only one participant, (b) a change in the target behavior (i.e., dependent variable) in the direction of pretreatment levels is unlikely or undesirable if the treatment is withdrawn, and (c) equivalent behaviors are targeted that do not covary (Skinner, 2004). In the current study, we staggered phases (e.g., baseline, intervention, and maintenance) across word lists. The fourth word list was periodically assessed (i.e., probed) to further control for threats to internal validity such as history effects, multiple-treatment interference, and generalization (Skinner & Shapiro, 1989).

Baseline phase: The dependent variable and assessment procedures. The dependent variable was the number of words read correctly within 3 s. During baseline, Dimitri's sight-word reading on three word sets (e.g., Sets A, B, and C) was assessed on 3 consecutive school days. On the first and third day, Dimitri's performance was" also assessed on List D (i.e., the assessment-only probe list). During these assessment-only sessions, the primary experimenter escorted Dimitri to the school library. Dimitri was given an assessment sheet and instructed to follow along with the tape attempting to read the words associated with each number. Dimitri was told that if he did not know a word he should move on to the next word when the next number was read on the tape. As Dimitri read aloud, the experimenter scored words correct if Dimitri read the word correctly within the 3-s interval. During the baseline phase, the three or four sets of words were assessed in random order. Although the first baseline session required about 20 min, the experimenter had to ensure Dimitri understood the instructions; subsequent sessions required less than 8 min.

Treatment phase: TDTW procedures. Prior to the first TDTW session, the primary experimenter trained Dimitri how to implement the self-managed treatment. A tape player, headphones, and a file folder containing worksheets were provided to Dimitri. Dimitri was taught to run the tape player. As the tape ran, he was taught to attempt to read the words before they were read on the tape. When the tape provided the correct reading of the word, Dimitri was instructed to evaluate his response and repeat the word after the tape when he had not read the word correctly before the tape provided the word (i.e., when he read the word incorrectly or failed to respond).

The goal was for Dimitri to complete the TDTW intervention each school day. Generally, he would read the words in the morning in his classroom at a table used for learning centers. If Dimitri did not have time to complete the TDTW intervention in the morning (e.g., he arrived at school late), the primary experimenter would escort him to the library to complete the intervention, before collecting assessment data. The primary experimenter ensured that Dimitri had appropriate intervention materials at all times (e.g., only one cassette tape with the list that corresponded to that tape). For each list, after Dimitri read 83% of the words correctly (25 words) across 5 assessments, the primary experimenter randomly selected the tape and corresponding word list for the next intervention phase and the identical TDTW intervention was applied to that set of words. Once the TDTW intervention was withdrawn from a list, the experimenter collected maintenance data by assessing Dimitri's performance on that list one time per week.

Interobserver agreement. An independent observer simultaneously recorded Dimitri's reading accuracy during assessments on 25% of the sessions. Percent interobserver agreement was calculated using the Kappa method (Watkins & Pacheco, 2000). Interobserver agreement was 82% for List A, 84% for List B, 86% for List C, and 81% for List D.

Student acceptability. Upon completion of the intervention, Dimitri was given a questionnaire to determine whether he liked the intervention and thought it was useful. A 5-point Likert scale (with 5 being strongly agree) was used to gauge Dimitri's response to the following questions: "I liked this strategy," "This strategy helped me to learn to read words," "This strategy would help other kids learn to read words," and "This strategy was easy to do." The primary experimenter read the questionnaire with Dimitri to ensure that he understood all the questions. His responses to the four questions were 5, 4, 5, and 4, respectively.

Results

Figure 1 displays the number of words read correctly within 3 s across all phases and word lists. These data show repeated (i.e., across all three word lists), immediate, and large increases in word-reading accuracy after the TDTW intervention. Following only one treatment, Dimitri's word reading accuracy increased 10 words for List A, 9 words on List B, and 17 words on List C. Across all three lists, stable increasing trends in accuracy followed initial large increases. These increases were maintained over 7 weeks for List A and 5 weeks for List B. The increasing baseline trend for List A words makes interpretation of results more difficult. However, the repeated, large, and immediate increases following the application of the TDTW intervention were not accompanied by concomitant increases in accuracy across other lists, including the assessment-only list (i.e., List D). Therefore these data provide three demonstrations of a treatment effect, which suggests that the TDTW procedure caused the improvements in Dimitri's sight-word reading.

Across all three lists, Dimitri's average accurate responding doubled from baseline to intervention phases. During baseline, Dimitri averaged 6.3 (SD = 3.1), 7.73 (SD = 1.2), and 8.5 (SD = 1.1) words correct on Lists A, B, and C respectively. During the intervention phase, Dimitri averaged 25.5 (SD = 2.0), 22.4, (SD = 4.6), and 27.2 (SD = 1.4) words correct on Lists A, B, and C respectively. During the maintenance phase, Dimitri averaged 27 (SD = .6) and 26.7 (SD = .5) words correct per minute on Lists A and B, respectively.

Discussion

Across all three word lists, Dimitri's sight-word reading accuracy increased rapidly and was maintained for Lists A and B. Dimitri's accuracy on lists still in the baseline phase and on the assessment-only list remained at low levels, suggesting that the intervention, as opposed to other confounding variables (e.g., learning during ELL instruction), caused the increases in performance. Thus, the current study extends the research on the taped-problems intervention by showing that this procedure could be used to enhance sight-word reading in an ELL student.

Although several empirically validated interventions have been shown to enhance sight-word reading in students with disabilities, many require a one-to-one learner to teacher ratio (Browder & Lalli, 1991). One important characteristic of the TDTW intervention is that it is self-managed. Dimitri's general education teacher stated that she liked that TDTW procedures did not take time away from regularly scheduled instruction and that Dimitri could complete it by himself. Because the TDTW procedure is a self-managed intervention, it is critical that students find it acceptable. Otherwise, students may choose not to implement the procedures (Skinner & Smith, 1992). The brief, experimenter-developed student acceptability form indicated that Dimitri enjoyed the intervention, thought it was easy to do, and thought that other students could benefit from listening to the tapes. It is also notable that Dimitri participated in the TDTW intervention on a volunteer basis with no programmed extrinsic reinforcement for participation or progress.

Dimitri's general education teacher also reported that Dimitri had begun to volunteer more when reading aloud in his literature class. An interview with Dimitri's parents revealed that they had noticed him speaking English more. Although these informal reports suggest that the TDTW procedure may have occasioned some positive side effects, researchers should conduct systematic studies to assess these effects (Turco & Elliot, 1986). In addition, Dimitri's teacher indicated that the 3-s delay might have been too long. Researchers should investigate the effectiveness of different time-delay procedures.

Researchers should also address several other limitations associated with the current study. With respect to internal validity, one limitation is the increasing baseline phase data for List A. Although this limitation is mitigated by the repeated, large, and immediate increases in sight-word reading after the TDTW intervention was implemented, future researchers replicating and extending the current research should better control for increasing baseline trends. The TDTW procedure was self-managed and headphones were used to prevent disrupting classmates' learning. Thus, it was not possible to collect systematic treatment integrity data. Future research could enhance the internal validity of the current study by playing tapes aloud in settings where disruptions are not a concern (e.g., laboratory, as opposed to applied classroom settings) and collecting treatment integrity data. In addition, researchers should control for level of English proficiency and current reading performance, as these data were not available.

In the current study, we altered the time delays across word repetitions. The initial delay was used to prevent inaccurate responding. During the second trial, the delay was increased to provide an opportunity for independent responding before the correct word was read on the tape. During the final trial, words were once again presented rapidly to encourage automatic responding and increase the probability that his last response was accurate. Intervention comparison studies should be run to determine if, and what role, these timedelay procedures had in increasing accuracy and to identify the most effective and efficient time-delay procedures (McCallum et al., 2004). Researchers should determine if the taped-words procedure could be strengthened by incorporating other procedures (e.g., performance feedback, extrinsic reinforcement) and compare the effects of the TDTW to other procedures (Browder & Lalli, 1991) to determine which are most effective and efficient.

During the intervention, Dimitri never learned all 30 words on any list. Upon examination of the word lists, we discovered that Dimitri had difficulty with words that began with blend sounds (e.g., who). A possible explanation is that these are not common sounds in Dimitri's native language and are difficult for him to learn. Researchers should assess the external validity of the TDTW procedures by running similar studies across students (e.g., students whose primary language is Spanish, secondary and adult education students, and level of English proficiency) and settings (e.g., small-group or classwide application). Although the failure to find concomitant increases in baseline and assessment-only words enhanced the internal validity of the current study, these data also show that the tapedwords procedure did not produce a generalized increase in word reading. Thus, future researchers should assess the effects of the TDTW intervention on target skills that may be more likely to produce generalized increases in word reading by targeting behaviors such as nonsense word reading, letter-sound associations, and segment blending.

Summary

There are few empirically validated procedures designed to enhance reading skills in ELL students (August & Hakuta, 1997; Gersten & Baker, 2003). To prevent these students from falling further behind their peers with respect to academic achievement, educators and researchers must develop and empirically validate effective, efficient, and acceptable reading interventions. As the numbers of ELL students entering public schools continues to increase, this line of research should not be neglected by those who want to help prevent and remedy students' problems via the application of effective, evidence-based interventions.

**References**

References

August, D., & Hakuta, K. (1997). Improving schooling for language-minority children: A research agenda. Washington, DC: National Academics Press.

Belfiore, P. J., Skinner, C. H., & Ferkis, M. S. (1995). Effects of response repetition in sight-word training for students with learning disabilities. Journal of Applied Behavior Analysis, 28, 347-348.

Browder, D., & Lalli, J. S. (1991). Review of research on sight word instruction. Research in Developmental Disabilities, 12, 203-228.

Dolch sight word list. (n.d.). Retrieved January 5, 2005 from www.proteacher.com.

Fitzgerald, J. (1995). English-as-a-second-language reading instruction in the United States: A research review. Journal of Reading Behavior, 27, 115-152.

Freeman, T. J., & McLaughlin, T. F. (1984). Effects of a taped-words treatment procedure on learning disabled students' sight-word reading. Learning Disability Quarterly, 7, 49-54.

Gersten, R., & Baker, S. K. (2003). English-language learners with learning disabilities. In H. L. Swanson, K. R. Harris, & S. Graham (Eds.), Handbook of learning disabilities (pp. 94-109). New York: Guilford.

Harris, A. J., & Sipay, E. R. (1985). How to increase reading ability: A guide to developmental and remedial methods (8th ed.). New York: Longman.

Koscinski, S. T., & Gast, D. L. (1993). Use of constant time delay in teaching multiplication facts to students with learning disabilities. Journal of Learning Disabilities, 26, 533-544.

Limbos, L. M., & Geva, E. (2001). Accuracy of teacher assessment of second-language students at risk for reading disability. Journal of Learning Disabilities, 34, 136-151.

McBride-Chang, C., & Treiman, R. (2003). Hong Kong Chinese kindergartners learn to read English analytically. Psychological Science, 14(2), 138-143.

McCallum, E., Skinner, C. H., & Hutchins, H. (2004). The taped-problems intervention: Increasing division fact fluency using a low-tech self-managed time-delay intervention. Journal of Applied School Psychology, 20(2), 129-147.

McCallum, E., Skinner, C. H., Turner, H., & Saecker, L. (2006). The taped-problems intervention: Increasing multiplication fact fluency using a low-tech, classwide, time-delay intervention. School Psychology Review, 35(3), 419-434.

National Reading Panel. (2000). Teaching children to read: An evidenced based assessment of the scientific research literature on reading and its implications for reading instruction. Available from http//www.nichd .nih.gov/publications/nrp/smallbook.htm

Shapiro, E. S., & McCurdy, B. L. (1989). Effects of a taped-words treatment of reading proficiency. Exceptional Children, 55, 321-328.

Skinner, C. H. (Ed.). (2004). Single-subject designs for school psychologists. West Hazleton, PA: The Haworth Press.

Skinner, C. H., Logan, P., Robinson, S. L., & Robinson, D. H. (1997). Myths and realities of modeling as a reading intervention: Beyond acquisition. School Psychology Review, 26, 437-447.

Skinner, C. H., & Shapiro, E. S. (1989). A comparison of taped-words and drill interventions on reading fluency in adolescents with behavior disorders. Education and Treatment of Children, 12, 123-133.

Skinner, C. H., & Smith, E. S. (1992). Issues surrounding the use of self-managed interventions for increasing academic performance. School Psychology Review, 21, 202-210.

Skinner, C. H., Smith, E. S., & McLean, J. E. (1994). The effects of intertriai interval duration on sight-word learning during constant time delay. Behavioral Disorders, 19, 98-107.

Sterling, H. E., Robinson, S. L., & Skinner, C. H. (1997). The effects of two taped-words interventions on sightword reading in students with mental retardation. Journal of Behavior Education, 7, 25-32.

Turco, T. L., & Elliot, S. N. (1986). Assessment of students' acceptability ratings of teacher-initiated interventions for classroom misbehavior. Journal of School Psychology, 24, 277-283.

Watkins, M. W., & Pacheco, M. (2000). Interobserver agreement in behavioral research: Importance and calculation. Journal of Behavioral Education, 10, 205-212.

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