The Effects of Precision Teaching and Add-A-Word Spelling on Spelling Performance of an Adult Graduate Student

Emily Noland, T. F. McLaughlin, and William J. Sweeney

The effects of the add-a-word spelling procedure and timed Precision Teaching techniques on a female adult graduate student were evaluated. An increase in corrects and a decrease in incorrects on daily spelling tests, after the add-a-word and timed Precision Teaching were introduced, indicate the effectiveness of the procedure.

Spelling is a difficult subject area for many students because standard English does not follow consistent rules (Smith, 1981). Children quickly learn to apply spelling rules but have difficulty discriminating between   appropriate and inappropriate rule application.   Some youths will become adults without mastering the ability to functionally spell. Spelling accuracy is considered a measure of literacy in our culture (Hansen, 1978).   Acquisition of spelling and writing skills is required by society and necessary for adults to cope successfully with life (Smith, 1989).

Vogel (1993) discussed the increasing demands on institutions of higher education to provide effective educational services for nontraditional students with a variety of learning difficulties. As more and more nontraditional students with a variety of learning problems are applying and are accepted into institutions of higher education (Berliner, 1993), these services become increasingly more difficult to deliver efficiently and effectively. Therefore, developing data-based instructional procedures for adult learners that are effective, cost-efficient, and user friendly is becoming increasingly important in today's society (Sweeney, Omness, Janusz, & Cooper, 1992).

Literature has indicated that the add-a-word spelling procedure (McGuigan, 1975), or Copy, Cover, and Compare (Murphy, Hern, McLaughlin, & Williams, 1990), has been more effective than traditional fixed list methods of spelling instruction. The add-a-word procedure makes use of small lists of words, practice until mastery, error drill, and maintenance probes after a word has been mastered. If a student were to spell the word "acceleration", the word would be copied from a sample; the student would then write the word again from memory; the written word would be compared to the correct sample, and this process would be repeated until the student wrote the word correctly from memory. Then, the next new word would be added.   The add-a-word procedure has resulted in improved spelling performance for students with mild handicaps (McLaughlin, Reiter, Mabee, & Byram, 1991), and students that have received special education services for reading difficulties (McAuley & McLaughlin, 1992).   Pratt-Struthers, Struthers, and Williams (1983) found the add-a-word program improved spelling performance of students with learning disabilities and increased generalization of spelling words to creative writing. However, there has been little research to determine the effects of the add-a-word program on spelling performance of the adult population.

Precision Teaching is an instructional procedure that incorporates a direct, continuous, and precise measurement system, which has provided a strong basis for instructional decisions (Lindsley, 1991). According to Mercer (1986), Precision Teaching has provided a direct and simple model for teachers. It has been found successful, in part, because feedback is immediate, which allows for interventions of new methods if the initial methods are unsuccessful (Briere, 1988). Data-based Precision Teaching helps the individual assess and evaluate the effectiveness of the instructional procedure. Precision Teaching allows one to determine whether an intervention is effective, whether it should be maintained, or whether it should be completely changed (White & Haring, 1980).

The purpose of this research was to determine the effectiveness of a timed Precision Teaching model teamed with the add-a-word program on spelling performance of an adult female graduate student.

Method

Subject and Setting

The subject was an adult female graduate student who, since elementary school, had difficulties with spelling and a phobia for timed tests . She carried a portable computerized spell checker that aided her in graduate school. The student was chosen as the subject because of her desire to improve her spelling performance. She felt daily timed testing might help her overcome her timed test phobia. This individual, was also a very hardworking and dedicated student, was very conscientious and wanted to remediate this difficulty.

The spelling procedures were conducted in her home where a relative administered the spelling assessments, while another person timed the one minute sessions. This work was performed at the kitchen table with a family member present. The family member was trained prior to the start of the project by the participant and served as intervention agent. This individual was employed for reasons of convenience.

Materials

The spelling words used in baseline and the add-a-word program were randomly selected from the Durrell Selected Vocabulary list (Durrell & Catterson, 1980) and a list of misspelled words from the subject's daily work, such as terms like "acceleration aim" to "empirical." The words on each daily list contained a total of up to 119 letters.

Daily spelling words were listed vertically on spelling probe training sheets. In the upper left corner of the sheets, spaces were provided for the subject's name, the date, the timed period (one minute), the number of letters correct, the number of letters incorrect, and the total number of letters completed. A column containing the running total number of correct letters possible corresponding with each word was placed on the right side of the paper next to a column for

actual completed correct letters. The training sheets were constructed with a column for the subject to copy words containing errors, cover the words, rewrite them, and compare them to the correct word (Murphy et al., 1986). A daily progress record sheet was used to record the correct letter count and the number of incorrect letters, the date, and a record of timing. This progress record sheet was used to keep a permanent record of the raw data and was later placed on a Standard Celeration Chart.

Movement Cycle

The behaviors measured during each daily assessment were the number of letters spelled correctly and the number spelled incorrectly per minute. The subject recorded spelling words on a sheet of paper as they were dictated to her. This exam was taken after the student had completed studying and practicing her list of words.

Experimental Design

An ABC single case design was used to provide data on the effectiveness of various procedures toward improving spelling performance. Reliability of measurement was not needed: as this was an instructional demonstration project similar to those used in quasi-experimental designs (Campbell & Stanley, 1966). Further, reliability is not commonly practiced among Precision Teachers due to the permanent products generated and daily charting of behaviors.

Baseline. During baseline, the subject formulated and studied three spelling word lists containing approximately 20 words with a total of up to 200 letters. The lists were studied for one week prior to the baseline assessment. Words on the list were studied through oral repetition and reviewed prior to the test. During the test, words were dictated to the subject for a one minute timed session. Three tests were administered over separate word lists on consecutive days. The number of correct and incorrect letters per minute were recorded and charted on Three-Cycle Chart. The Three-Cycle Chart was used during data collection because of the ease of charting, while the Six-Cycle Chart was employed later for ease of

interpretation and analysis. Aims were established and minimum celeration lines were drawn on the Chart as directed in White and Haring (1980).

Add-a-word + Precision Teaching. During this phase, new spelling words were placed on a flow, rather than fixed list. On a fixed list, the words remain the same even when mastery is achieved. On a flow list, after mastery, new words are added, and the words mastered are removed. Words that have been mastered reappear after five sessions to assess maintenance. The spelling words were practiced using the copy, cover, and compare method daily, for three days prior to the first test. After that, testing took place daily. When a word had been spelled correctly for three consecutive days, that word was dropped and another new word added. After five school days, previously correctly spelled words were again placed on the subject's list to assist in retention (McLaughlin et al., 1992).

During this condition, the subject was presented with up to 16 words, or 116 letters in a one-minute timed period. Spelling lists contained up to 18 words in the event the subject's speed increased. As in baseline, the number of correct and incorrect letters completed were charted. When the subject missed a word, she had to copy it from a correct model, cover, rewrite, and then compare her spelling to that on the list. This was repeated daily three times for each misspelled word daily.

Add-a-word + Copying. A new condition was introduced to the previous procedure when the subject's correct rate fell below the minimum celeration line for three consecutive days. To build speed, the subject copied each word on the list 10 times.

Results

The data indicate improvement in spelling performance with an add-a-word spelling program, when compared with a traditional study and oral repetition procedure used during baseline. During three baseline sessions, the median number of correctly written letters was 80, with scores ranging from 71 to 85. This was com-

pared with the five sessions conducted during the Intervention I and Intervention II conditions (i.e., add-a-word and add-a-word + copying) resulting in median scores of 101 and 103, with ranges from 84 to 110 and 94 to 116 respectively.

Results from Chart 1 show an acceleration in correctly written letters and a deceleration in learning opportunities during the add-a-word and add-a-word + copying interventions respectively when compared with relatively level trends during baseline. The student's celeration on correct letters written was x1.00 during Baseline, while learning opportunities were x1.10. During Intervention I and II, respectively x2.0 and x1.9 celeration of correctly written letters, and + 8.00 celeration of learning opportunities which remained below zero was observed.

Discussion

Results of this study indicate that add-a-word spelling procedures teamed with Precision Teaching were effective in significantly increasing the subject's spelling performance. These should be interpreted with some caution because there was no return to baseline. No definitive functional relationship between change in performance and various experimental manipulations was demonstrated. The effects of multiple treatments on the present outcomes cannot be ruled out. However, in a subsequent investigation, a partial component analysis could be conducted to replicate and verify the present results. Another experimental design that controls for the multiple treatment inference, such as a counterbalanced multiple baseline design or an alternating treatments design, (Kazdin, 1982) could also be used.

The individualized procedure was inexpensive. It involved extra effort to maintain the daily flow spelling list and to administer the daily tests. In most research involving the add-a-word spelling program, the number of words on the spelling list is reduced and testing is not timed (McAuley & McLaughlin, 1992; Pratt-Struthers, et al., 1983). The timing procedure
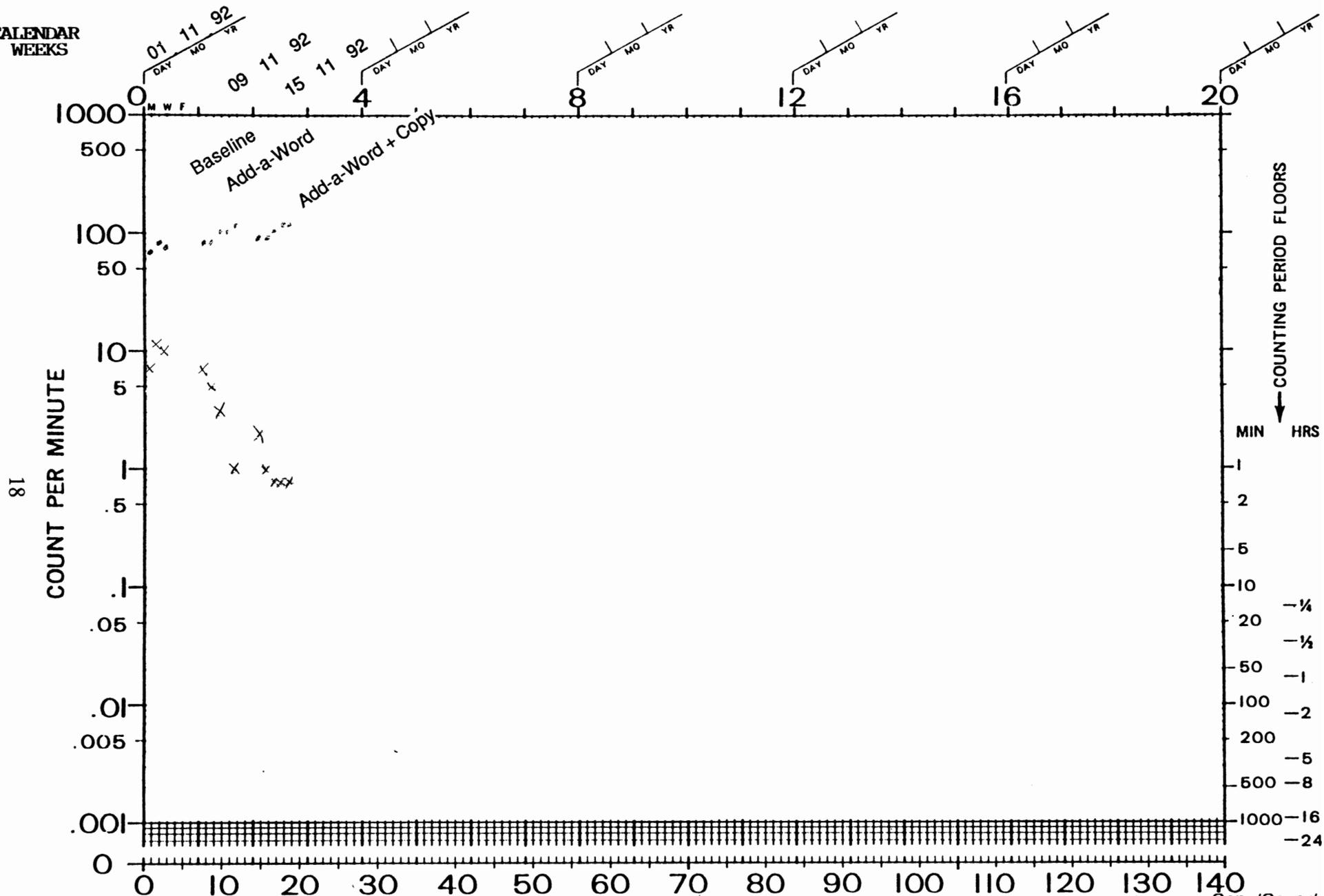
was difficult because the administrator occasionally said the words so fast the subject could not understand them. The subject did become more comfortable using a timed procedure and was pleased with the results of Precision add-a-word. More research might determine if the add-a-word procedure could be used successfully with larger lists of words.

References

Berliner, D. C. (1993). Mythology and the American system of education. *Phi Delta Kappan, 74*, 632-640.

Briere, M. A. (1988). *The effects of precision teaching and sleep on eating habits and weight reduction of a 21-year-old female college student.* Unpublished manuscript, Gonzaga University, Department of Special Education, Spokane, WA.

Campbell, D. T., & Stanley, J. C. (1966). *Experimental and quasi-experimental designs for research.* Chicago: Rand McNally.

Durrell, D. D., & Catterson, J. H. (1980). *Durrell analysis of reading difficulty* (3rd ed.). San Antonio, TX: Psychological Corporation.

Hansen, C. L. (1978). Writing skills. In N. G. Haring, T. C. Lovitt, M. D. Eaton, & C. L. Hansen (Eds.), *The fourth R: Research in the classroom* (pp. 93-126). Columbus, OH: Charles E. Merrill.

Kazdin, A. E. (1982). *Single case experimental designs: Methods for clincial and applied settings.* New York: Oxford.

Lindsley, O. R. (1991). Precision Teaching's unique legacy from B. F. Skinner. *Journal of Behavioral Education, 1*, 253-266.

McAuley, S. M. & McLaughlin, T. F. (1992). Comparison of add-a-word and Compu Spell programs with low-achieving students. *Journal of Educational Research, 85*, 362-369.

McGuigan, C. A. (1975). *The add-a-word spelling program* (Working Paper No. 53). Experimental Education Unit, Seattle, WA: University of Washington.

McLaughlin, T. F., Reiter, S. R., Mabee, W. S., & 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.

Mercer, C. D. (1986). Learning disabilities. In N. G. Haring & L. McCormick (Eds.), *Exceptional children and youth* (4th ed.). Columbus: Charles E. Merrill.

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

Pratt-Struthers, J., Struthers, T. B. & Williams, R. L. (1983). The effects of the add-a-word spelling program on spelling accuracy during creative writing. *Education and Treatment of Children, 6*, 277-283.

Smith, D. D. (1981). *Teaching the learning disabled.* Englewood Cliffs, NJ: Prentice-Hall.

Smith, D. D. (1989). *Teaching students with learning and behavior problems.* Englewood Cliffs, NJ: Prentice-Hall.

Sweeney, W. J., Omness, C. K., Janusz, K. L., & Cooper, J.O. (1992). Adult literacy and Precision Teaching: Repeated readings and see/cover/write practice to improve reading and spelling. *Journal of Precision Teaching, 9*(1), 6-19.

Vogel, S. A.. (1993). A retrospective and prospective view of post secondary education for adults with learning disabilities. In S. A. Vogel, & P. B. Adelman (Eds.), *Success for college students with learning disabilities* (pp. 3-20). New York: Springer-Verlag.

White, O. R. & Haring, N. G. (1980). *Exceptional teaching.* Columbus, OH: Charles E. Merrill.

Emily Noland, T. F. McLaughlin, and William J. Sweeney are affiliated with Gonzaga University, Department of Special Education, School of Education, Spokane, WA 99258-0001.

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100   -2

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500   -5

1000   -8
          -16
          -24

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Sweeney	Dept. Sp. Ed. -Gonzaga Univ.	E. Noland	E. Noland	Sweeney			
DEPOSITOR	AGENCY	TIMER	COUNTER	CHARTER			