

USING TRACING AND MODELING WITH A *HANDWRITING WITHOUT TEARS*® WORKSHEET TO INCREASE HANDWRITING LEGIBILITY FOR TWO PRESCHOOL STUDENTS WITH DEVELOPMENTAL DELAYS: A BRIEF REPORT

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ABSTRACT

The purpose of this study was to increase the legibility of letter writing using tracing and copying procedures derived from the Handwriting Without Tears® (Olsen, 1998) program. Two preschool students with developmental delays served as participants. Both participants were enrolled in an integrated preschool and expected to continue on to kindergarten in the Fall. To promote success in kindergarten the letters in each participants name were chosen as the target letters. Both participants showed low rates of legible handwriting during Baseline. Using the tracing and copying procedure from the Handwriting without Tears® program produced improved handwriting legibility. Overall, both participants showed an increase in their ability to write the letters in their name legibly. The Handwriting Without Tears® program and its effects were discussed.

Key words: Handwriting without Tears®, handwriting, preschoolers, developmental delays, replication, classroom research

INTRODUCTION

Handwriting is an important skill and the early development of handwriting lays the foundation for writing development. Handwriting places the earliest constraints on writing development (Addy, 1996). Children who experience difficulty mastering this skill may avoid writing and develop a mindset that they cannot write, leading to arrested writing development (Graham, 1999). Handwriting is a functional skill that is used daily, even with the advancement of technology. Whether the student is writing their name, filling out an application, drawing a picture, or taking notes, their ability to write legibly and quickly is essential. If children cannot form letters with reasonable legibility and speed, they cannot translate the language in their minds into written text (Addy, 1996). Struggling with handwriting can lead to a self-fulfilling prophecy in which students avoid writing, come to think of themselves as not being able to write, and fall further and further behind their peers (Koenke, 1986). If the teachers understand the child's difficulty, they will not attribute poor handwriting to laziness and they will realize that when the child puts a lot of effort into the graphomotor aspects of writing, his or

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her ability to process (Tseng, 1993). If a student has poor handwriting skills, many other academic areas are negatively affected.

Handwriting instruction can be integrated into the classroom using many different techniques. When planning instruction, curriculum decision makers should keep in mind the objectives of a good handwriting program: to help students develop neat and legible handwriting for purposes of communication, acquire facility in both manuscript and cursive writing so that writers may use either style, gain speed and proficiency in writing, and see the value of good handwriting (Ross, 1990). Students should receive instruction in specific handwriting problems, and it is best if learners practice handwriting skills in functional writing, rather than simply practicing handwriting skills in isolated practice (Graham, 1999). Handwriting and spelling instruction in kindergarten for children with writing and reading difficulties may help students develop more fluent transcription in later grades (Edwards, 2003). It has been shown that systematic instruction including prompts, praise, and task analysis is effective for teaching children with disabilities to write their name (Park, Weber, & McLaughlin, 2007). When considering the importance of quality interventions for children with possible early writing and reading difficulties, it appears that the strategies and explicit use of writing in kindergarten may serve as a powerful instructional component with a potentially intrinsic motivating benefit (Edwards, 2003). Regardless of the program, copying leads to better results than just tracing or discrimination training (Koenke, 1986).

There are several effective programs, but one recommended by teachers and Occupational therapists is *Handwriting without Tears*®. Improvement in the handwriting of students in experimental groups indicate that a multi-sensory structured handwriting program, particularly *Handwriting without Tears*®, may be more effective in improving handwriting legibility than a traditional ball and stick method of instruction (Pontello, 1999). A recent study (McBride, Peltó, McLaughlin, Barretto, Robison, & Mortenson, 2009) found that teachers who used the *Handwriting without Tears*® method during the study were overwhelmingly satisfied with the programs' effectiveness and usability and they continued to use the *Handwriting without Tears*® program after the study was completed. In addition, the performance of their preschool students improved. Carlson, McLaughlin, Derby, and Blecher (2009) employed aspects of *Handwriting Without Tears*® to improve the handwriting skills of preschool students with Autism. *Handwriting without Tears*® provides verbal reminders the students can say when writing each letter. According to a study, effective handwriting programs provide opportunities for children to verbalize the rules of letter formation. (Owens, 2004) This handwriting curriculum uses a developmental approach, grouping the letters by difficulty and teaching a handwriting style that uses simple, vertical lines (Case-Smith, 2002)

The purpose of this study was to evaluate the effects of procedures from the *Handwriting without Tears*® program on increasing the letter legibility for two preschool children with developmental delays. Both children were scheduled to attend kindergarten in the fall, where they will be expected to write their name. The letters in each participant's name were chosen as the dependent variable. An additional purpose was to replicate (Jasny, Chin, Chong, & Vignieri, 2011) our previous work with *Handwriting without Tears*® (Carlson et al., 2009; Cosby, McLaughlin, Derby, & Huewe, 2010; McBride et al., 2009) with preschoolers from a rural school district.

METHOD

Participants and Setting

The participants of the study were two preschool age students with developmental delays. Participant 1 was a 5-year-old male with developmental delays in fine motor, speech, and adaptive behavior, and Participant 2 was a 4-year-old boy with developmental delays in speech and behavior. Participant 1 was chosen because he has low fine motor skills and had been unable to write any of the letters in his name legibly. Participant 2 was chosen because he could write his name, but it was not consistency legible. Both participants are enrolled to enter kindergarten in the fall, where they will be expected to learn and write all 26 letters of the alphabet and legibly write their name.

The study took place in an Early Childhood Assistance Program preschool in a small rural town in the Pacific Northwest. Both participants had attended preschool for one school year. They both regularly

attended the afternoon session. The preschool classroom had seven students on IEP's and 10 students who were typically developing and qualified for ECEAP. There was on average five adults in the classroom, including a special education teacher and an ECEAP teacher, four instructional assistants, and a student teacher.

Data were collected after small groups during work time. The students were pulled individually to another room in a portable building, to minimize distractions caused by the other students. Each session lasted ten minutes with one-on-one instruction with the first author. Each participant had an opportunity to earn a small reward (stickers) for each task they completed.

Materials

The materials used for this study were from the *Handwriting Without Tears*® program (Olsen, 1997). There was a worksheet for each letter in both participants' names from the "Get Ready for School" the *Handwriting without Tears*® student workbook. They were also given a worksheet with their first name written on it, as a model, and a blank worksheet where the participant could write their name. The blank worksheets used for writing their name have a smiley face in the upper left hand corner to prompt them to start their letters at the top. The first author provided stickers as a reward to the participants.

Experimental Design


A multiple baseline design across letter pairs (Barlow, Nock, & Hersen, 2008; Kazdin, 2010) was implemented to evaluate the effects of the handwriting intervention. Baseline data were taken for each participant, then the *Handwriting without Tears*® intervention was implemented.

Baseline

Each participant was given a work sheet from the *Handwriting without Tears*® program. Each participant worked on their first name, Participant 1 worked on letters (T, H) (I,S) (A,V) and Participant 2 worked on letters (E, H) (T,A) (N). The first author gave the instruction, "Write your name in the box." For Participant 1 Baseline was taken ranging from three times (TH) to thirteen times (A,V). Baseline was taken for Participant 2 ranging from four times (EH) to eleven times (N).

Handwriting without Tears® worksheet with individual letter instruction and modeling

After baseline, the first author split the letters in each participants name into sets of two letters. Participant 1 has three sets of letters; Set 1 (T,H), Set 2 (I,S), and Set 3 (A,V). Participant 2 had three sets, two sets with two letters, and one set with one letter; Set 1 (E,H), Set 2(T,A), and Set 3 (N). Both participants were given a *Handwriting without Tears*® worksheet for the specified letters they were working on. The first author gave the instruction, "We are going to write the letter _____". The first author then verbally prompted the student using the script for each letter provided by the *Handwriting without Tears*® program. "Big line down. Jump to the . Little line across the top, middle, and bottom.," for the letter E. "Big line down. Big line down. Little line across," for the letter H. "Big line down. Little line across top," for the letter T. "Big line down. Little line across the top and little line across the bottom," for the letter I. "Make a little Magic c curve. Make a little curve the other way," for the letter S. "Big line slides down. Jump back to the top. Big line slides down. Little line across," for the letter A. "Big line slides down. Big line slides up," for the letter V. "Big line down. Jump to the. Big line slides down. Big line goes up," for the letter N. On the worksheets from *Handwriting without Tears*®, there is a

at the top left corner to remind the student to start at the top. After the participant completed the worksheet for each letter,  they were given the same worksheet used during baseline to write their name. Participants were provided with a model on the worksheet to practice copying a model and practicing the letter they were working on. Each letter was independently scored on a three point scale; size, slant, and legibility. The size and slant were scored by comparison to the model provided by the first author, and the point for legibility was given if the letter was legible. The participant moved to the next set when they had scored 5 out of 6 points, the combined total of points for the two letters in the set. The participant practiced the previously mastered letters every session, to maintain the skill.

Handwriting without Tears® worksheet with individual letter instruction and modeling and contingent reward

Since the participants are pulled out for the intervention during their free time, the first author decided to implement a reward procedure to increase their motivation. The participants followed the same steps as the first intervention, but they received one sticker for each worksheet they completed and for writing their name.

Reliability of Measurement

Inter observer agreement was taken 40 % of the time for Participant 1, and 66% of the time for Participant 2. An independent scorer rescored the handwriting for both participants. The scores from the first author were masked and the independent scorer graded the handwriting by the same criteria; size, slant, and legibility. Inter observer reliability was calculated by dividing the number of agreements by the sum of the agreements and disagreements and multiplying by 100. An agreement was scored if each scorer gave the letter the same score for all three criterions. Any difference in points was considered a disagreement. Agreement between the first author and the independent scorer was 86%.

RESULTS

The results of this study presented in Figures 1 and 2 indicated that the modeling and tracing procedure derived from the *Handwriting Without Tears*® program has a positive effect on handwriting legibility for each participant. During baseline, Participant 1 had a mean score 0.0 for Set 1, a mean score of 1.0 for Set 2 with a range of 0 to 1, and a mean score 2 for Set 3 with a range of 0 to 5. After intervention on Set 1, Participant 1 increased his mean score to 5 with a range of 1 to 6. After intervention on Set 2 his mean score increased to 5 with a range of 4 to 6. After intervention for Set 3 his mean increased to 4 with a range of 4. Participant 1's scores increased across all three sets of letters.

During baseline, Participant 2 had a mean score 1.0 for Set 1 with a range of 0 to 1, a mean score of 2 for Set 2 with a range of 0 to 4, and a mean score .5 for Set 3 with a range of 0 to 1. After intervention 1 on Set 1, Participant 2 increased his mean score to 5 with a range of 1 to 6. After the intervention for Set 2 his mean score increased to 5 with a range of 4 to 6. Due to low attendance, the first author was only able to complete intervention on Sets 1 and 2. Participant 2's scores increased across these two sets of letters.

DISCUSSION

The results of this study indicate that the use of the modeling and tracing procedures from *Handwriting Without Tears*® (Olsen, 1998, 2005) increase the legibility of handwriting. The outcome of this study provides evidence that *Handwriting Without Tears*® curriculum is effective for preschool aged students with developmental delays.

There are four key strengths of this intervention. First, before the first author implemented the intervention, Participant 1 only recognized the letter T. After the *Handwriting Without Tears*® procedures were employed, he recognized T, H, I, S, A, and V. His letter recognition skills increased with the use of this program. Second, the skills taught in the program generalized for both participants. Both participants' ability to write their name independently and legibly during small group lessons increased. This is a different environment without one-on-one instruction and the *Handwriting Without Tears*® format. Participant 1's handwriting legibility generalized to other letters that had not been taught. Third, the procedures used in this study can be easily implemented in any classroom. The intervention took little time out of the typical routine and with little to no cost, if the *Handwriting Without Tears*® program is available. If the curriculum is available to the teacher, the supplies can be used and reused for all of the students. The last strength, was the study proved that *Handwriting Without Tears*® procedures can be implemented in an integrated preschool and can be effective for students with

Four limitations of this study must be noted. First, the attendance on Participant 2 was extremely varied, making the implementation for each set take several weeks. His varied attendance also required constant review of previously mastered letters, and did not allow the first author to intervene across all three sets. If his attendance was more consistent we have hypothesize that he would mastered all the letters in his name. Second, both participants were boys with developmental delays in similar skill areas. Third, the time spent each week with both participants varied according to the schedule for the ECEAP preschool. The students attend school four days a week, and in the middle of the study they were absent for two weeks for conferences and a spring break. Lastly, more materials from the *Handwriting Without Tears*® program could have easily been used, such as mat man, chalk boards, and wooden letters. These interventions included in the *Handwriting Without Tears*® program are recommended by occupation therapists and teachers (Case-Smith, 2002). Overall, the study implemented an intervention that could easily be integrated into a preschool classroom and increase the legibility of handwriting.

This study provides data that supports the outcomes of the *Handwriting without Tears*® program. This replicated our previous research with *Handwriting without Tears* (Carlson et al., 2009; Cosby et al., 2009; McBride et al., 2009) and adds confidence (Jasny et al., 2011) of employing this program with preschool students with developmental delays. The implementation of procedures from the *Handwriting without Tears*® program increased two preschool aged boy handwriting legibility drastically. This intervention can be employed in any type of classroom with little time and little expense, once the program has been purchased. Finally, many of the procedures and materials recommended by the *Handwriting without Tears*® program worked with both of our participants.

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