

# Effectiveness of the Size Matters Handwriting Program

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## Research Question

- Is the Size Matters Handwriting Program (SMHP) effective in improving the handwriting skills of children in kindergarten, first and second grade?

## Introduction

- Typically, handwriting skills develop rapidly around the ages of 6-7 (1<sup>st</sup> grade), and plateau by ages 7-8 (2<sup>nd</sup> grade) (Karlsdottir, 2002).
- Handwriting is a predictive factor in determining the length and quality of compositions (Baker, Gersten, & Graham, 2003).
- Limited literature is available that explores the effectiveness of handwriting intervention programs that focus on grouping alphabet letters by sizes.
- Therefore, the purpose is to investigate a curriculum-based handwriting intervention that emphasizes the importance of letter size.

## Methodology

### Design & Participants

- Pretest-posttest experimental design
- Equal number of classrooms from kindergarten, Grade 1, and Grade 2 assigned to control and intervention groups
- All students in regular education
- Elementary schools in New York (rural setting) and Massachusetts (urban setting)

### Instrumentation and Outcome Measures

- Minnesota Test of Handwriting Skills (MTHS)
  - 1<sup>st</sup> and 2<sup>nd</sup> graders
- Test of Handwriting Skills – Revised (THS-R)
  - Kindergarten, 1<sup>st</sup> and 2<sup>nd</sup> graders

### Procedures

- Teachers were trained on how to implement the SMHP in their classroom and OT consultation available for intervention classrooms during study
- Pre-test data was collected for each student
- Handwriting instruction using the Size Matters Program provided to the treatment group 5 days a week, totaling 40 sessions lasting 20 minutes each
- Post-test data was collected for each student

## The Size Matters Handwriting Program

8 Key Concepts:

- Writing Letter Line Names
- Letter Line Names
- Starting Points
- Touch Points
- Super C
- Stars and Dice Game
- Letter Sizes
- Spaghetti and Meatballs

For each letter the students:

- Identify size and structure of the letter
- Identify which letters are correct and why others are not according to Letter Size Rules
- Trace and make the letters
- Play the dice game to achieve Star Worthy letters

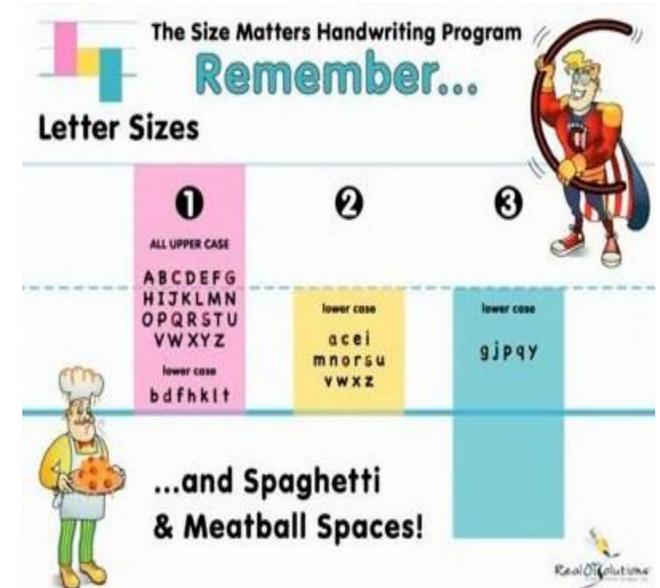
## Data Analysis

- Chi-squared and independent samples t-tests examined if there were significant differences between groups in demographic and outcome measures prior to intervention.
- Within-group differences over time were assessed with paired t-tests. Independent samples t-tests compared the groups on the *changes* between post- and pre-intervention scores on the measures.
- Analyses were done separately for each grade level.

## Results

- At pre-intervention, there were no significant differences between control and experimental groups in demographics or on the any of the measures for kindergarten and 2<sup>nd</sup> graders.
- The control group had statistically significant better pre-intervention scores on MHA Size for 1<sup>st</sup> graders.
- Kindergarteners in both groups had significant improvements over time on the THS-R. These improvements were significantly greater in the intervention group.
- First graders in the intervention group had significant increases on all scales of the MHA and THS-R except the MHA Spacing scale and MHA Rate scale. There was actually a significant *decrease* at the post-intervention on the MHA Rate scale. First graders had significantly greater over-time increases on all sub-tests of both measures except the rate subtest of the MHA when compared to the control group.

- Second graders in the intervention group had significant increases on all sub-tests on the THS-R and MHA with the exception of the MHA Rate and Spacing scales for which there was no change over time. Those in the control group did not report over-time increases on any of the sub-tests and scales of the THS-R or MHA.
- Moderate to large effect sizes were found in all grades.



## Discussion

- The results from the study indicate that the SMHP serves as an effective intervention for kindergarten, 1<sup>st</sup>, and 2<sup>nd</sup> grade students.
- The students improved in size, legibility, form, alignment, and spacing of their handwriting.
- OT's have a role in directing handwriting curriculum in school based settings.
- By emphasizing the importance of letter size, this program works to improving students' handwriting.

## Limitations

- Lack of complete randomization
- No longitudinal study following these students, so it is unknown whether the students' gains will be sustained.

## Future Research

- A longitudinal study to determine if the benefits of the SMHP are sustained
- A longitudinal study could also examine whether the students' rate increases with time
- Effectiveness study with children who have special learning needs or disabilities.

## References

Baker, S., Gersten, R., & Graham, S. (2003). Teaching expressive writing to children with learning disabilities: Research based applications and examples. *Journal of Learning Disabilities*, 36, 109-12

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