2015

The Relationship Between Somatosensory Processing and Handwriting Proficiency

Hillary Colby  
*Dominican University of California*

Ani K. Courville  
*Dominican University of California*

Sherin Thomas  
*Dominican University of California*

Salwa Yaser  
*Dominican University of California*

---

**Survey: Let us know how this paper benefits you.**

Follow this and additional works at: [https://scholar.dominican.edu/ug-student-posters](https://scholar.dominican.edu/ug-student-posters)

Part of the [Elementary Education and Teaching Commons](https://scholar.dominican.edu/ug-student-posters), and the [Occupational Therapy Commons](https://scholar.dominican.edu/ug-student-posters).

---

**Recommended Citation**


[https://scholar.dominican.edu/ug-student-posters/13](https://scholar.dominican.edu/ug-student-posters/13)

---

This Presentation is brought to you for free and open access by the Student Scholarship at Dominican Scholar. It has been accepted for inclusion in Student Research Posters by an authorized administrator of Dominican Scholar. For more information, please contact [michael.pujals@dominican.edu](mailto:michael.pujals@dominican.edu).
Somatosensory Processing & Handwriting Proficiency

Hillary Colby, OTS | Ani Courville, OTS | Salwa Yaser, OTS | Sherin Thomas, OTS | Melisa Kaye, MS, OTR/L

Objective The objective of this study was to examine the relationship between somatosensory processing and handwriting proficiency in typically developing second grade children. The researchers hypothesized a positive correlation between somatosensory processing and proficient handwriting.

Methods
Research Design: Exploratory Correlational
Setting: The Friends School in San Francisco, CA & Bacich Elementary School in Kentfield, CA
Participants: 74 typically developing second grade students between the ages of 7.0-8.11 years
Independent Variable: Somatosensory Processing
Dependent Variable: Handwriting Proficiency
Data Administration: In class individual and small group testing was completed. Teacher and parent/guardian questionnaires were also completed. Inter-rater reliability in test administration was established at the .98 level prior to testing
Data Analysis: Descriptive Statistics, Pearson Product Moment Correlation Coefficient (p = .05), SPSS Version 22.0

Assessment Measures
Minnesota Handwriting Assessment (MHA): This assessment measures handwriting size, form, alignment, legibility, spacing, and speed. Test range: 1st-2nd graders.
Beery-Buktenica Developmental Test of Visual Motor Integration, Sixth Edition: Motor Coordination Subtest (VMI-MC): This assessment includes three part test that measures visual motor integration, visual perceptual ability, and motor coordination. The motor coordination subtest was used to measure the precision of motor output that is informed by effective tactile discrimination and proprioception. Test range: 2-100 years.
Quick Neurological Screening Test, 3rd Edition (QNST-3): This assessment measures motor coordination and sensory integration. The three subtests used to measure somatosensation were: Finger to Nose Proprioception and Kinaesthesia, Rapid Reversing Hand Movements (Kinaesthesia and Proprioception), and Palm and Form Recognition (Tactile Discrimination and Haptic Skill). Test range: 4-80 years.

Results
Sample Size: N=74
Statistically significant correlations:
- Quick Neurological Screening Test - Finger to Nose Subtest (QNST-FN) and Minnesota Handwriting Assessment Size, Form, and Alignment Subtests.
  - As the student becomes more able to precisely touch the tip of the nose with the index finger, handwriting proficiency also increases.
  - As the student becomes more able to precisely touch the tip of the nose with the index finger, handwriting size becomes more effective.

Discussion
- Our research revealed two statistically significant links between somatosensory processing and handwriting proficiency. Therefore, somatosensory processing is a necessary component required to produce legible handwriting.
- Proficiency in somatosensory skill is necessary for children’s development and may contribute to handwriting proficiency.
- Understanding the relationships between somatosensory skill components and their contribution to handwriting ability can help occupational therapists provide effective, evidence-based interventions to students who have difficulties with handwriting.

Implications
- Additional research is recommended to examine the links between somatosensory processing ability and handwriting proficiency.
- Further research should focus on somatosensory skills as they relate to handwriting performance in specific handwriting components such as legibility, form, size, alignment, and spacing.
- Development of new assessments to measure somatosensory components and how they apply to handwriting development and proficiency are indicated.