

# The Top 5 Handwriting Problems... and What to Do about Them

presented by Laura Sena, OTR/L

## Presentation Overview

Objectives:

- 1) Understand 5 common handwriting problems
- 2) Learn strategies to address each problem

If you remember just one thing by the end of this presentation remember this:

*The more we understand about a handwriting problem,  
the easier it is to know what to do about it.*

## Introduction: A Frame of Reference for Understanding Handwriting Problems

Handwriting and Written Communication

Handwriting and Reading Disabilities

## Problem # 1 – Reversals

## Problem #2 – Letter Formation

## Problem # 3 – Pencil Grasp

## Problem #4 – Alignment, Spacing, Size

## Problem #5 – Fluency

## Conclusion

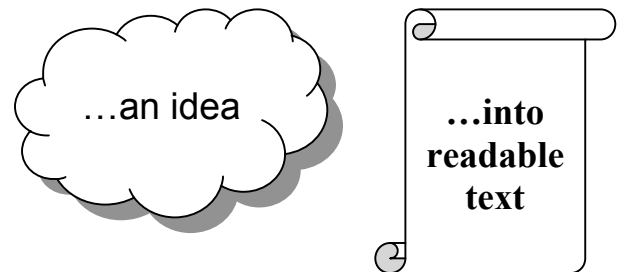
SWIDA, 2008 *The Top 5 Handwriting Problems...and What to Do about Them* - by Laura Sena, OTR/L

## Introduction: A Frame of Reference for Understanding Handwriting Problems

### Handwriting and Written Communication

- € Handwriting is really just a subcategory of written communication.
- € The writing tools may change but the *process* remains the same.
- € Think of written communication in a broader context as a *process* rather than the specific subcategory of *handwriting*.
- € Written communication is the process of using:

Phonetic **CODE** ... to transform



- € If a child does not understand the code, then letters are just “a bunch of lines and circles devoid of linguistic meaning.” (Shaywitz, pg. 50)

### Handwriting and Reading

- € Brain imaging studies show that brains of typical readers are different from dyslexic readers.
- € In typical readers, exact neural models of phonemes, words, spelling, pronunciation and meaning are permanently stored in occipito-temporal region...called the *word form* region.

€ Writing a word and learning how to spell it contributes to establishing an accurate representation of the word in the neural circuitry.

€ “In writing, the fingers express phonemic awareness...

≅ ... *the fingers form the fine motor* :  
*correlates of the phonemes.*” Shaywitz pg. 115

*Activity:*  
*The Mary Poppins Spelling Test*

---

€ Brain imaging studies of children with reading disabilities show:

- } *Underactivation* of neural pathways in word form region
- } *Overactivation* of alternate secondary pathways in frontal regions
- } Difficulty analyzing words
- } Difficulty transforming letters into sounds
- } Slower, less fluent reading

To summarize, there is a strong correlation between *language* and listening, talking, reading, writing.

Listening = *Language* by ear

Talking = *Language* by mouth

Reading = *Language* by eye

Writing = *Language* by hand (Berninger, 2004)

## Problem #1 - Reversals

There are common myths and misunderstandings about reversals.

- € “One of the most enduring misconceptions is that dyslexic children see letters and words backward and that reversals (writing letters and words backward) are an invariable sign.” (Shaywitz, pg. 100)
- € There is no evidence that dyslexics actually see letters or words backward. (Shaywitz, pg. 100)

Reversals are commonly seen in the early stages of writing development.

- € This typically coincides with the early stages of spatial development.

Reversals may be *associated* with weak spatial awareness.

- € Children need a strong “frame of reference” from which to make spatial judgments. This begins with body awareness leading to body scheme.
- € A strong body scheme allows children to develop spatial concepts.
- € They can then project spatial concepts from their body to the world.

Reversals may be *associated* with the natural motor planning tendencies of left-handed people.

- € We naturally move our extremities outward from our body midline.
- € Right-handed = midline to right
- € Left-handed = midline to left

Reversals are *directly* related to the ability to attach appropriate labels or names to letters and words.

- € “...children were able to copy the word *was* and to say the individual letters making up the word in appropriate order...then would name the word as *saw*.” (Shaywitz, pg. 100)

## Problem #2 – Letter Formation

Errors in letter formation are commonly seen when:

- € the starting point is incorrect
- € the direction of the pencil strokes are incorrect
- € the sequence of the pencil strokes are incorrect
- € the control of the pencil is poor
- € letters are confused with each other

Errors in letter formation may result from:

- € introducing printing too early
- € omitting pre-writing stroke practice
- € underestimating the effectiveness of demonstration
- € forgetting to watch children as they write
- € over-reliance on copying and worksheets
- € under-utilization of practice and repetition for mastery
- € omitting multimodal instruction
- € neglecting to link phoneme with letter formation

Poor letter formation may be *associated* with deficient:

- € motor planning and motor memory
- € visual motor integration
- € fine motor skill for pencil control
- € phonemic awareness and language processing

### Problem # 3 – Pencil Grasp

The underlying misconception is:

- € A child has poor handwriting *because* he holds the pencil incorrectly.
- € Therefore, if we *fix* his pencil grasp, his handwriting will improve.

An awkward pencil grasp may be among a cluster of problems associated with poor handwriting, but it is never the sole cause.

Most children transition to a mature grasp between age 4 and 6 (Edwards et al., 2002)

- € 3 year olds may grasp drawing tools with the whole hand, using the arm to control the movement.
- € Through a combination of neurological and muscular maturation, the wrist, hand, and fingers gain more control.
- € This allows a transition into a mature grasp between age 4 and 6.

What is a mature pencil grasp?

- € dynamic *wrist* control
- € open and stable *thumb web space*
- € *finger pads* in contact with the pencil

There are variations of pencil grasps that are *functional*.

- € tripod
- € lateral tripod
- € quadrupod

Why do some children develop *dysfunctional* pencil grasps?

- € introducing writing tools before the hands are ready
- € an imbalance between stability and mobility in the hand
- € neglecting to teach how to hold a pencil

## Problem # 4: Alignment, Spacing and Size

Neat and legible handwriting is related to the spatial organization of letters and words on the page.

- € *aligning* letters and words on the guideline
- € leaving adequate *spaces* between words
- € regulating the *size* of letters consistently

In general, errors in alignment, spacing and size may be associated with:

- € poor spatial awareness
- € visual-perceptual-motor deficits
- € motor planning deficits
- € weak near point and far point copying skills
- € poor attention to detail

In particular, errors in *spacing* may be associated with:

- € weak phonemic awareness
- € difficulty grouping letters into words
- € difficulty holding linguistic information in working memory while copying
- € too much emphasis on copying text (“drawing not writing”)

Errors in alignment, spacing and size may be influenced by:

- € failure to consider “stroke excursion”
- € using too many different types of lined paper
- € omitting direct instruction with guided repetition

## Problem # 5: Fluency

Handwriting fluency is the most challenging problem to address.

- € dependent on automatic integration of brain processes and subskills

Formula for Handwriting Fluency:

$$\frac{\text{READING FLUENCY} \times \text{SPELLING} \times \text{GRAMMAR} \times \text{COMPOSITION}}{(\text{VISUAL PERCEPTUAL MOTOR}) \times (\text{MOTOR PLANNING} \times \text{MOTOR MEMORY}) \times \text{MOTIVATION} \times \text{ATTENTION} \times \text{PRACTICE FOR MASTERY} \times \text{AUTOMATICITY}} = \text{HANDWRITING FLUENCY}$$

- € Reading fluency is the ability to read “text quickly, accurately and with good understanding.” (Shaywitz, pg. 230). Reading fluency is a foundation for handwriting fluency.
- € Spelling, often more challenging than reading, may interrupt the flow of writing with frequent starts and stops.
- € Writing mechanics of grammar and composition must be mastered and applied to the writing process.
- € Visual motor, perceptual motor and/or fine motor skills may be important contributors to handwriting fluency and legibility.
- € The ability to “automate” motor patterns for handwriting via motor planning and motor memory is a crucial to “free-up” higher order processes.
- € The student should be motivated to express himself through writing.
- € The student needs sufficient *attention* for memory storage and retrieval.
- € Automaticity for handwriting, developed through intensity, frequency and duration of systematic multidisciplinary intervention, is necessary.

Without these factors in place, the equation may =

$$\frac{\text{FIDGETING} \times \text{FATIGUE} \times \text{FRUSTRATION} \times \text{FEELINGS OF FAILURE}}{\dots} = \dots$$

SWIDA, 2008 *The Top 5 Handwriting Problems...and What to Do about Them* - by Laura Sena, OTR/L

### References

Amundson, S., J., (1998). *TRICS for written communication – techniques for rebuilding and improving children’s school skills*. Homer, Alaska: O.T. KIDS, Inc.

Berninger, V. (2004). Understanding the graphia in dysgraphia. In D. Dewey & D. Tupper (Eds.), *Developmental motor disorders: A neuropsychological perspective*. New York: Guilford.

Berninger, V., Vaughan, K. B., Abbot, R. D., Abbot, S. P., Rogan, L. W., Brooks, A. & et al. (1997). Treatment of handwriting problems in beginning writers: Transfer from handwriting to composition. *Journal of Educational Psychology*, 89, 652-666.

Cavey, D. W., (2000). *Dysgraphia – Why Johnny can’t write*. Austin Texas: ProEd.

Edwards, S., Buckland, D. & McCoy-Powlen, J. (2002). *Developmental & functional hand grasps*. Thorofare, NJ: Slack.

Mooney, J., and Cole, D., (2000). *Learning outside the lines*. New York: Simon & Schuster.

Shaywitz, S., M.D., (2003). *Overcoming Dyslexia*. New York: Random House.