

Linn Benton Lincoln ESD-Cascade Regional Autism Program

## Differentiated Writing Instruction for Students with Autism Spectrum Disorders

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Writing can often be a challenge and source of frustration for students with Autism Spectrum Disorders (ASD). Both written expression and graphomotor deficits have been identified as weaknesses for students with Asperger Syndrome (AS) or High Functioning Autism (HFA) (Whitby and Mancil 2009) with as many as 60% of individuals with AS/HFA displaying writing disabilities (Dickerson Mayes & Calhoun 2008). Likewise, handwriting of students with ASD may be sloppy or even illegible. Written expression for students with ASD can be impacted by organization and attention deficits, and graphomotor abilities can be impacted by motor planning, coordination difficulties, and information processing deficits (Barnhill et al., 2002). The result is that many students may protest writing tasks while others may willingly approach them but experience difficulty in completing them. To maximize writing outcomes, teachers will need to differentiate instruction for their students with ASD.

Important for all students is for the teacher to cultivate a positive climate for writing, but this is especially critical for students with ASD. According to Zimmerman, Bandura, and Martinez-Pons (1992), a student's belief in his/her ability significantly impacts the amount of effort expended and the height of achievement (as cited in Chapman, 2003, p. 10). Creating a positive environment includes supporting and encouraging whatever expressive attempts are made by students, whether scribbles, pictures, words, sentences, or a few lines. Also, a positive writing climate can be fostered by encouraging students to use alternative forms of expressions, such as a computer, word processor, or communication device. In addition, support can be offered through peers, classroom volunteers, teachers, and paraprofessionals who serve as scribes to students with ASD to record their thoughts and ideas expressed.

Finally, teachers and peers can influence positive writing experiences and build confidence by providing specific constructive feedback on all writing attempts.

Continued on page 2.

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## DIFFERENTIATED WRITING INSTRUCTION CONTINUED...

Once a positive writing environment has been established, differentiation for individual students with ASD might include some of the following considerations:

- Individualized instructional goals: Acknowledge the need for increased processing time, and implement time and work assignment modifications as needed.
- Choice making: Providing opportunities for choice making will increase student engagement. Because an associated characteristic of ASD is a heightened display of interest in a narrow field of topics, students will engage the most when writing about topics of interest to them. Embedding choices throughout the writing process, such as preference to work in a group or alone, graphic organizers to be used, and selection of output device, maximize student participation and outcomes.
- Final product form: Because written work is an integral component of instruction across content areas, it is important to consider assistive technology to support students in expressing their ideas. In addition, a variety of final product forms can be offered for the student to choose. These can include but are not limited to oral responses, PowerPoint presentations, graphs and diagrams, mindmaps, storyboards, and flow charts.
- Vocabulary Instruction: Teaching vocabulary is important for all students, but especially important for students with ASD for whom communication is a significant challenge. Attempt to maximize vocabulary that the student already knows and uses and expand from there.
- Model before writing: It is beneficial to take the time to work out a sentence or thought structure verbally or visually before having the student write it.
- Visually support the writing process: Use graphic organizers to help the student see the components of
  the writing assignment and provide visual prompts to support student thinking and expression. For
  example, start with one thought at a time and provide visual and/or verbal prompts to support the
  student thinking through what they want to say next.
- Use small, simple steps to teach the writing process: Break down and chunk information for students with ASD. Think about each step in the writing process and back up further.

It is important that students have specific writing instruction and activities each day, even if the process is difficult. To support teachers in differentiating writing instruction for students with ASD, a wide variety of resources can be found at T/TAC Online: http://www.ttaconline.org.

- To view the <u>SOL Enhanced Scope and Sequence PLUS</u> documents that include sample activities and lesson plans click on your region; then on the <u>SOL Enhanced</u> tab at the top; click on Search <u>SOL+Lessons</u> (left margin); then choose a grade level for <u>English</u>.
- To access <u>resources</u>, including a wide variety of web-based resources click on the Resources tab at the top of the webpage http://www.ttaconline.org; then enter "writing" within the search box.

Software and resources, such as Alternative Pencils, Buildability, Clicker 5, Co-Writer, Developing Minds, Draft Builder, Handwriting Without Tears, PixWriter, and Write OutLoud are available for check-out through your local T/TAC lending library.

#### References

Barnhill, G., Hagiwara, T., Smith-Myles, B. & Simpson, R.L. (2000). Asperger Syndrome: A study of the cognitive profiles of 37 children and adolescents. Focus on Autism and Other Developmental Disabilities, 15, 146-153.

Chapman, C.M. & King, R. (2003). Differentiated instructional strategies for writing in the content areas, Corwin Press: California, p. 10. Dickerson Mayes, S. & Calhoun, S.L. (2008). WISC-IV and WIAT-II profiles in children with high functioning autism. Journal of Autism and Developmental Disabilities, 38, 428-439.

Whitby, P.J.S. & Manceil, G.R. (2009). Academic achievement profiles of children with high functioning autism and Asperger syndrome: A review of the literature. *Education and Training in Developmental Disabilities*, 44(4), 551-560.

https://ttac.gmu.edu/telegram/archives/spring-2010/article-2

## **HANDWRITING**

## New Study Reveals Handwriting is Real Problem for Children with Autism

# Kennedy Krieger Researchers Suggest Improvements Are Possible by Targeting Letter Formation, Fine Motor Control Training

Handwriting skills are crucial for success in school, communication, and building children's self-esteem. The first study to examine handwriting quality in children with autism spectrum disorders (ASD) has uncovered a relationship between fine motor control and poor quality of handwriting in children with ASD, according to research published in the November 10, 2009, issue of *Neurology*, the medical journal of the American Academy of Neurology. The study, conducted by researchers at the Kennedy Krieger Institute, compared handwriting samples, motor skills, and visuospatial abilities of children with ASD to typically developing children. The researchers found that overall, the handwriting of children with ASD was worse than typically developing children. Specifically, children with ASD had trouble with forming letters, however in other categories, such as size, alignment, and spacing, their handwriting was comparable to typically developing children. These findings build on previous studies examining motor skills and ASD conducted in 2009 by Kennedy Krieger researchers.

Parents of children with ASD are often the first ones to observe their child's poor handwriting quality. This study identifies fine motor control as a root source of the problem and demonstrates that children with ASD may not experience difficulties across all domains, just forming letters. By identifying handwriting as a legitimate impairment, parents, teachers and therapists will now be able to pursue techniques that will improve children's handwriting.

"The ability to keep up in classes and convey ideas through handwriting is fundamental to life," said Christina Fuentes, lead study author and researcher at the Kennedy Krieger Institute. "Knowing the causes of impairment allows us to strategically identify techniques that will help children with ASD improve their handwriting. Our study suggests that teaching children how to form letters, in combination with general training of fine motor control through techniques that include stabilizing the arm and the use of proper writing utensils, may be the best direction for improving handwriting performance."

#### About the study

Researchers administered a total of three tests to 14 children with ASD and 14 typically developing children. The handwriting samples were scored on legibility, form, alignment, size and spacing. The children's motor skills were then assessed using the Revised Physical and Neurological Examination for Subtle Sign (PANESS). The PANESS consisted of multiple categories such as gait tasks (heel walking), balance tasks (hopping on one foot) and timed movements (repetitive and patterned movements). Lastly, the children's visuospatial skills were assessed using the Block Design test in which they were timed to reconstruct large designs by properly assembling a set of blocks.

With no significant difference between the typically developing children and children with ASD groups in age, perceptual reasoning IQ, and the Block Design scores, a significant difference was found for performance on the PANESS, with the typically developing children performing better. Researchers found children with ASD's total handwriting scores were lower than typically developing children due



to the quality of their letter formation. Researchers also found that motor ability, specifically for timed movements, was a strong predictor of handwriting performance in children with ASD as opposed to age, intelligence, and visuospatial abilities.

"Identifying this fine motor deficiency in handwriting provides important insight about ASD," said Dr. Amy Bastian, corresponding study author and Director of the Motion Analysis Laboratory at the Kennedy Krieger Institute. "It provides another example of motor skill problems that may give us cues for other deficits with socialization and communication. Furthermore, occupational therapists and teachers can now take the information from this study and apply it to the students they see on a daily basis."

This study was sponsored by Autism Speaks and the National Institutes of Health.

https://www.autismspeaks.org/science/science-news/new-study-reveals-handwriting-real-problem-children-autism

## HANDWRITING PROBLEMS

## Handwriting Problems Hard to Outgrow With Autism

Study Links Poor Handwriting in Teenagers With Autism to Reasoning Skills

By Jennifer Warner

Nov. 16, 2010 -- Handwriting problems may be hard for children with autism to outgrow.

A new study shows the handwriting problems that often affect children with <u>autism</u> are likely to persist into adolescence, but there may be strategies to help them compensate.

Researchers found that teenagers with autism were more likely than their peers to have poor handwriting and impaired motor skills. But unlike in younger children with autism, motor skill problems were not the main factor affecting their handwriting ability.



Instead, the study showed perceptual reasoning abilities were the main predictor of handwriting skills in adolescents. Perceptual reasoning is a person's ability to organize and reason to solve problems when presented visual, nonverbal material.

That reasoning skills can predict handwriting performance suggests a possible strategy adolescents with autism could learn to overcome motor impairments, says researcher Amy Bastian, PhD, director of the Motion Analysis Laboratory at the Kennedy Krieger Institute in Baltimore.

"There are several techniques available to improve handwriting quality, such as adjusting pencil grip, stabilizing the writing hand with the opposite hand, or forming letters more slowly," Bastian says. "These therapies could help teens with autism to progress academically and develop socially."

#### HANDWRITING PROBLEMS LINKED TO REASONING SKILLS

In the study, published in *Neurology*, researchers evaluated handwriting samples from 24 boys and girls between the ages of 12 and 16. Half of the group had autism.

The participants were asked to copy the words in a sentence in their best handwriting, and their handwriting was scored based on legibility, form, alignment, size, and spacing. A scrambled sentence used in the study was "the brown jumped lazy fox quick dogs over."

The participants' motor skills, including balance and timed movements, were also rated.

The handwriting score results showed that teenagers with autism earned an average of 167 out of 204 points compared with an average of 183 points among teens without autism. The teenagers with autism also showed impairments in motor skills testing compared with their peers.

"The importance of this research was not 'if' children and adolescents with autism struggle with handwriting, which many individuals can already attest to, but rather to document the extent of the challenge and determine if we could reveal anything about 'why' it is the case," Bastian says.

https://www.webmd.com/brain/autism/news/20101115/handwriting-problems-hard-to-outgrow-with-autism

## **ADVICE ON WRITING**

## Advice on helping grade schooler with autism hold a pencil and write

I have an 8-year-old son who has autism. He is doing well in a regular classroom in terms of developing speech and playing more with other children. The problem now is that he can't write but only grips the pen to scribble. What can I do to help my son hold a pen properly and write?

Today's "Got Questions" response is by occupational therapist Desiree Gapultos, who practices within the <u>Autism Speaks Autism</u> <u>Treatment Network</u>, at Children's Hospital Los Angeles.

Editor's note: The following information is not meant to diagnose or treat and should not take the place of personal consultation, as appropriate, with a qualified healthcare professional and/or behavioral therapist.

Thank you for your question. It sounds like your son would benefit from learning some basic prewriting skills and then mastering a grip that's more effective for writing.

Here are some of the ways that you and his teacher can help him acquire these skills.

### Finding where to start

First, I recommend seeing if your child can imitate your drawing a vertical line and a horizontal line. You can demonstrate how to do this on one piece of paper and ask him to draw on another piece of paper. Next, see if he can imitate you drawing a circle and then two crossed lines.

If he can imitate your motions to draw these shapes, next try showing him each shape without him watching you draw it. You want to see if he can copy the shape without directly seeing and imitating your motions. If he can, he may be ready to copy actual letters and numbers.

However, if he has difficulty imitating your motions or copying pre-drawn shapes, it's important to start with some pre-writing skills before attempting to teach him to write letters and numbers.

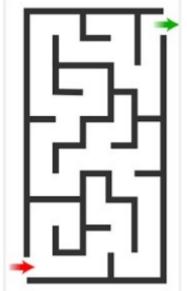
#### **Prewriting skills**

Writing is not just about developing the fine motor skills needed to grip a pen the right way. It's also about motor planning and being able to come up with ways to construct letters. So we want to help your son use his visual perception and visual-motor, or "eye-hand," coordination.

There are many playful ways to develop these skills.

- For instance, you and your child can use each use a finger to make shapes in the sand, some foam soap, shaving cream or soft modeling clay.
- Encourage him to pop bubbles in the air with one finger.
- Show him how to use his finger to follow a simple maze drawing or complete a dot-to-dot picture in a preschool activity book. (See image at right.)

All these activities require eye-hand coordination and motor planning.



## ADVICE ON WRITING CONTINUED...

#### Have fun with air writing and more

Another prewriting exercise I recommend involves showing you child how to use his hand and big arm movements to make shapes in the air. Make big circles, triangles and squares. The two of you can move on to drawing letters in the air. You might want to start with simple letters such as "L" and "M."

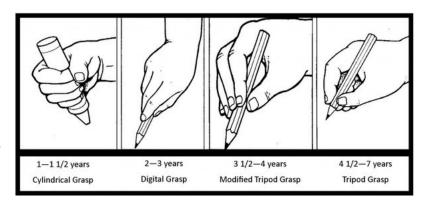
Since many children – and adults – who have autism are visual learners, it may help if you draw these shapes and letters with a bold marker on a piece of paper to help your son see and grasp what shapes you're making in the air together.

You and your child can also construct 3-D letters using sticks, markers, pencils and other objects. For example, give your son a small pile of short sticks. Ask him to pick up four sticks and make them into the letter "E." If he has difficulty, you can demonstrate what you mean. Or you might start by drawing a big "E" on a piece of paper as a guide for laying down the sticks.

## Grasping a pen or pencil

As your son master's prewriting skills, you can move on to help him grip a pencil or pen properly.

As infants, we tend to use what's called a palmar, or fisted, grip. (See photo at right.) It sounds like this may be what your son is using now when he grips a pen to scribble.



I've found that one of the best and most natural ways to discourage a fisted grip and encourage a more functional pencil grasp is to offer a short writing tool such as a broken crayon or short pencil. It's just too small for a palmar grip, but just right for fitting between his fingers.

You can also encourage your child to use a paintbrush, chalk, pastels, colored pencils and different sizes of marker.

If he has difficulty with these, I suggest trying an "easy grip" crayon. Some come in ball-shapes and triangle-shapes that may encourage him to use an effective grasp. (See examples.)



Ultimately your goal is a natural and effective pencil grip, such as that illustrated in the photo at right. It may help you son to look at this picture as you gently place the pencil in the proper position in his hand.

Above all, remember to make this process fun and praise him for his cooperation and each advance, however small.

I also strongly encourage you to work with an occupational therapist – ideally at your son's school – for personalized activities to promote your child's fine-motor and eye-hand skills on his way to mastering handwriting.

I hope these tips prove helpful. Please let us know how your son is doing in the comment section below or by emailing us again at gotquestions@autismspeaks.org.

https://www.autismspeaks.org/blog/2016/01/22/advice-helping-grade-schooler-autism-hold-pencil-and-write

## **LEARNING TO WRITE**

## Autism and learning to write: Our child won't look at the paper

Our son is 4 years old and has autism. How can I help him learn to write when he doesn't make good eye contact with the paper?

Editor's note: The following information is not meant to diagnose or treat and should not take the place of personal consultation, as appropriate,

Thank you for your question. It's very apt as visual attention is one of several foundation skills we need to write. Other important pre-writing skills include visual-motor integration (hand-eye coordination) and fine motor skills. A child also needs to grasp the concept that we can use a writing implement to make deliberate shapes and marks on a writing surface (versus just scribbling).

I'm glad to offer some tips based on my experience working with many young children on the autism spectrum. First, I want to emphasize that 4 years old is too young to expect a child to write clear letters – regardless of whether the child has autism. Rather, the goal should be encouraging your son to copy basic shapes and trace some letters.

## Engaging your son's attention

- Place a large piece of paper, erasable writing board or chalkboard on an upright surface such as an easel or wall. Put it right at your son's eye level. Then, give him some colorful markers or crayons and show him how fun it is to draw on the surface in front of him.
   (I've found that standing often helps kids on the spectrum become involved in a task.)
- Grab some colorful pieces of chalk and head outdoors to show your son how to draw on the sidewalk.



## **Pre-writing skills**

Once you've found a writing surface that engages your son's attention, I encourage you to practice some fun, pre-writing skills before moving on to letters.

- Using colorful crayons, markers or chalk, show your son how to draw shapes circles, a big "X" and zigzags.
   Encourage him to copy or trace your motions. Or you copy him. If he makes a mark on the sidewalk, praise him and make a mark just like his. Have your child make a circle; then you add the eyes, nose and mouth to make a happy face that you both created together.
- Show your son how to trace his hand on the sidewalk or the writing surface
  you've put on the wall. After tracing your own hand, you might need to use
  gentle hand-over-hand guidance to show him how to trace his own. (See photo
  above.) Many children in my practice greatly enjoy the sensory aspects of this
  activity, which encourages visual attention and interest in using a writing tool.
- Show your son how to trace shapes in the sand with his finger or press shapes
  in soft clay with a stick. These activities can provide enjoyable sensory feedback. In fact, having your child "feel"
  letters and shapes can help him remember how to draw them later.

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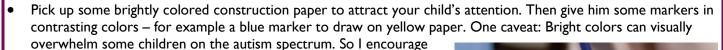
## LEARNING TO WRITE CONTINUED....

## **Eye-catching cues**

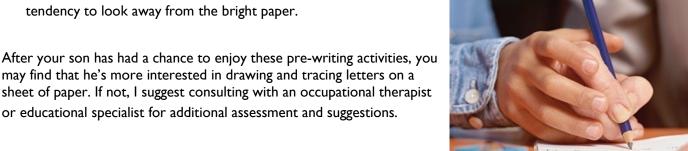
Use some visual cues to encourage your son to trace the lines and shapes you draw. This teaches the important concept of making purposeful movements with a writing tool and having a goal with the lines he creates (i.e. moving from scribbling to writing).

Here are some options:

- Use a small sticker or inked stamp to highlight the start of the line or shape that
  you want your child to trace or draw. Place another at the end of the line or shape.
  Try a series of stickers or shapes and show your son how to connect the dots with
  a colorful crayon or marker. Give your child some stickers and have him place
  them along the line of a letter you draw.
- Draw a square and ask your child to make a mark in it. You may need to demonstrate how to do this by placing an "X" in the box. (See image at right.)



you to look for signs of this in your son – for example, an increased tendency to look away from the bright paper



https://www.autismspeaks.org/blog/2016/07/29/autism-and-learning-write-our-child-won%E2%80%99t-look-paper

#### **ADDITIONAL SUPPORTS ONLINE**

How Various Learning and Attention Issues Can Cause Trouble With Writing

https://www.understood.org/en/learning-attention-issues/child-learning-disabilities/writing-issues/how-various-learning-and-attention-issues-can-cause-trouble-with-writing

Download: Graphic Organizers to Help Kids With Writing

https://www.understood.org/en/school-learning/learning-at-home/encouraging-reading-writing/download-graphic-organizers-to-help-grade-schoolers-with-writing

Writing Supports for Students with Autism

http://www.gatfl.gatech.edu/tflwiki/images/2/26/AT and Writing for Students with Autism.pdf

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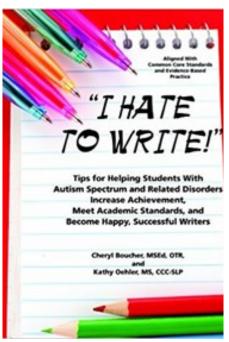
Questions? Call (503)786-6082
or email registration@factoregon.org.

## **BOOK REVIEWS**

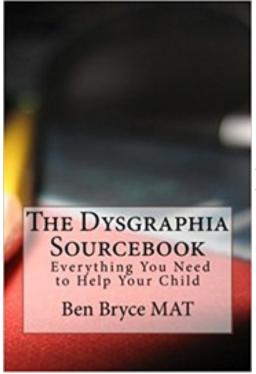
## "I Hate to Write!"Tips for Helping Students with Autism Spectrum and Related Disorders Increase Achievement, Meet Academic Standards, and Become Happy, Successful Writers

by Cheryl Boucher and Kathy Oehler

The writing process requires a high level of coordination between various parts of the brain. In individuals with an autism spectrum disorder, the areas of the brain do not communicate effectively with each other, leading to great difficulty coordinating all the skills needed for writing. As a result, many students HATE TO WRITE! Written in a format that appeals to readers, this aptly-named resource is brief, practical and to the point, focusing on the four areas of writing that are most problematic for students with ASD: language, organization, sensory and visual-motor skills. The book is organized under topics such as Getting Started, Knowing What to Write, Getting Stuck, Misunderstanding the Directions, and many more. Reproducible, easy-to-use worksheets make the task of



teaching writing easy and fun. What's more, it is aligned with the National Common Core Standards. Strategies are appropriate for students K-I2 and beyond.



# The Dysgraphia Sourcebook: Everything You Need to Help Your Child

by Ben Bryce

Dysgraphia is a learning disability that affects the ability to write, and can occur with other disabilities. If your child is struggling with dysgraphia, *The Dysgraphia Sourcebook* will give you the tools you need to help your child including causes, treatment options for the three types of dysgraphia, a software review for dozens of free and paid programs, suggestions for working with your child's school, and specific techniques to help your child overcome their dysgraphia. This resource provides basic, introductory information for families just learning how to understand and support their child's writing challenges.



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## SENTENCE STARTER VISUALS

