

# Do dysgraphia treatments really work? essay sample

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Dysgraphia is a neurological learning disability ensuing from the struggle in expressing thoughts in writing and graphing. Dysgraphia is commonly referred to as poor handwriting or penmanship, but is essentially a learning disability that affects the ability to translate thinking into motor skills in the hands (Pechman, 2010, p. 93). Dysgraphia is a serious disorder that can affect adults and children. Stroke patients and patients with aphasia and attention deficit hyperactivity disorder (ADHD) can also suffer from the disorder. Doctors and psychologists have researched and administered educational treatments such as a variety of different types of educational therapy along with the complete avoidance of handwriting through use of computers. Some of the practices described below have been suggested to be advantageous and some need further investigation to substantiate claims that they work.

### Background to the Disorder

### Signs and Symptoms

Recognizing the signs and symptoms of dysgraphia is the foundation for treating and ultimately curing a child's disability. The study of dysgraphia is significant because of its relevance to neurologic disease. Strokes, tumors, or infections relating to any lobe of the cortex in either hemisphere of the brain can affect the production of the written language. Impaired spelling can be the first symptom of a number of degenerative diseases, such as Alzheimer's disease or frontotemporal lobar degeneration. Dysgraphia may also be a persistent symptom of traumatic brain injury or stroke (Hillis, 2004, p. 89). An individual's penmanship plays an important role in his/her education. If an educator cannot read a child's work, it is most often interpreted as an incorrect answer. After diagnosing a child with dysgraphia, the definitive goal

is to treat the patient with either practical means of educational exercises or more unconventional therapies.

Warshaw (2004, p. 10) states children are typically able to duplicate letters when writing slowly, but due to the nonexistence of instinctive skills used to process and transcribe information, they are incapable of writing intelligibly or spelling properly. A few signs of the child having difficulty are: letters staying on a straight line, holding the pencil awkwardly, and uncomfortably twisting of the arm causing the individual to become extremely tired and rushing to finish (Pechman, 2010, p. 94). Children may be able to draw even though still having difficulties with their penmanship; they are essentially “drawing” the letters instead of writing them (Warshaw, 2004, p. 10). History of Neuropsychological Research

Poor spelling disorders have been reported early on in the neuropsychological community but the attentiveness put forth has been inadequate (Miceli & Capasso, 2006, p. 110). In earlier times, good penmanship was not an important trait to have. If an individual had proper skills in speech, handwriting and spelling were not necessarily critiqued. The study of writing impairments began to be noticed in the mid 19th century; however concern for this area of information has been scarce in the past one hundred years (Hillis, 2004). Writing impairment has progressively become unbearable since more communications are occurring such as computer and cell phone use. Early 1980s research

In the 1980s, models based on expectations from information processing methodology of the brain arose to inspire psycholinguistic research

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concerning normal language. Researchers have tried to use a systematic (linguistic) method but it did not last long. Rapid progress in dysgraphia research led to the abandonment of the practically systematic method by researchers. The question asked by studies in the 80's was: is it likely to support a practical design of spelling that was equivalent to what was suggested for reading by cognitive neuropsychological investigations of dyslexia? Subjects that had difficulty spelling unique words as compared to common words, led to the inclusion of more accurate demonstration of the ability to write unique words than common words chosen. The contrasting arrangements of performance were attributed, just as the syndromes described in dyslexia, to a disproportionate impairment of or relating to the secondary words of a language (sub-lexical) conversion processes, and of lexical-semantic (language) mechanisms, individually (Miceli & Capasso, 2006, p. 111). Since the research, which has been conducted in the early 1980s, additional treatments are available and the opportunity of a cure is closer to a reality. Medical Nomenclature

Medical nomenclature may be difficult to understand, but useful in facing the tough realization that a child has a learning disability. For instance, the word dysgraphia is defined in the Merriam-Webster online dictionary (2012) as "the impairment of the ability to write caused by brain damage." This definition could be misinterpreted as the words "brain damage" may cause an individual to visualize someone laying in a hospital bed incapable of moving because of trauma. Neuropsychology is another cryptic term in the dysgraphia glossary. Neuropsychology is defined as "a science concerned with the incorporation of psychological observations on behavior and the

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mind with neurological observations on the brain and nervous system” (Merriam-Webster, 2012). Merriam-Webster (2012) lists psycholinguistic as “relating to the psychological characteristics of a language.” This can be construed as a reasonably understandable word after broken down: “psycho” originates from the word psychology, that has previously been defined, and linguistic derives from the word language. Treatments of Dysgraphia

### Pharmaceutical Treatments

The research for this paper concludes, medicinal treatments for dysgraphia alone have not been found. Medicinal treatments of disorders accompanied by dysgraphia exist; although rarely used to treat dysgraphia alone. Most treatments for dysgraphia are educational or hands-on unless the disability is accompanied by additional learning disabilities such as ADHD. Drugs, such as Concerta could possibly be used in dysgraphia but are normally used when the disorder is accompanied by other disabilities such as ADHD.

Dysgraphia and ADHD are considered in the psychology community to have a common genetic cause, but not much has been learned about the fundamental mechanisms of the two and how they are a factor to the deficit (Adi-Japha, Landau, Frenkel, Teicher, Gross-Tsur, & Shalev, 2007, p. 700).

The team (Adi-Japha, et al, 2007, p. 701) conducted an experiment where 20 6th grade boys underwent testing for linguistic knowledge, reading, and standardized spelling tests. The majority of the group exhibited signs of dysgraphia along with already diagnosed AD-HD (Adi-Japha, et al, 2007, p. 706). The study was conducted to evaluate the presence of dysgraphia in

patients with AD-HD and was a successful. The conclusion of this study indicated that children with AD-HD have a much greater likelihood of having dysgraphia than a healthy child. The study also points to the assumption that if medications for AD-HD, such as Concerta and Ritalin, can calm the nerves of a patient with AD-HD, these medicines will also assist him/her in slowing down and concentrating on writing the alphabet properly and legibly. Non-medical Treatments

Non-medicinal treatments can range from a simple educational tool to the use of computer programs. Something such as a physical therapy treatment can develop the motor skills needed to assist in improving penmanship. Educational tools like repetitive training and writing simple sentences can also help improve the readability of a child's handwriting. As discussed below, computer programs can possibly benefit a child in expressing what he/she wants to put on paper (Kohnen, Nickels, & Coltheart, 2008, p. 355).

#### Treatments for Lexical Spelling

Kohnen, Nickels, & Coltheart (2008) conducted two treatment studies. The first experiment was to make irregular word spelling improve. Spelling was practiced until the patient had 90% of the words correct (Kohnen, et al, 2008, p. 355). By practicing, the patient showed improvement in performance of handwriting and spelling at the first follow-up appointment (Kohnen, et al, 2008, p. 359). In a second experiment with the same subject, Kohnen, et al (2008, p. 359) investigated if it would be possible at all to predict inductive reasoning for different untreated words based on the results of the first experiment. The practicing of words that depart from the

usual pattern of spelling, or irregular word spelling, has indicated the advances in long-lasting improvements in accuracy (Kohnen, et al, 2008, p. 363). Tripod Pinch Strength

Graphomotor skills are a combination of cognitive and motor skills which allow a person to write well. Out of 51 children from 3rd through 5th grade, 23 had dysgraphia and 28 did not. The study evaluated the strength in hands allowing a writing utensil to be held correctly, tripod pinch strength, (the strength in a hand that allows holding a pencil correctly) on penmanship (Engel-Yeger, & Rosenblum, 2010, p. 1749). This study is one of the first studies that compared the tripod pinch strength of children with dysgraphia (Engel-Yeger & Rosenblum, 2010, p. 1755). The children were instructed to copy handwriting onto an electronic tablet. The results found the children with dysgraphia had much lower tripod pinch strength. Therapy to increase the strength could improve the handwriting of individuals with dysgraphia (Engel-Yeger & Rosenblum, 2010, p. 1755). Case Studies on Non-traditional

#### Treatments

Examining case studies concerning treatments that are less than traditional, such as using the rule-of- $\{E\}$  ("I" before "E" except after "C"...), can help with better treatment of the disorder. Kohnen, Nickels, & Coltheart (2010, p. 392) conducted a case study on a young man with developmental mixed dysgraphia (Noggle, Dean, & Horton, 2012, p. 263), where they replicated an earlier successful case study. They were attempting to develop the sub-lexical (secondary word) spelling ability in the young man suffering from developmental mixed dysgraphia during a random intervention method.

They attempted to deduce if more evidence would be introduced if untrained words (words not normally used, un-learned) would take a longer time to improve. A particular interest in this study was how strong is the finding that the training of only two vowels using the rule-of- $\{E\}$  can lead to improvement in the spelling of all five vowels using the rule-of- $\{E\}$  in another case with mixed dysgraphia (Kohnen, et al, 2010, p. 395)? The young man was identified to have mixed dyslexia/mixed dysgraphia, and he had not yet gained the appropriate knowledge of the rule-of- $\{E\}$ . The subject was an appropriate case to conduct the training of sub-lexical spelling based on case studies from the past (Kohnen, et al, 2010, p. 399). The case study concluded spelling had improved after training. The Paper and Pen or Monitor and Keyboard?

Another form of treatment is to type words on a keyboard instead of writing them on paper. Is anything accomplished when using a computer to express thoughts, or is it really treatment? Typing as an alternative to writing seems to be a means of escaping the issue or ignoring to problem entirely. In a case study, children in the 2nd, 4th, and 6th grade that had learning disabilities in transcription, such as dysgraphia and those without learning disabilities, were observed in the performance of three tasks such as writing letters, sentences, and essays. They were also shown different signs according to their language competency level and were asked to write with pen and paper and type on a keyboard (Berninger, Abbott, Augsburger, & Garcia, 2009, p. 123).



The two groups had comparable IQs verbally, but were thoroughly dissimilar in spelling, writing and composing capabilities. The studies indicated both groups took longer to write their essays, letters and sentences with the keyboard than by handwriting. The studies also showed that the children were faster at producing work and writing complete sentences by pen as they progressed in age. In the summary (Berninger, et al, 2009, p. 138), it was concluded that children need both handwriting experience as well as that of the keyboard. Handwriting will help hone skills such as penmanship, writing, and spelling. Using a computer will help with the speed and readability of the content the children are developing. What does this mean as a treatment for dysgraphia?

Mortley, Enderby, & Petheram (2001) believe that using a computer will improve functional writing in patients with severe dysgraphia. A review published in 1990 posed the question: " Does computerized rehabilitation work?" The author of the review, discussed in Mortley, Enderby, & Peteram's (2001) article, concluded not enough evidence was available at the time to prove whether computer rehabilitation worked or not. The author went on to say " by fostering or supporting unrealistic expectations of complete recovery [computer rehabilitation programs are] therefore causing more problems than they are solving by way of poor adjustment of the individual and family to the disability" (Mortley, et al, 2001). Computer interventions may also help older patients with dysgraphia. In a case study, a 67-year-old with a left carotid bruit (abnormal narrowing of an artery), caused by a stroke, was on the waiting list for surgery. In the year following, his speech,

conversational ability, and handwriting suffered immensely (Mortley, Enderby, & Petheram, 2001, p. 445).

The patient could not write his name or make out a list, thus proving his functionality was amiss, to say the least. In the first year, the patient showed no sign whatsoever of improvement. Psycholinguistic writing evaluations were overseen before therapy in order to examine the type of writing deficiency involved. These evaluations were repeated at eight week intervals to create a base-line reading of penmanship quality before beginning the intervention. The treatment lasted over six months and included phases such as practicing his speech, familiarizing him with a dictionary and a computer. The patient had never used a computer or a QWERTY keyboard and first needed training before using software. By the end of the study the patient was able to use a computer to communicate and could now complete a handwritten letter to his family (Mortley, Enderby, & Petheram, 2001, p. 445)

#### Text to Speech Therapy for a Patient with Dysgraphia

Estes and Bloom (2011) led a study using voice recognition software on a 65-year-old woman who had Aspasia along with dysgraphia because of a stroke. The treatment was conducted on the Dragon NaturallySpeaking Program (text-to-speech computer software) in ten one-hour sessions (Estes & Bloom, 2011). Studies have shown good results for treating children with learning disabilities such as dyslexia and dysgraphia, in the areas of speech and writing abilities with this software. Although the patient is not writing, her thoughts can be more accurately typed. When Estes and Bloom were gathering information about this patient, she had difficulty writing words, but

was able to draw pictures without difficulty. This demonstrates the patient had use of her writing hand, but could not form the letters to make up a complete word. The findings which this study produced, illustrate that voice recognition software can be effectively used by someone with dysgraphia as an alternative to handwriting (Estes & Bloom, 2011, p. 379). Treatments for Other Disorders Could Work for Dysgraphia

Another type of disorder that can cause poor handwriting is developmental coordination disorder (DCD). Aside from lacking coordination and balance when conducting daily tasks, DCD also affects handwriting much like dysgraphia, only on a smaller scale. A study was conducted where a group of children were put through a series of tests to evaluate their motor skills such as riding a bicycle or writing words on a paper (Banks, Rodger, Polatajko, 2008, p. 101-102). The approaches chosen by the analysts and executed by the patients were to increase their handwriting skills. The patients were unsuccessful at grasping what the assignment of handwriting required of them and how to best proceed with the execution thereof. The findings influenced the idea that DCD results primarily from a cognitive problem that manifests in motor skill acquisition difficulties (Banks, et al, 2008, p. 108). DCD is very much like dysgraphia in that handwriting is affected in both areas, which may prove that treatments for DCD may also work for dysgraphia. Dysgraphia with Aphasia

Aphasia is a common degenerative disease that is often accompanied with dysgraphia. Rapp and Glucroft, (2009, p. 243) conducted neuropsychological testing on a woman who had aphasia with a primary symptom of dysgraphia.

At baseline testing, she was tested in picture recognition and had made multiple errors; her ability to write words and non-words was substantially diminished. The treatment procedure chosen for this study was the spell-study-spell procedure where the patient spells a word, studies, and spells it again. This procedure was repeated until the word was spelled correctly. Her vocabulary and spelling were improved by the end of the treatment, but six months after treatment the benefits were reduced. Most words were spelled accurately and the study was categorized as a success, even though only one patient was studied (Rapp & Glucroft, 2009, p. 257). Dysgraphic Turn-Around

Pickard, McAllister, and Horton, (2010) write about a number of unprompted texts written by a stroke victim 100 days after the stroke. The patient was an educated and successful author prior to the stroke. The text written three and a half months after the stroke was completed all with the patient's non-dominant hand. After one year the patient had returned to his normal vocabulary and writing ability as if nothing occurred (Pickard, McAllister, & Horton, 2010, p. 1228). The idea of the study suggests that it is possible to gain control of handwriting and spelling skills with immediate treatment after a stroke. Conclusion

When researching different treatments for dysgraphia from the medicines that can be prescribed to the treatments or workarounds, non-medical treatments appear to be the obvious choice, judging by the outcomes of the studies mentioned in this paper. Medicinal treatments are used to help an individual focus his/her energy to assist the patient in slowing down and

concentrate on his/her penmanship. Medicines such as Concerta and Ritalin seem to work; however, popular opinion is the potential zombie-like behavior and could possibly be considered as a lazy way out or a quick fix. Based on the research presented above, the educational/non-traditional treatments are concluded to be the most advantageous and successful in improving one's spelling and handwriting skills for a person with dysgraphia.

Dysgraphia can affect a child's performance in grade school which can lead to difficulties, making it harder to succeed in professional life in the years to come, therefore the importance of conducting such studies as discussed in this paper to better understand the disorder and try and solve the affliction.

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