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Dyslexia Is Not Actually Caused By Gray Matter Differences, Brain Anatomy Study Suggests

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Anatomical differences of the brain that were previously thought to be a root cause of dyslexia could actually be the result of poorer reading experiences, according to a small new study.

The findings suggest the brain differences are a result of the dyslexia, rather than the cause. "These results have an impact on how we interpret the previous anatomical literature on dyslexia and it suggests the use of anatomical MRI would not be a suitable way to identify children with dyslexia," study researcher Anthony Krafnick, Ph.D., of the Center for the Study of Learning at Georgetown University, said in a statement.

Dyslexia is a neurologically based language-processing disorder, suspected to be genetic, that can lead to problems with reading comprehension and spelling, according to the National Center for Learning Disabilities. It's also quite common: the University of Michigan reports that as many as 80 percent of people with reading difficulties have dyslexia.

The new findings, published in the *Journal of Neuroscience*, are based on data from 15 children with dyslexia and 30 children with typical reading skills. Half of the children with typical reading skills were matched by age to the children with dyslexia; the other half of the children with typical reading skills were younger, whose reading levels matched those of the children with dyslexia. By doing this, researchers were able to compare not only age but reading experience between the children with dyslexia and those without the condition.

"If the differences in brain anatomy in dyslexia were seen in comparison with both control groups, it would have suggested that reduced gray matter reflects an underlying cause of the reading deficit," study researcher Guinevere Eden, DPhil, a neuroscientist at Georgetown, said in the statement. "But that's not what we observed."

Indeed, researchers found that when comparing the children with dyslexia with their age-matched controls, the children with dyslexia had less gray matter.

But researchers did not find that there was less gray matter in the children with dyslexia when they were compared with the younger children whose reading experiences matched theirs.

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Not really surprising when a similar study a few years ago of adult people in illiterate societies observed the same lower gray matter volumes which increased after they were taught to read.

It is reasonable to speculate that all the differences observed from dyslexia MRI brain language processing areas are also not causal but a result from lack of experience reading.

My niche is visual dyslexia and believe that described visual problems that make reading difficult are the result of poor filtering of visual noise by the brain caused by autofluorescent proteins in the eyes. Filtering out all the wavelengths of light associated with the different proteins extinguishes the visual noise and removes the visual problems. You can read about the filters called See Right Dyslexia Glasses at [dyslexiaglasses.com](#).

It's not a big jump to suspect that dyslexia might be caused by poor filtering of auditory noise. Delayed speech, trouble rhyming and word confusion could easily result if noise is not filtered out when hearing speech. Trouble understanding speech across a crowded room is common with dyslexics (poor filtering of noise). Studies of teacher to dyslexic student communication using headphones show improvements similar to educational interventions (by removing the auditory noise).

Granted that no one has been able to determine how the brain filters noise but it must. It is also possible that the one on one dyslexia instruction is mostly effective because it eliminates the noise allowing the dyslexic to hear the pure sounds to be learned.

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