
LEARNING DISABILITY OR ATTENTION DEFICIT DISORDER: WHICH IS IT?

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I am often asked what is a learning disability, what is an attention deficit disorder, and whether there is any difference between them. The questions imply that the two are similar, if not the same. And that is not true. In fact, a person can have one or both of these conditions, each causing its own unique problems.

A learning disability is caused by a processing problem in the parts of the brain that handle auditory and visual information, what you hear or think, and what you see or picture in your mind. The learning difficulty is the symptom of the condition, while the processing problem is what's behind it.

I find it helpful to imagine the brain as a very nice, very high powered computer system. Picture a pair of computers connected by wires that let them work together and then consider learning disabilities to be the result of either a software or a hardware glitch in those computers.

One computer, usually the part of the one near your right temple and ear, handles the things you see and processes information as pictures. On a laptop or desktop machine, the information is stored as picture files. The other computer, usually the part of the one near your left temple and ear, handles the things you hear or say and processes information like the document files on a computer at home, in school, or at your work. The network lets the two sides work together so you can read and write and speak, use language, draw pictures, and do math and science and music.

For example, to read this sentence, your right-side computer looks at the letters on the page and recognizes them as pictures of sounds that it has in its memory bank. Sending that information over the network, your left side retrieves the sounds that match those pictures from its own memory storage and puts them together in the right order. Finally, you hear the sounds of the words silently in your head.

Software programs in a computer can use the information in its memory banks to produce typescript, draw graphs and maps, and connect you by telephone to other computers. The equivalent of those software programs in the brain, your memories and ideas and the ways to use them, can do all of those things too. And it can do more than a computer on your desk. Your brain can think and learn and redo and reorganize itself. It can change and draw and adapt in ways that the metal machines never will.

Real desktop computers have random access memory (RAM) that only holds information as long as the machine

is running. Turn it off and the data vanishes. Those computers also have hard drives that can keep information stored forever unless it is deliberately erased. And they have operating systems and central processing units that run the software and make the systems do the work.

The brain's circuits work like the hardware and software in the computer you buy at the store. The brain has short term memory (like RAM), good for about 20 minutes or so, and, which, unless the information is filed away, gets pushed aside for the next batch. It also has long term memory banks, like a hard drive, that are good for a lifetime. And it has processing areas that handle the information arriving from the eyes and ears (just as the desktop handles information coming from its keyboard or mouse), file it properly, and put out results orally or in writing (just as the desktop computer prints it or displays it on the monitor).

But the brain is very different from a computer in other ways as well. The computer you put on your desk has only a single operating system, and, usually, only one software program for any task. Furthermore, it can not change any of the software programs by itself - it can't really learn, but just repeat what is in its memory files.

The brain, on the other hand, has more than one operating system and often several software programs to do the same work. Some of the brain's systems or software are lightning fast, sort of like one of those new 586 machines running at 200 megahertz, while others are as slow as molasses, as if they were an old 286 doing just 30. The brain prefers the quick systems, but when those do not work right, it can use the secondary ones. The brain is what researchers call plastic. What they mean is that it can grow and learn and change itself and learn new ways of doing things.

The brain's computers have software-like programs that file and retrieve information, keep it in the right order, and connect the two sides of the brain in one way to let you read and speak, and in other ways that let you write and draw. Specific problems in one part of the software, in the hardware, in the connections between the parts of one, both of the computers, or in the network between them can interfere with the academic things you learn in school.

Problems in auditory processing (using the information you hear or that you think silently in words) can make learning anything dealing with language slower or more difficult. So learning to read, learning a foreign language, or reading music will be affected. Spelling, writing essays, and

doing language-based math and science - like word problems or algebra or biology - can be harder when auditory processing does not work right. On the other hand, art and arithmetic and geometry and chemistry and physics tend to flow more easily because the circuits you use to picture things are still working without a problem. These people are called visual learners.

On the other hand, problems using what you see or picture in your mind, visual processing, can affect reading, but also the more visual school subjects like math and science, and especially geometry and chemistry and physics. And when the difficulties are in the visual-motor control areas, the parts of the brain that coordinate what your eyes tell your hands to do, handwriting can be so hard to read and drawing so frustrating to do that no one wants to be humiliated by showing what they have done. On the other hand, reading, learning music or the language-based school subjects may not be so difficult. These are the auditory learners.

Another way to look at a learning disability is to picture the brain's pathways like a road map you get at a gas station or an auto club. The red highways are the expressways and the turnpikes, the blue roads the secondary routes. Both kinds connect cities together, but if the red ones are closed for any reason, you can still get where you want to go on the blue ones, only it will be a little slower and probably with a lot more effort.

A person who has a learning disability is like someone who can't always get onto the red highways, who has some fast programs out of order, and who has to make do with alternate routes and detours and rely on the slow software to get to a destination.

But unlike highways that can be repaired, computer software programs that can be debugged, hardware glitches that can be replaced, or wiring that can be replaced, the brain's problems are not going to change. The best schools can do is help people learn to drive the blue roads more efficiently, to use the slower systems more effectively. That's what tutoring and compensatory strategies do. They teach a person with a learning disability to recognize the road blocks, find the detours, and develop the skills needed to get through them to the same goals as those who do not have a learning disability. Done well, this lets students succeed in school and college, and lets adults succeed in work and life.

Learning disabilities have another set of effects as well, but these are emotional - for the person with a learning disability, for the family, for the school, and even for friends. Learning disabilities can affect understanding oral and written communication and impair personal relationships, and these obstacles can make a person feel incompetent. They interfere with self-confidence and self-esteem. Learning disabilities get children called dumb or stupid, and produce statements like "This kid could do better if he tried harder." They get families angry and resentful and schools and teachers defensive and sometimes even hostile. Learning disabilities require schools to provide special education programs that are costly to operate, raise taxes, and irritate entire communities.

Among adults who have one, a learning disability can leave them feeling dumb. It can isolate them from their friends, affect relationships, interfere with job performance, and make even family relationships harder to manage. Here is where counseling work with trained professionals who understand learning disabilities can make the emotional issues less troublesome and their effects less harmful.

Everyone has things he is good at and things she is not so good at. Plotted as dots on graph paper, these high and low points usually fall into a narrow band. Children and teens still in school have to do everything, every subject, whether they are good at it or not, whether they like it or not. On the other hand, when adults choose careers, they have the freedom to choose from the top layer, not the bottom, from the things they are good at, from the things they like.

People who have learning disabilities have highs and lows on that graph paper too, but the width of the band between the highs and the lows is much larger. Like every other student, they have to study every subject, and they are expected to do equally well in every one of them. They have no choice. That makes childhood and adolescence especially hard for our young people with learning disabilities, and life a little simpler for them when they get to be adults.

When they select a career, adults who are visual learners may become accountants or artists or mechanics or surgeons or even mathematicians and never do much reading again. Those who are auditory learners tend more towards sales and marketing and try very hard to avoid science or working with numbers. Everyone, learning disabled or not, avoids the things that are harder or less pleasant when he or she chooses a job or a career.

So how is a learning disability different from an attention deficit disorder (ADD)? Doesn't ADD cause learning problems too? Doesn't it affect emotions and relationships too? Isn't it a learning disability?

While a learning disability is the result of an electrical or wiring (hardware) or a processing (software) problem, ADD is really a chemical problem. Medical research has shown two things. First, there is an area of the brain called the pre-frontal cortex that acts like a speed governor. It sets the rate at which information gets to be used in the brain, much like the clock in a computer. When that area is not working properly, too much leaks through and distracts the brain from its regular tasks. The brain can't keep up with the high speed demands of all that data and falls into a searching mode. It thrashes around, spending a little time here, a little there, but never really settling down and getting focused. Internally distracted, behaviors are impulsive, attention span is brief, and planning, concentration and pace are short. Injuries are more common, and so are fender benders and speeding tickets.

Second, the pre-frontal cortex runs on a chemical called a neurotransmitter named dopamine. If the brain does not have enough dopamine in the pre-frontal cortex, that area does not work right and too much information gets through and confuses things. The result is the short attention span,

impulsivity, and, often, hyperactivity that characterize ADD.

Unlike a learning disability which won't go away and which responds only to developing bypass strategies, there is a lot that can be done medically for an attention deficit disorder, even though it won't go away entirely either. First, recognizing that the short attention span and problems with concentration and pace affect every aspect of life, not just learning in school, people with ADD need help in identifying the specific effects of their condition and developing an almost compulsive style to compensate for the difficulties completing tasks or assignments. Aids like day-planners, both those on paper and especially those in little pocket-sized computers, really help stay organized and on track.

Second, when the effects of ADD include emotional reactions, people with ADD need counseling help to deal with those so they do not get in the way of success. Third, families who have been living with ADD need psychological help with their own feelings and behaviors that were produced by the ADD and in responding more helpfully to the affected person.

And fourth, people with ADD need medication to get that dopamine level back up to where it will do some good. Think of it as being like a person who has an underactive thyroid gland where thyroid pills replace the hormone the body is not making, or lactose intolerance where lactase pills replace the missing chemical that is needed to digest milk sugar. In fact, until just a few years ago, many thought that the medicines used to treat ADD were doing just that - replacing the missing dopamine with a synthetic substitute. Instead, more recent research shows that the medicines slow down the rate the body gets rid of the dopamine it does make, allowing it to build up to working levels.

Now then, untreated ADD can interfere with learning. After all, a person who can not concentrate, whose attention span is so short that his or her thoughts wind up half way to Hawaii much of the time, whose parents and teachers think they need to send out search parties to find the missing mind can not learn well. Not in school, not at home, not anywhere in the social or workaday world. However, with proper and effective support, understanding and treatment, people with ADD can and do succeed without the processing problems of a person with dyslexia, for example. In that sense, ADD is not truly a learning disability.

There is another thing to consider. A person can have both a learning disability and ADD. In fact, more than three quarters of people with ADD also have a learning disability. That makes it extremely important that anyone with a diagnosis of ADD has a complete examination for a learning disability. And since as many as one in three people with a learning disability can also have ADD, everyone diagnosed with a learning disability needs an evaluation for that as well.

There are some very good tests for learning disabilities that can identify them at any age. They can pinpoint the electronic processing problems accurately and can help devise appropriate accommodations and effective compensatory strategies.

The problem with ADD is that there are no readily usable reliable tests, chemical or otherwise, that identify ADD. None of the questionnaires in use today are as sensitive or as specific as they need to be to reliably identify a child, a teen or an adult with ADD. These tests only indicate a direction to go, not a diagnosis.

There is another issue that every family with either a learning disability or ADD needs to keep in mind. The majority of cases of both conditions run in families. Ask enough questions of aunts, uncles, cousins and grandparents on both sides of the family and there is a very large chance that you will find others with the same condition. And that familial nature of these conditions makes it important to look at the parents of children who are diagnosed with either or both of them to be sure you know if Mom or Dad is also affected. It also makes it important to look at the other children in the family - those here now, but also those who may be born in the future - to identify these conditions as early as possible, because then treatments and management can begin soon enough to reduce their emotional effects and make life easier from an earlier age.

Learning disabilities affect about 9 percent of both the male and female population. Like diamonds, they last forever. What makes each one of them different and confusing is that they come in different sizes and flavors. Some are mild, some severe. Some affect reading and language, others math and science, and sometimes every subject. The more severe the learning disability, the earlier it will cause trouble and be recognized.

Some learning disabilities occur in people with very high levels of intelligence, people who can develop their own strategies, camouflaging their disability into high school, college or even beyond. These folks are almost too smart for their own good, for if they were not that smart, they could not have hidden the problem so well or for so long. In other people with learning disabilities, their intelligence is average or lower, causing problems when they are much younger and resulting in recognition very early in elementary school.

An important difference between children and adults is that adults can choose what they do and avoid the consequences of a learning disability - children are stuck with what the world serves them. But identification and knowledge and compensatory strategies can make their problems with learning less troublesome.

Attention deficit disorders affect about 3 percent of the population. They too affect both girls and boys, both men and women. They too never fully go away. They too come with varying severity and symptoms, sometimes with or without hyperactivity, and often with differing degrees of short attention and impulsivity. But unlike a learning disability, the growth and maturation of the brain during the late teens and early twenties often calms the hyperactivity and makes the concentration problems less noticeable, even without any intervention or treatment. But identification and treatment and lifetime medication can make living a lot nicer.

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So, while both a learning disability and ADD can cause learning problems, they are not the same. They are not two ends of the same string. They are different conditions with different treatments which just happen to interfere with learning. Neither means a person can not learn - only that learning will be different, perhaps slower, and that there must be different strategies to get to the same goals others are working towards.❖

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