

The Ins and Outs of Learning Disabilities

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Learning disabilities (LD) is a broader term in the United States to describe various types of neurologically-based processing problems. These processing disorders can interfere with learning basic life functioning skills such as reading, writing, or mathematics. They can also interfere with higher level skills such as organization, time management and abstract reasoning.



The types of LD are identified by the specific processing disorder and can be categorized within one or more of the following four areas. They might relate to getting information into the brain (Input), making sense of this information (Integration), storing and later retrieving this information (Memory), or getting this information back out (Output).

Input

Information is primarily brought into the brain through the eyes (visual perception) and ears (auditory perception). An individual might have difficulty in one or both areas.

Auditory Perception

Also called Receptive Language, the individual might have difficulty distinguishing subtle differences in sound (called phonemes) or might have difficulty distinguishing individual phonemes as quickly as normal. Either problem can result in difficulty processing and understanding what is said. Individuals might have difficulty with what is called auditory figure-ground. They have difficulty identifying what sound(s) to listen to when there is more than one sound.

Visual Perception

One might have difficulty distinguishing subtle differences in shapes (called graphemes). They might rotate or reverse letters or numbers (d, b, p, q, 6, 9); thus misreading the symbol. Some might have a figure-ground problem, confusing what figure(s) to focus on from the page covered with many words and lines. They might skip words, skip lines, or read the same line twice. Others might have difficulty blending information from both eyes to have depth perception. They might misjudge depth or distance, bumping into things or having difficulty with tasks where this information is needed to tell the hands or body what to do. If there is difficulty with visual perception, there could be problems with tasks that require eye-hand coordination (visual motor skills) such as catching a ball, doing a puzzle, or picking up a glass.

Integration

Once information is recorded in the brain (input), three tasks must be carried out in order to make sense or integrate this information. First, the information must be placed in the right order or sequenced. Then, the information must be understood beyond the literal meaning, abstraction. Finally, each unit of information must be integrated into complete thoughts or concepts.

Sequencing

The individual might have difficulty learning information in the proper sequence. Thus, he might get math sequences wrong, have difficulty remembering sequences such as the months of the year, the alphabet, or the times table. Or, she might write a report with all of the important facts but not in the proper order.

Abstraction

A person might have difficulty inferring the meaning of individual words or concepts. Jokes, idioms, or puns are often misinterpreted or not understood. He might have problems with words that have different meanings depending on how they are used. For example, "the dog" refers to a pet. "You dog" is an insult.

Organization

An individual might have difficulty organizing materials: losing, forgetting, or misplacing papers, notebooks, or homework assignments. She might have difficulty organizing her environment, such as her bedroom. Some might have problems organizing time. They have difficulty with projects due at a certain time or with being on time. The act of organizing over time is referred to as Executive Function.

Memory

Three types of memory are important to learning. "Working memory" refers to the ability to hold on to pieces of information until the pieces blend into a full thought or concept. For example, reading each word until the end of a sentence or paragraph and then understanding the full content. "Short-term memory" is the active process of storing and retaining information for a limited period of time. The information is temporarily available but not yet stored for long-term retention. "Long-term memory" refers to information that has been stored and that is available over a long period of time. Individuals might have difficulty with auditory memory or visual memory.

An example of **working memory** is when an individual reads a sentence and holds on to the information while continuing to read the next portion of the text. By the end of the paragraph, he pulls together the meaning of the paragraph to complete the task. An example of **short-term memory** is when the individual continues to read the full chapter, studies the content and retains the information long enough to retrieve it during an exam or other form of evaluation. An example of **long-term memory** is when the meaningful connections and associations are made resulting in the ability to retrieve the information over a longer period of time. By making personal, world and/or textual connections the information is likely to be integrated into the individual's greater body of knowledge.

Output

Information is communicated by means of words (language output) or through muscle activity such as writing, drawing, gesturing (motor output). An individual might have a language disability (also called expressive language disability) or a motor disability.

Language Disability

It is possible to think of language output as being spontaneous or on demand. Spontaneous means that the person initiates the conversation. Thoughts have been organized and words found before speaking. Demand language means that one is asked a question or asked to explain something. Now, she must organize his thoughts, find the right words, and speak at the same time. Most people with a language disability have little difficulty with spontaneous language. However, in a demand situation, the same person might struggle to organize her thoughts or to find the right words.

Motor Disability

One might have difficulty coordinating teams of small muscles, called a fine motor disability. He might have problems with coloring, cutting, writing, buttoning, or tying shoes. Others might have difficulty coordinating teams of large muscles, called a gross motor disability. She is awkward when running or jumping.

Each individual will have his or her unique pattern of LD. This pattern might cluster around specific common difficulties. For example, the pattern might primarily reflect a problem with language processing: auditory perception, auditory sequencing/abstraction/organization, auditory memory, and a language disability. Or the problem might be more in the visual input to motor output areas. Some people with LD will have a mixture of both.