



Memory and Learning

By Linda Balsiger, M.S., CCC-SLP

What is the common denominator of all aspects of learning? Information processing! **Memory** is the mechanism through which all information is stored and retrieved, and it is a crucial component of learning success. Children with learning disorders often have memory deficiencies in one or more of the following areas:

Phonological memory – Phonological memory is a temporary storage area for the phonological or speech sound components of language. In reading, it is needed to decode new words – because sounds and syllables must be stored in working memory until they can be “blended” together to form a word. Children with weak phonological memory may have difficulty decoding new words, and consequently read at a slower pace than other children.

Linguistic Memory – The ability to store and recognize common linguistic patterns, word parts (or morphemes), and high-frequency words leads to greater word recognition and reading fluency. Research shows that children with reading disabilities need 40+ exposures to a word before it is stored as a recognizable “whole word”, whereas normally developing readers only need 10-14 exposures. Children with reading disorders such as dyslexia also have trouble noticing and recognizing the distinct parts of words, and the underlying linguistic and phonological patterns in words. They need explicit instruction to acquire these patterns, and to “match” them to words with similar patterns already stored in memory.

Visual sequential memory – Good spellers typically visualize words when they spell, and the ability to spell irregular non-phonetic sight words involves the use of visual sequential memory. (Note: This type of visual memory is strongly “wired” to the linguistic processing areas of the brain.)

Auditory memory – Auditory memory allows us to remember spoken information. Children with auditory memory weaknesses may have trouble following long or multi-part directions. They may also struggle to learn information that is presented only through oral instruction. Often times it appears that these children are listening, but their information recall is incomplete or inaccurate. Many of these children are visual learners, and learn best when visual instruction or hands-on experiential learning accompanies verbal instruction.

Rote memory – Rote memory is the ability to memorize information that has no inherent meaning, through sheer repetition (usually oral). Rote memory is important as early as kindergarten, when children must memorize the alphabet and sound-letter associations. Later, rote memory is required to memorize state names, multiplication tables, chemistry periodic tables, and foreign language vocabulary. Children with rote memory weaknesses learn best when they utilize



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multiple modalities to learn new information, and when they use techniques to make the information more meaningful. For example, stories with visual pictures can be used to give more meaning as well a visual image to rote information. Music is also an excellent modality for learning rote facts such as multiplication tables, since it integrates a different part of the brain. Many children with dyslexia suffer from rote memory deficiencies, and are often quite strong in skills that reside in the “right-brain”– such as art, music, and visual-spatial skills. They can be more successful learners by building upon their learning strengths, and incorporating multiple modalities for learning new information.

Some students appear to learn new information, but cannot recall it later on-demand. This is often due to problems with the retrieval of information rather than its storage. Retrieval can sometimes be helped by building stronger semantic networks and associations between words and concepts, which improves the organization and access to stored information. Many students with poor retrieval have good recognition memory, and are able to recognize the correct answer if tested with multiple choice questions or matching formats. They may also benefit from the use of a “word bank” list when they are being tested with a fill-in-the-blank or short answer test format.

Memory is an essential component of learning, and many children with learning disorders have deficiencies in certain aspects of memory. If you have concerns about the presence of a learning disorder, a comprehensive learning evaluation that includes an assessment of memory is recommended.

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