Your Child's MEMORY NEEDS

SHUTTERSTOCK

There is not simply one type of memory and different strategies need to be utilized when employing different memory systems.

BY VINCENT J. MORELLO, PHD

HOW IT IS POSSIBLE for a child to have studied information carefully one day, yet fail to recall it the next day? If you are the parent of a child with ADHD, you have firsthand knowledge of this situation and likely find it both vexing and mystifying.

The following scenario may be familiar to you. Peter is eleven years old, a student of average intelligence who has ADHD. He put forth a strong effort studying for a World Cultures exam the day before the test. Peter and his parents were reasonably sure he "knew" the information, as he used flashcards to memorize the names of people, places, dates, and events. Imagine how disheartened his parents were when Peter brought home a grade of 73. They are positive that Peter is smarter than that and really knew the material. So what went wrong?

ADHD is a neurodevelopmental disorder that leads to attention problems but also interferes with memory performance. It is well established, for example, that frontal lobe problems associated with ADHD interfere with working memory and memory retrieval. Those are just two of the memory processes affected in ADHD. Students such as Peter have challenges encoding information into and retrieving information from long-term memory. In the above example, it is possible that the information was not encoded or processed at a deep level despite using flashcards. And it also is possible that it was processed deeply enough but could not be easily retrieved.

Memory is a multi-faceted system in that there are many different types of memory processes. As a result, it is possible to possess comparatively better skill recalling one type of information than another. Therefore, before trying to help a student remember information, it is essential to determine what type of information needs to be remembered. Does the child need to recall phone numbers, spelling words, faces, paired-associate information, stories, or other types of information?

After determining what type of information needs to be remembered, it is easier to select a strategy to recall the information. For example, there are procedural memories, which involve memory for procedures such as brushing teeth or riding a bicycle. There are semantic memories, which involve meaningful verbal information contained in stories. And there are episodic memories for discrete, not inherently meaningful, events such as names, dates, and events.

Students most certainly need to utilize different strategies to recall procedures, numbers, words, paired-associates (states and their capitals, for example), and stories (newspaper articles, reports, etc.). When considering the encoding and retrieval of information, it is important to also consider that memory may depend upon the modality—auditory, visual, or kinesthetic—that is being utilized. As you can see, when trying to pinpoint the specific type of memory problem a student may face, a comprehensive psychoeducational or neuropsychological evaluation is a tremendous asset.

Five stages to the memory process need to be considered when you are trying to help a student with ADHD to remember information: attention, intention, encoding, comprehension, and retrieval.

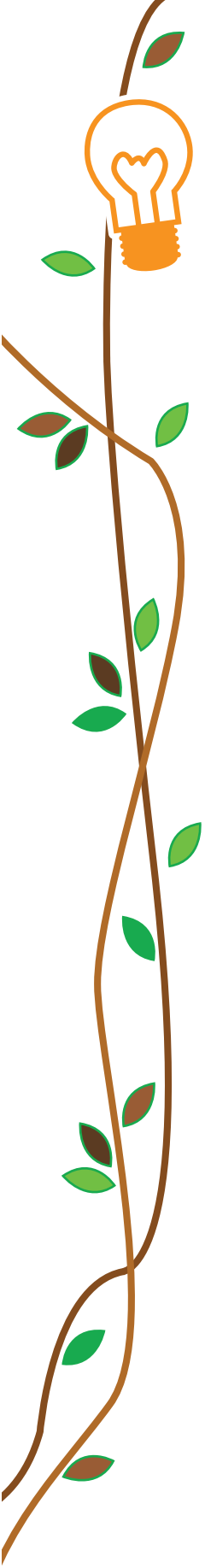
ATTENTION

Before information can be entered into memory (encoded), the student must ***attend*** to it. What many parents and teachers believe is a memory problem may actually be a problem attending to the information. Asking the child if she is paying attention and making sure you have her eye contact and focus is invaluable before you start to teach.

INTENTION

When provided with new information, most neurotypical individuals in middle childhood and adolescence readily ascertain whether or not the information needs to be remembered or not and automatically take steps to try to remember the information. That is, they form an ***intention*** to remember. Students with ADHD often do not automatically form intentions "to remember" and most likely need to be asked to do so.

Even when it appears obvious that the student needs to actively engage in a process to remember the information, parents and teachers cannot assume the student knows that something more needs to be done than simply reading (or listening) to it. Perhaps the most powerful intervention you can use is to remind him that the information he has been taught needs to be remembered. Keep in mind that reading or listening to information on one occasion is no guarantee



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it will be understood, and less of a guarantee that it will be remembered on a second occasion. You might ask the child how he intends to recall the information while it is being taught and then begin to engage in a discussion of methods to encode and remember the information.

Students with ADHD often are quite inaccurate in estimating how much time and effort they need to expend to remember a specific amount of information given their innate memory skill. This ability, called *metamemory*, is an essential aspect of intention. When children form an intention to remember, they need to understand that effort will be needed to engage with the to-be-remembered information. Left to their own devices, adolescents with ADHD often overestimate how well they have learned information. Therefore, parents need to assist them to accurately assess how well they truly have remembered the information and how much more effort will be needed to have it memorized satisfactorily. That metamemory is an essential factor in the acquisition and retention of information is shown by research that metamemory predicts performance better than intelligence.

ENCODING

If the child is attending to what she is reading or hearing and develops an intention to remember, there is a chance that it will be registered only in short-term memory, which typically lasts just a couple of seconds. What teachers and parents strive for is to have the student input or ***encode*** the information into a longer-term storage system. This is the time when selecting a memory strategy—such as a mnemonic device (see the sidebar)—is essential. It is also important to discuss the use of strategies with your student to pick one she will feel comfortable using.

Let's say you want your student to remember the names of all of the New England states and their capitals. This is a list of paired-associates. You might use REHEARSAL or repeat the list a particular number of times until the student knows it by heart. Or you might try the KEYWORD strategy, the most well-researched memory strategy. Had Peter used a keyword strategy to develop images for the paired associates, such as countries and their capitals or countries and their natural resources, he might have registered them more deeply in long-term memory.

COMPREHENSION

Meaningful information, using the semantic memory system, needs to be understood thoroughly in order to facilitate deeper encoding. Strategies to facilitate comprehension include asking the student to retell the story in her own words, asking what is the main point of the story, asking about different characters' points of view ("how was he thinking and feeling"), using prediction and verification, or any method to help the student elaborate (expand) on the content. Lynn Meltzer, PhD, recommends several strategies to facilitate comprehension for written text, such as the STAR strategy and TITLE and WHY.

RETRIEVAL

One way to enhance memory ***retrieval*** is by choosing the most appropriate type of performance measure. For example, multiple-choice or matching, which are recognition tests, typically are easier than fill-in-the-blank, or free recall tests. Memory retrieval also is aided if, when studying for an exam, no additional information is studied subsequently during the same evening. So, to maximize Peter's success on his history test, he would have done well not to have studied any other subject other than history later that evening.

Interestingly, daily review may not be the best means of ensuring that information will be remembered, even though daily review seems to make the most sense. Memory expert Milton Dehn, EdD, NCSP, points out that making an "effortful retrieval" is the most desired way to prepare to remember information for a test. Dehn recommends studying information the day after it is encountered, then not again for several days—hence the more substantial effort required to retrieve the information—and then again the night before the exam.

If studying can take the form of self-testing, memory retrieval is enhanced more effectively compared to simply re-reading the information. When parents and teachers devote as much time and attention to the process of how children learn and remember as they do to the content of what needs to be remembered, performance can only improve.

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ADDITIONAL READING

Milton Dehn, *Long-Term Memory Problems in Children and Adolescents,* John Wiley & Sons, 2010.

Margo Mastropieri and Thomas Scruggs, "Enhancing School Strategies with Mnemonic Strategies," LD Online, 1998; http://www.ldonline.org/article/5912.

Lynn Meltzer, *Promoting Executive Functioning in the Classroom,* Guilford Press, 2010.