

A PARENT'S GUIDE TO THE
SCIENCE BEHIND LEARNING DIFFICULTIES

smartchoice

The Learning **CURVE**

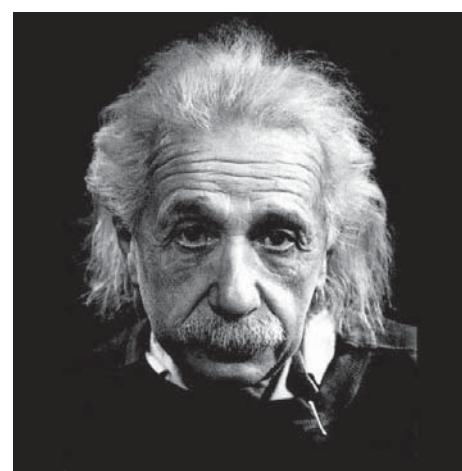
Contemporary science has opened up powerful new possibilities for those who struggle to learn or want to gain a competitive edge. **There are causes behind learning and reading problems.** What you see on the surface—when facing a persistent learning or reading struggle—is most often merely a symptom. The causes are deeper and sometimes more difficult to identify and understand. Through a series of key questions this booklet helps you understand learning problems and explore the most common root cause: cognitive skills weakness. You will learn strategies and options available to overcome poor learning and reading if cognitive weakness is the source.

Poor learning and reading need not be a lifelong problem!



BrainRx™

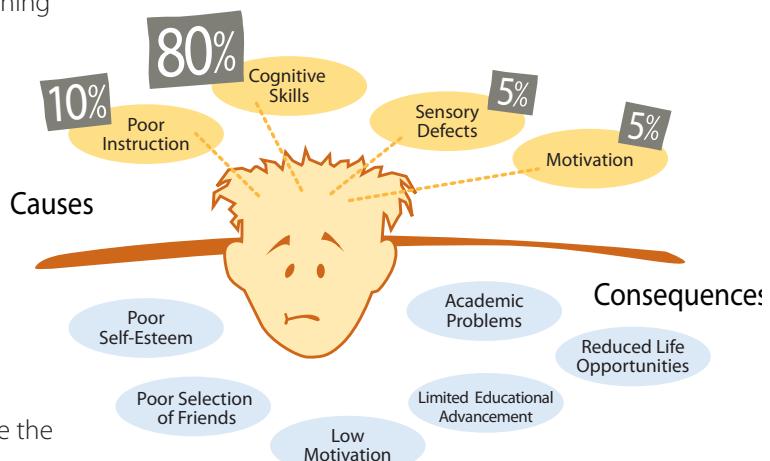
DID YOU KNOW? Albert Einstein was once labeled a slow learner.





What are the CAUSES of most learning and reading problems?

There are a variety of reasons that can cause learning and reading difficulties. Drawing from numerous studies determining the prime causes of learning problems in the U.S., approximately 10% are due to poor or inadequate instruction. Another 5% are attributed to one or more sensory defects such as hearing or vision problems. Up to 5% can be blamed on low motivation. The balance — roughly 80% of learning or reading difficulties among U.S. students and adults — are the direct consequence of a cognitive skill weakness.



FOR EXAMPLE:

After a ten-year public study, the National Institute of Health concluded that the cause of **88% of specific learning-to-read difficulties** resulted from a single weak cognitive skill known as **phonemic awareness** (an inability to blend, segment, and analyze sounds).

What are the CONSEQUENCES of cognitive weaknesses?

Learning and reading struggles are the breeding ground for other serious problems including poor self-esteem, disruptive or withdrawn behavior, poor selection of friends, chronically low motivation, academic weakness, and limited educational advancement. These directly impact life opportunities such as earnings and lifestyle.

Like a set of muscles [the brain] responds to use and disuse. For the first time, we are learning to see mental weaknesses as physical systems in need of training and practice. The brain is a dynamic, highly sensitive yet robust system that may adapt, for better or worse, to almost any element of its environment. If we are going to set about training our brains to succeed in the world, we certainly need to learn about the various factors that can influence brain functions. — DR. JOHN J. RATEY, Professor of Psychiatry, Harvard Medical School





What CHOICES are available to help a struggling learner or reader?

Effective long-term strategies are surprisingly rare when trying to help someone with a persistent learning or reading struggle. One non-strategy is to pretend that the struggle will simply go away or be outgrown. This is rarely the case. When trying to take positive steps, you must choose one of three approaches. You can try to accommodate

the problem by expecting less. You can attempt to compensate by focusing only on strengths. Or, you can identify and overcome core cognitive weaknesses through testing and training. This has the potential to open the future to faster, easier learning and reading.

THREE OPTIONS FOR THE STRUGGLING LEARNER

	<p>► Accommodation is a passive strategy that simply <i>accepts</i> the learning limits as permanent. Special programs that isolate underperforming students, or require long-term medication to control behavior, are examples of this approach. It is a common alternative, and is often justified in the name of preserving self-esteem.</p>
	<p>► Compensation is a never-ending approach to <i>work around</i> learning weaknesses. Typically it includes altering the student's environment or selecting challenges to fit individual strengths while ignoring their weaknesses. It trades the present appearance of success for future frustration and failure.</p>
	<p>► Identifying and overcoming the source of the struggle is the logical choice. If cognitive weakness is the root of a particular student's learning or reading struggles, then cognitive testing and training is clearly the most promising approach to provide both immediate and long-term answers. It's the only choice specifically designed to <i>overcome</i> barriers and <i>unlock</i> potential.</p>

FOR EXAMPLE:

Over 4 billion dollars are spent each year in the U.S. on tutoring and similar programs that focus on treating the external symptoms of learning struggles (while producing little measurable change in underlying learning ability).*

Correctly identifying the underlying cause of a learning problem is *the only way* to determine the correct treatment strategy. Even when there is limited success in a specific issue or subject, the underlying problem that caused the struggle in the first place remains. Identifying and treating the cause of a learning struggle is the best guarantee of long-term success.

* Aimee Green - Newhouse News Service - *Times-Picayune* - July 31, 2005

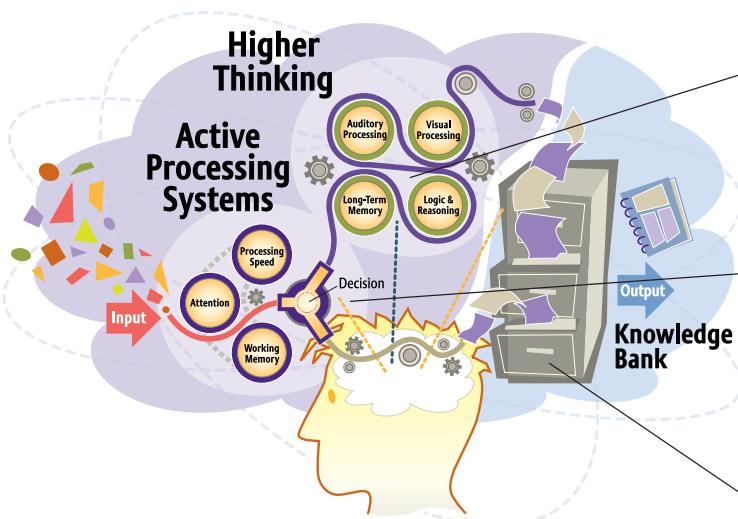


Just what are cognitive skills, and how do they impact learning?

Cognitive skills are the underlying mental skills required for learning. Active skills are identified as Attention, Processing Speed, and Working Memory. These attend to, receive, sort, and prioritize incoming information. Higher Thinking skills are Auditory Processing, Visual Processing, Long-Term Memory, and Logic and Reasoning.

The cognitive skills and processes used to learn are different than the information that is accumulated in our Knowledge Bank after learning. Cognitive skills process new and recalled information. Our Knowledge Bank stores and distributes information we have already processed.

THE LEARNING MODEL: How Your Brain Works



FOR EXAMPLE:

How well you do at a new mental task depends on...

- ▶ The strength and speed of your mental skills (Active Processing System plus Higher Thinking).
- ▶ The presence of data in your Knowledge Bank.

- ▶ **How smart you are =** Active Processing System + Higher Thinking

- ▶ **What you know =** Data stored in your Knowledge Bank.

Higher Thinking

- ▶ Mental skills you use to process new information
- ▶ Solve a problem you can't automatically process
- ▶ General thinking ability
- ▶ Determines how well you store and retain info

Active Processing System

- ▶ Always active and running
- ▶ Automatically handles most information we take in
- ▶ Needs to be fast and efficient
- ▶ Some information can't be automatically processed

Knowledge Bank

- ▶ Learned information and data
- ▶ Different from mental processing skills
- ▶ Storage must grow as we age
- ▶ Size and use are dependent on processing abilities

The Learning Model illustrated here helps point out the difference between the processing functions of Active Processing and Higher Thinking Systems on the left and the storage and distribution function of the Knowledge Bank on the right. All new or unfamiliar information must be processed before it is useful in life, work, or academic performance. Strong, efficient cognitive skills are essential to successful learning.



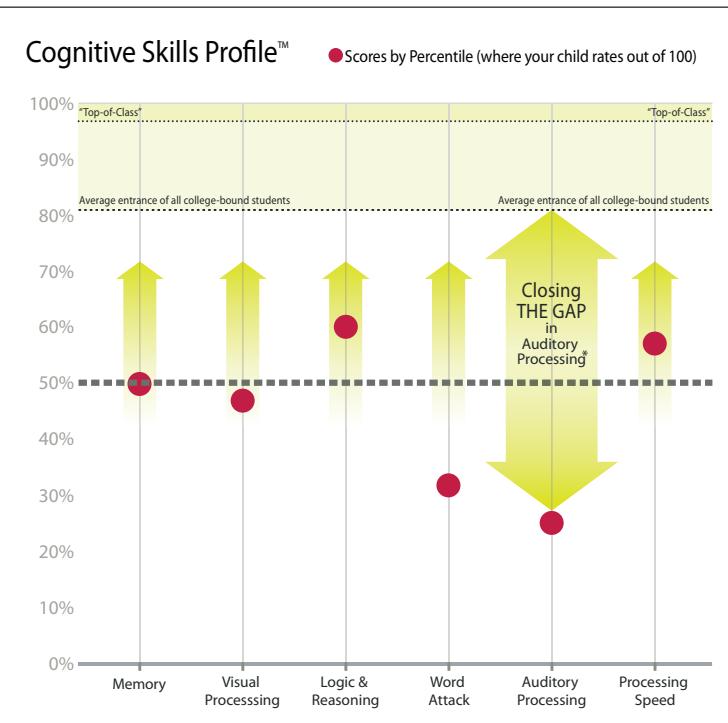


Why is it so important to test individual cognitive skills?

A cognitive skills weakness is *internal* and *specific*. One struggling student might be weak in visual processing skills and another weak in long-term memory, but both may seem to struggle in a similar way. You must measure each student's individual cognitive skills to confirm the cause of his or her particular learning problem and formulate the right training. Untested, cognitive weaknesses can remain undetected for years while hindering a student's ability to learn or read successfully. Guessing at the cause without

testing can lead to frustration and wasted time and money.

Your child's individual skills testing will create a personal **Cognitive Skills Profile™**. The profile will measure the strength or weakness of his or her individual cognitive skills by both age and percentile. It will also show you any gaps between current skill levels and the success you envision for your child. This knowledge will help you determine both the specific type and the amount of training required.



◀ **STUDENT PROFILE:** This Cognitive Skills Profile™ shown here is typical of a student who struggles significantly with reading.

How does “closing the gap” on cognitive skills weakness work?

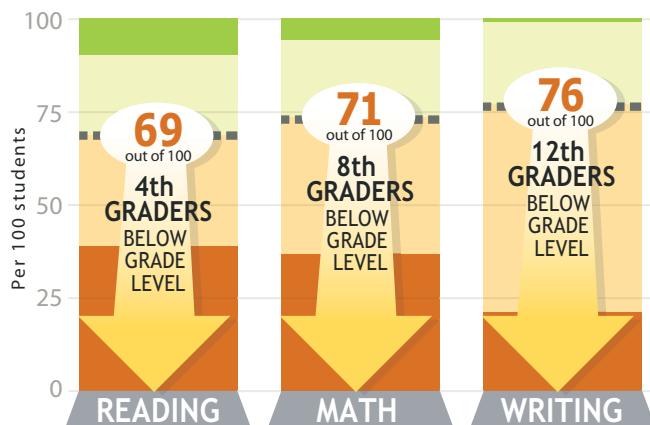
Example: The average cognitive skills ranking of all entering freshmen students in the United States is the 81st percentile. If you desire your student to attend college and be successful, and his or her average score is lower than the 81st percentile, a cognitive skills “gap” needs to be overcome to increase the chance of realizing that college goal. This gap can be narrowed — and even closed — with appropriate cognitive skills training.

FOR EXAMPLE:

Cognitive skills play an essential role in learning. Therefore, a significant weakness in Auditory Processing (also called Phonemic Awareness) *will* lead to poor reading regardless of other skill strengths. Any individual cognitive skill or ability that functions below age-level expectation or scores below the 50th percentile in a standardized cognitive skills test is considered a weak skill. Learning skills can also be considered weak in relationship to individual goals. Skills in the 50th to 70th percentile are weak for the students hoping to attend college, for example.



Average Performance – U.S. National Report Card



IS AVERAGE GOOD ENOUGH?

It depends on your goals and desires. The average student in the U.S. is significantly below grade level in writing, math, and reading. Average students do not face a very bright future. Increasing demands in the Knowledge Economy and stiff competition from foreign students and workers make *average* far too low a goal for most students.

Source: The National Assessment of Educational Progress; 2002-2003.

Why must cognitive skills be trained, not taught?

Just as you cannot learn to play the piano with 12 weeks of classroom lectures (you will have to actually practice playing), cognitive skills grow stronger with training, not teaching or tutoring. Cognitive skills training must also feature specific methods if it is to be consistently effective.

Studies have shown, and logic confirms, that one-on-one training is by far the best vehicle to deliver these essential training methods. The student gets undivided, individual attention.

Neuroscience research indicates the following are necessary elements of effective cognitive training:

It must be skill-specific and targeted.

...to close specific mental skill gaps

It must be highly intense.

...concentrated repetition builds skills quickly

It must be properly sequenced.

...small challenging steps build upon one another without overwhelming the student

It must be progressively loaded.

...properly increasing both difficulty and complexity makes skills automatic

It must contain immediate, accurate feedback.

...instant, effective reinforcement and correction keeps training focused and intense

In addition, training benefits from being non-academic.

...fun and game-like exercises get beyond student's frustration and defenses

FOR EXAMPLE:

