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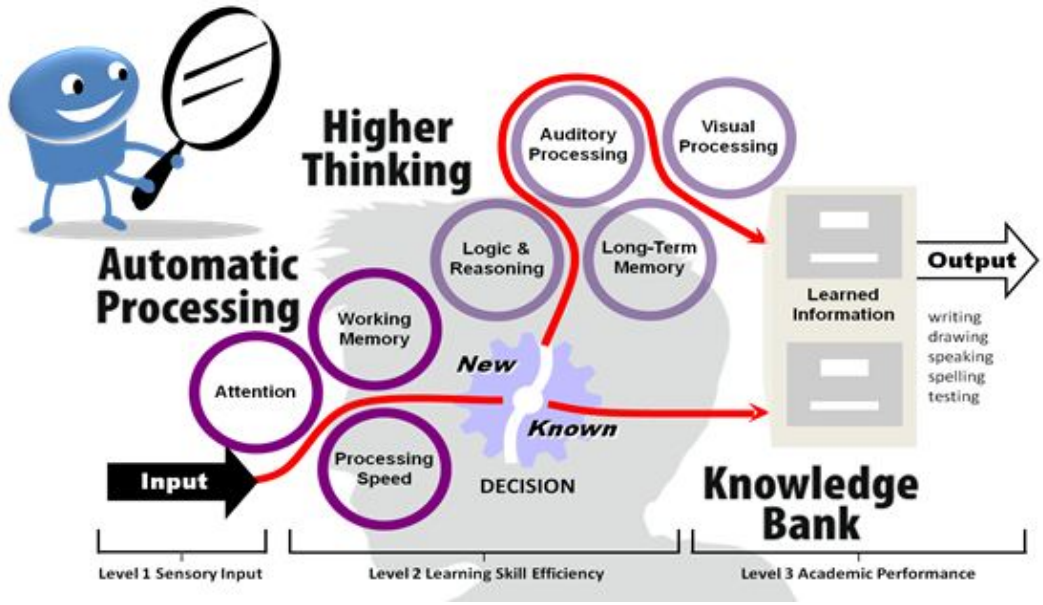
A Guide to Interpreting the Gibson Test Cognitive Processing Skills Assessment

This document assumes that you or someone you supervise has taken or will soon take a cognitive skill assessment and you want to better understand what the scores mean, especially if any of the scores are low. You could also be wondering if weak cognitive skills may be the cause of observed difficulty in learning and if they can be strengthened.

This information is based upon using the Gibson Test of brain skills, which is a cognitive screening tool that is delivered online. It generally takes approximately 40 minutes to complete.

What are cognitive skills?

There are three major systems involved in learning: 1) the sensory input system (hearing, vision, touch, smell, and taste) through which information gets into the brain; 2) cognitive processing of information by the brain (processing speed, visual processing, auditory processing, memory, attention, and logic and reasoning, etc.); and 3) instruction and learning that build the brain's knowledge bank.



Cognitive processing skills, the second category, are the focus of the Gibson Test. Processing skills enable each person to process sensory inputs and do the following kinds of tasks: think, plan, learn, read, hear, pay attention, remember, understand, prioritize, and solve problems. Over seventy different cognitive processing skills have been identified, but many of the skills break down into sub-categories. Memory, for example, is broken down into long-term, short-term, working, auditory, and visual memory.

Most cognitive skill testing, including the Gibson Test, is based upon the Catell-Horn-Carrol theory of cognitive abilities (http://en.wikipedia.org/wiki/Cattell–Horn–Carroll_theory). The Gibson Test assesses processing speed based upon a simple visual processing task, short-term/working memory, long-term memory, discerns the relative strength between visual vs. auditory memory, visual processing, auditory processing (3 different sub-tests) and logic and reasoning. There is also a sub-test for word attack.

You can improve your cognitive processing skills

As we mature and interact with the world, we learn more and our knowledge bank grows. It is expected that a fifteen-year old student should know more than a six-year old student. In the past it was generally believed, however, that intelligence itself was fixed and could not grow. A wealth of new science and research has proven beyond doubt that the mature mind can still make new neural connections and improve cognitive processing skills through training. The following article summarizes the criteria the training must meet in order to improve cognitive processing skills: http://sharpbrains.com/blog/2013/05/22/does-brain-training-work-yes-if-it-meets-these-5-conditions/

How are cognitive skills measured?

It is impractical to isolate a single processing skill and measure it in isolation. That is because each task/activity requires multiple skills to perform. For example, each task requires attention, visual or auditory processing, and memory. However, cognitive scientists have devised tasks that provide a reasonable approximation of a dominant skill required to perform a given task and that can be measured. Scores are normed across a broad sample to provide test takers a reasonable approximation of how their skills compare to the norm. Generally, higher skill scores mean that learning is easier, faster and more effective than lower scores.

Traditional testing has been resource intensive, however. There are a variety of different tests. Most are given by a psychologist or qualified practitioner for the purposes of diagnosing a learning disability and require one-on-one testing along with observation. Scores are compared against several test batteries and generally yield a consistent picture of processing skill capacity. The Gibson Test provides a faster and more affordable method of gaining basic insights into the processing skill profile for a given student.

How does this test relate to IQ?

IQ or intelligence quotient is a term that refers to a variety of tests that are intended to define a person's intelligence as it relates to a normed sample. This type of test is designed such that a score of 100 is defined as average or the median raw score of the sample, and 95% of the population falls within a range of 70 to 130, or two standard deviations from the median.

An IQ score is a composite score based upon several measurements, including both processing skills and learned skills. It is possible to have one or more high sub-test scores and one or more low sub-test scores, which yield an average IQ score but mask the fact that some areas are strong while some areas are very weak. The high scores tend to exhibit strong potential, but the weak scores can impair a student's ability to succeed. Unless each sub-test is analyzed individually, a single IQ score is limited.

The Gibson Test scores the major individual processing skills to help identify weak areas that may be contributing to learning struggles. Even high-performing students may be compensating and working harder than desired because of one or more weak processing skills.

What does a low score for any cognitive skill mean?

Learning is a complex process involving multiple processing skills. Higher scores generally mean that processing information is faster, easier, and more effective. Lower scores mean that processing information is relatively harder, slower, and less effective. But low scores don't mean that a person cannot learn, just that learning is harder. A person with low scores may take longer to perform a task or may have to re-read the same material several times to understand and remember the information.

Certain skills are more critical than others. Memory, for example. A person who has difficulty retaining information in memory has difficulty learning. Relative strength in visual or auditory processing is also a key factor in learning. A person who processes visual inputs better than auditory inputs may need to see something to understand it better versus just hearing the same information. A person with weak auditory processing skills may have a difficult time spelling and decoding (sounding out) new words and may need to memorize each word and remember it by sight.

As individuals with weak processing skills mature and build knowledge, they may be able to perform routine tasks quite well, but learning new things may still take longer. While there are many examples of successful individuals who are dyslexic, a person with dyslexia generally struggles to learn and read using traditional methods of learning.

Knowing if an individual has any low processing scores helps us understand why learning may be harder for that person and provides guidance toward a solution. It is important to know that in most cases processing skills can be strengthened through the proper training to improve learning and help individuals achieve their full potential.

How accurate are the scores?

A complete one-on-one evaluation by a trained professional using multiple assessment instruments generally yields an accurate assessment, especially when complemented by observation and input from others who know the student well. However, this process is resource intensive and expensive, thereby limiting how many students can be assessed.

Educators developed the manual Gibson Test in a clinical setting with input from a psychologist. It is modeled after several commonly used tests in the industry and has been used in clinics throughout the country for over a decade. The online version closely follows the manual version and was evaluated and normed using standard protocols in the industry. While the Gibson Test was designed to be used only as a screening tool, several school psychologists evaluated the accuracy of the Gibson Test compared to their standard one-on-one evaluations and found it to be strongly correlated.

Why are my scores low?

Please keep in mind that the Gibson Test can be very accurate when taken properly, but there are several potential issues that can indicate lower skill levels than actual. Below is a list of several examples. Because each sub-test is relatively short, one or two incorrect answers could have a large impact on the percentile. The Gibson Test results should be compared against observational data regarding student performance to corroborate findings. If a student has strong skill scores but is underperforming academically, other possible causes should be explored.

- One or more distractions occurred during the test.
    - The mouse may not have worked properly.
    - Someone walked into the room, there was a loud noise, or a student did something to distract another.
    - The computer did not work properly.
    - The instructions were not clearly understood.
    - The student was tired and could not focus.
    - The student did not eat properly before the test.
- Computer or mouse skills are not strong enough, which resulted in a lower score than expected.
- There are differences between taking a paper-based test one-on-one vs. a computer-based test. In some sub-tests, a computer-based test must provide multiple-choice options, whereas in a one-on-one test, the answer is given directly orally. This is true for auditory processing. Thereby, guessing can be more of a factor in a computer-based assessment.

- For older students, some sub-tests have a very tight scoring pattern, so missing one or two answers can show a dramatic drop in percentile, whereas the actual skill is not that weak.
- Some students have learned to compensate for one or more weak skills and perform well academically. So seeing a low skill score seems counterintuitive. In most cases, these students have to work harder than a student with stronger skills, so it is still important to learn which skills are weak and strengthen them.

What is a percentile score?

The Gibson Test results were normed by age using a large and diverse population. A percentile score is a relative ranking compared to the norm sample. If you received a score of 45 percentile, that means that 45 out of 100 students scored below your score and 44 scored above your score. Please remember, it is not a direct ranking of intelligence. It is a ranking of how efficient that skill is compared to the norm.