Psychological Processing Areas

Cognitive abilities is an umbrella term, according to the California Education Code, which includes Association, Conceptualization, Expression and Memory.

- **Association/Memory** is the mental/psychological process of remembering basic units of information and establishing systems for relating those units to each other. Areas impacted may be difficulty storing and retrieving information through association (long term memory); registering and immediate use of information (short-term memory); and/or processing and learning novel stimuli at an expected rate of performance, otherwise known as processing or psychomotor speed. Short-Term Memory: The ability to encode, process, and manipulate information that is immediately available. Other abilities that are measured include memory span and working memory capacity. Long-Term Storage and Retrieval: Defined as the ability to store, consolidate, and retrieve information over a period of time that extends beyond immediate awareness. Other abilities measured include learning efficiency, associative memory, and retrieval fluency.

- **Conceptualization** is the mental/psychological process of understanding or grasping the significance and meaning of increasingly complex information and ideas, including abstract thinking and reasoning. Conceptualization is also known as “Fluid Reasoning” and “Problem-Solving.” Students need to be able to see basic similarities and differences, classify, categorize, summarize and draw conclusions, in order to implement an appropriate procedure or to further understanding. These characteristics are broad features of the cognitive domain of fluid reasoning. Areas impacted may include problems with understanding and reasoning, generalizing, and problem solving. Fluid reasoning requires problem solving which cannot be completed by relying on previously learned schemas. It is the ability to apply logic and reasoning to new situations.

- **Expression** is the mental/psychological process of conveying the meaning of information to others through language – i.e., speaking, writing or gesturing and is associated with crystallized ability. Areas impacted my include problems with verbal knowledge and comprehension. Crystallized Ability: The depth and breadth of cultural knowledge that is largely the result of exposure to school-based learning tasks. Other abilities include verbal information, language development, and lexical knowledge.
**Sensory-Motor functions** encompass our ability to process visual, auditory, kinesthetic, and olfactory information. Dysfunctions in any single sensory system can have a dramatic effect on a child’s learning capabilities and behavioral regulation. **Motor functions** encompass both fine motor skills (e.g., picking up or manipulating small objects, holding a pencil correctly, buttoning a button) and gross motor skills (e.g., walking in a balanced and coordinated manner, running, jumping, riding a bike).

Sensory-motor integration refers to the ability to relate visual stimuli to motor responses in an accurate and appropriate manner (Fletcher-Janzen, 2000). An example of this type of processing is the act of copying a shape by which the physical fine motor movements of drawing must correspond with the incoming visual stimuli of the shape.

**Visual Processing** is broadly defined as the ability to perceive, analyze, synthesize, and think with visual patterns, including the ability to store and recall visual representations.

**Auditory Processing** is broadly defined as the basic building blocks of language that includes the ability to hear, comprehend and recall verbal information. It also includes ability to discriminate differences in sounds and speech and to apply basic auditory and phonological skills.

Memory is a significant contributor to the learning process. Memory is comprised of multiple interactive systems: immediate memory, working memory, and long-term retrieval. Each of the types of memory may be tested depending on the referral question.

**Attention** is a complex and multifaceted construct used when an individual must focus on certain stimuli for information processing. In order to regulate thinking and to complete tasks of daily living such as schoolwork, it is necessary to be able to attend to both auditory and visual stimuli in either structured or unstructured environments. Attention can be viewed as the foundation of all other higher-order processing. All other cognitive abilities rely on attention/concentration making a foundation for learning.

In other words, if attention is compromised it can adversely affect other cognitive processes of language, memory, visuospatial skills, etc. Attention can be divided into four subareas: selective/focused attention, sustained attention, and attentional...
capacity. Illness and other emotional distress can negatively affect attention, which in turn may influence overall cognitive abilities.

**Executive functioning** can be conceptualized into two broad areas: cognitive and behavioral/emotional control. The **cognitive** aspects of executive functioning include concept generation and problem solving. The **behavioral/emotional** aspects of executive functioning relate to the inhibitory controls of behavior (e.g., impulsivity, regulation of emotional tone, etc.). The following are some of the main areas of executive functioning skills that are important for learning to occur.

**Attention:** the ability to avoid distractions, sustain attention and concentrate on tasks.

**Emotional Regulation:** the ability to manage emotions, which includes staying calm when handling problems and reacting with the right level of emotion.

**Flexibility:** the ability to adjust behavior to meet circumstances, which includes coming up with different ways to solve problems.

**Inhibitory Control:** the ability to control behavioral impulses, such as maintaining self-control and thinking about consequences.

**Initiation:** the ability to begin tasks in a timely manner and take initiative when needed.

**Organization:** the ability to manage time effectively, manage multiple tasks, and work neatly.

**Planning:** the ability to develop and implement strategies to accomplish tasks.

**Self-Monitoring:** the ability to self-evaluate personal behavior in order to determine when a different approach is warranted.

**Working Memory:** the ability to keep information in immediate awareness while attempting to do things, such as follow instructions.
**Processing speed** is the ability to perform basic and simple cognitive tasks efficiently. Includes performance fluency, retrieval fluency, acquired knowledge fluency, and fluency and accuracy. *Performance fluency* is defined as the ability to quickly perform simple, repetitive tasks. *Retrieval fluency* is defined as how quickly information can be retrieved from long-term memory. Performance fluency tasks do not require assessing previously learned or stored information; whereas, retrieval fluency requires quick access to long-term memory. *Acquired knowledge fluency* relates to the automaticity of academic achievement including: reading fluency, writing fluency, and mathematics fluency. The final classification within the speed and efficiency of processing areas is fluency as it relates to *accuracy*. We interpret processing speed with the context of performance accuracy, which means that although a student may complete work, he/she may make many errors due to rushing and not producing accurate work.