Basic Psychological Processes

Required Initial Assessments

Visual-Spatial (Gv)

Visual-Spatial abilities help generate, perceive, analyze, synthesize, manipulate, transform and think with visual patterns and stimuli. These abilities should not be confused as measures of sight (vision), but rather as indicators of more complex cognitive activities after visual perception has occurred. "Narrow," or specific, visual-spatial abilities include spatial relations, visual-perceptual organization and reasoning, visual memory, visualization, spatial scanning, and visual planning. Visual processing abilities are related to math problem solving.

Language (Gc)

Language abilities involve using verbal information to define concepts and solve problems. They refer to the breadth and depth of a person's acquired knowledge of a culture and the effective application of that knowledge. This ability is sensitive to cultural, linguistic, educational, and environmental factors; as is true of all assessment data, these factors should be taken into account when interpreting this psychological processing area. Language abilities are important for the development of reading and writing skills and math problem solving and increase in importance with age.

Working Memory (MW)

Working memory is the capacity to hold information in mind for the purpose of 1) temporarily maintaining and 2) simultaneously processing information. Working memory is required to efficiently analyze, reconfigure, and encode information that must be stored into long-term memory. Working memory may be represented by auditory means (e.g., phonological loop) or by visual means (e.g., visual-spatial sketchpad). Teams may also consider other aspects of memory as basic psychological abilities. Working memory is important for the acquisition of skill mastery that leads to automatic reading, writing and math processes.

Long-Term Memory Storage and Retrieval - Learning (Glr)

Long-term memory storage and retrieval is the ability to 1) store information in long-term memory and 2) quickly and accurately retrieve previously learned information from long-term memory. Long-term storage includes associative memory (also known as paired-associate learning or sound/symbol encoding). Long-term retrieval begins within a few minutes or hours of learning a task. Retrieval includes ideational fluency, word fluency (quickly producing words that have specific phonemic, structural, or orthographic characteristics), and rapid automatic naming. Long-Term Memory is important for the development of all reading skills and for math calculation.

Fluid Reasoning (Gf)

Fluid reasoning refers to the mental operations used when faced with a novel task that cannot be performed automatically. These metal operations may include forming and recognizing concepts, perceiving relationships among patterns, drawing inferences, comprehending implications, using inductive reasoning, problem solving, and extrapolating. Fluid reasoning also includes general sequential reasoning: hypothesizing, planning, initiating, monitoring performance, and analyzing results. This psychological processing area is important for math, written expression, and reading comprehension.

Processing Speed (Gs)

Processing speed is the ability to make fast and accurate decisions on relatively familiar tasks under timed conditions. Processing speed is important for basic reading skills, reading fluency, math calculation, and written expression.

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Phonological Awareness

Phonological awareness includes; rhyming, phoneme segmentation, phoneme deletion, elision, phoneme isolation, phoneme blending, phoneme matching, and phoneme substitution. Phonological awareness is highly predictive of deficits in basic reading skills.

Additional Assessments

Because of the extensive research literature regarding the following processes, teams may use them when determining PSW.

Executive Functions and Attention

Attention and executive functions are the ability to be alert and pay attention when working on problems in a systematic way. Executive functions include directive capacities that are responsible for a person's ability to engage in purposeful, organized, strategic, self-regulated, goal-directed behavior to accomplish a task.   Types of attention include sustained attention (the ability to stay on task, often measured by tests of continuous performance), focused attention (focusing on only the right material and inhibiting wrong responses when necessary), shifting attention (refocusing on a new task and/or avoiding "getting stuck" on one task), and divided attention (responding to more than one task or type of information simultaneously by means of "rapid automatic switching"). Executive functions and attention affect all areas of academics.

Speed of Lexical Access

Speed of lexical access includes the ability to rapidly and fluently retrieve words. This processing area also includes rapid automatic naming (RAN) or the ability to rapidly produce names when presented with a pictorial or verbal cue. Speed of lexical access is related to fluid retrieval from long-term memory and to processing speed. Speed of lexical access is important for basic reading skills, reading fluency, and math calculation.

Orthographic Processing

Orthographic processing is the rapid and accurate recognition of alphabet letters and numbers, letter and number groups, or whole words. Orthographic processing includes the rapid and accurate formation of word images in memory. "Individuals with orthographic dyslexia often have difficulty recalling sight words and, subsequently, are slow to develop fluency and automaticity…in decoding (reading) or encoding (spelling) skills…One common characteristic of individuals with orthographic dyslexia is that they have difficulty storing mental representations of phonetically irregular words or gestalts. As a result, they rely primarily on phonic principles for reading and produce misspellings that have good phonetic resemblance to target words." Roberts, R. & Mather, N. (1997). Orthographic dyslexia: The neglected subtype. *Learning Disabilities Research & Practice, 12,* 236-250. Orthographic processing is important for basic reading skills, reading fluency, and math calculation skills.