

Auditory Processing (Ga)

The ability to discriminate, remember, reason, and work creatively (on) auditory stimuli, which may consist of tones, environmental sounds, and speech units.

(Schneider & McGrew, 2018)

Major Narrow Abilities

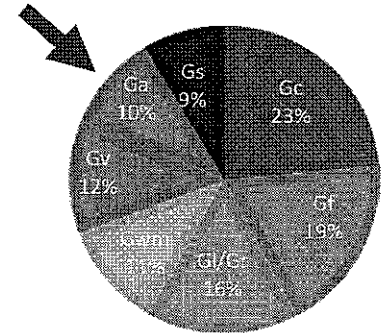
Phonetic Coding (PC): The ability to distinctly hear phonemes, blend sounds into words, and segment words into parts, sounds, or phonemes.

Maintaining & Judging Rhythm

(U8): The ability to recognize and maintain musical beat.

Narrow Ability Subtests

- KTEA-3 Phonological Processing
- WIAT-4 Phonemic Proficiency
- WJ-IV COG Phonological Processing
- WJ-IV OL: Sound Blending
- WJ-IV OL: Segmentation
- WJ-IV OL: Sound Awareness
- N/A



Minor Narrow Abilities

Speech Sound Discrimination (US) Memory for Sound Patterns (UM) Resistance to auditory stimulus distortion (UR)

Broad Deficits

- Difficulty paying attention when there is background noise

Reading Deficits

- Phonemic awareness and phonics

Writing Deficits

- Spelling
- Poor writing quality
- Note taking

Math Deficits

- Word Problems

Effective Interventions

- Expose young children to sounds, music, rhythms, and language
- Read aloud to the child
- Provide daily practice with language
- Use explicit, systematic, synthetic phonics instruction
- Use decodable texts for daily practice
- Listen to books on tape
- Phonemic awareness activities
- Emphasis on sight-word reading
- Teach comprehension monitoring (e.g., does the word I heard/read make sense in context?)
- Annunciating sounds in words in an emphatic manner when teaching new words for reading or spelling
- Use work preview/text preview to clarify unknown words
- Provide guided notes during note taking activities
- Build in time for clarification

Recommended Accommodations

- Quiet learning environment
- Seat student close to primary channels of auditory information
- Provide copy of notes
- Use tape recorder instead of requiring notes
- Provide extended time or shorter assignments
- Provide visual representations of oral information

(Flanagan & Mascolo, 2020)

Comprehension Knowledge (Gc)

The ability to comprehend and communicate culturally-valued knowledge. Gc includes the depth and breadth of both declarative and procedural knowledge and skills such as language, words, and general knowledge developed through experience, learning and acculturation.

(Schneider & McGrew, 2018)

Intermediate Ability

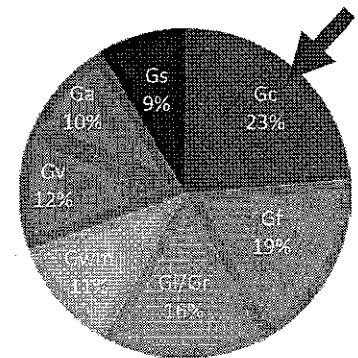
Language Development (LD): An *intermediate stratum* ability to comprehend & communicate using language. The general understanding of spoken language at the level of words, idioms, and sentences. Understanding words in context.

Major Narrow Abilities

Lexical Knowledge (VL): The knowledge of the definitions of words and the concepts that underlie them. Vocabulary knowledge.

Narrow Ability Subtests

- WIAT-IV Oral Expression
- WJ-IV COG Oral Vocabulary
- WJ-IV OL Picture Vocabulary
- WISC-V Vocabulary
- WISC-V Similarities
- KABC-II NU Verbal Knowledge
- KABC-II NU Expressive Vocabulary
- KABC-II NU Riddles
- WJ-IV COG General Information
- WISC-V Information
- WISC-V Comprehension
- KABC-II NU Story Completion



General (Verbal) Information (K0):

The breadth and depth of knowledge that one's culture deems essential, practical, or worthwhile for everyone to know.

Minor Narrow Abilities

Listening Ability (LS)

Communication Ability (CM)

Grammatical Sensitivity (MY)

Broad Deficits

- Vocabulary, knowledge acquisition, understanding of language, drawing connections between prior and new knowledge

Reading Deficits

- Poor decoding, fluency and comprehension

Writing Deficits

- Grammar, simple writing, limitations on descriptions, inappropriate word use

Math Deficits

- Understanding the vocabulary of math; math concepts;

Effective Interventions

- Create a language and experience rich environment
- Provide frequent exposure and practice with words
- Read aloud to the child
- Increase time spent reading
- Read for different purposes
- Provide direct instruction in morphology
- Provide intentional, explicit word instruction
- Develop word consciousness

Recommended Accommodations

- Simplify vocabulary; oral communication that is individualized, clear, with concise language
- Use multiple examples to explain concepts
- Provide resources from which a student can draw information for discussions or written expression
- Provide sufficient time to review, practice, and time to share and discuss ideas

(Flanagan and Mascolo, 2020)

Fluid Reasoning (Gf)

The use of deliberate and controlled procedures (often requiring focused attention) to solve novel "on the spot" problems that cannot be solved by using previously learned habits, schemas, and scripts.

(Schneider & McGrew, 2018)

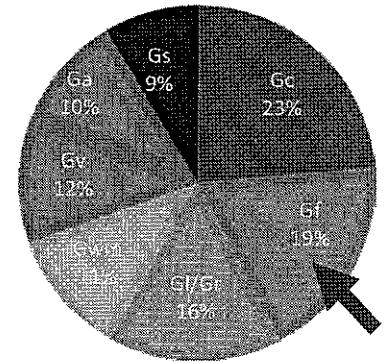
Major Narrow Abilities

Induction (I): The ability to observe a phenomenon and discover the underlying principles or rules that determine its behavior. This ability is also known as rule inference.

Quantitative Reasoning (RQ): The ability to reason with quantities, mathematical relations, and operators.

Narrow Ability Subtests

- WJ-IV COG Concept Formation
- WISC-V Matrix Reasoning
- WISC-V Picture Concepts
- KABC-II NU Conceptual Thinking
- KABC-II NU Pattern Reasoning
- WJ-IV COG Number Matrices
- WISC-V Figure Weights



Minor Narrow Ability

General Sequential Reasoning (RG)

Broad Deficits

- Higher level thinking
- Transferring or generalizing
- Deriving solutions for novel problems
- Extending knowledge through critical thinking
- Perceiving and applying underlying rules or processes used to solve problems

Reading Deficits

- Drawing inference from text

Writing Deficits

- Developing themes; comparing and contrast; essay writing

Math Deficits

- Math reasoning; developing procedures and solving problems; recognizing the relationship between numbers

Effective Interventions

- Provide opportunities to sort, classify, and categorize
- Use teacher demonstrations with a think-aloud procedure followed by guided practice with feedback
- Make use of graphic organizers
- Teach meta cognitive and problem-solving strategies
- Use cooperative groups and reciprocal teaching.

Recommended Accommodations

- Monitor for understanding and aid in a timely manner and functioning throughout a task and particularly when there are changes in task demands.
- Seat the student next to a peer helper who can aid
- Weight grades in favor of concrete information and skills acquired

(Flanagan & Mascolo, 2020)

Learning Efficiency (GI)

The ability the ability to learn, store, and consolidate new information over periods of time measured in minutes, hours, days, and years.
(Schneider & McGrew, 2018)

Major Narrow Abilities

Associative Memory (MA): The ability to form a link between two previously unrelated stimuli such that the subsequent presentation of one of the stimuli serves to activate the recall of the other stimuli.

Meaningful Memory (MM): The ability to remember narratives and other forms of semantically related information.

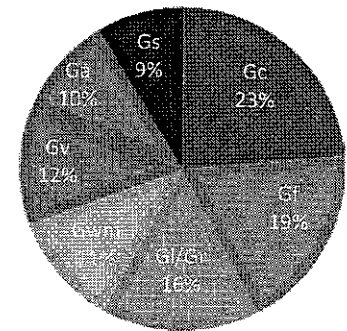
Minor Narrow Ability

Free Recall Memory (M6)

Narrow Ability Subtests

- WJ-IV COG Visual and Auditory Learning
- WISC-V Immediate, Delayed, & Recognition Visual Memory
- KABC-II Rebus & Delayed

- WJ-IV COG Story Recall



Broad Deficits

- Learning new concepts
- Retrieving or recalling information by using association
- Performing consistently across different task formats (e.g., recognition versus recall formats)
- Speed with which information is retrieved and/or learned
- Paired learning (visual-auditory)
- Recalling specific information (words, facts)

Reading Deficits

- Accessing background knowledge to support new learning while reading (Associative Memory deficit)

Writing Deficits

- Accessing words to use in writing; difficulty with note taking

Math Deficits

- Memorizing and recalling math facts



Effective Interventions

- Repeated practice with and review of newly presented information
- Use multiple modalities when teaching new concepts (pair written with verbal information)
- Limit the amount of new material to be learned; introduce new concepts gradually and with a lot of context
- Make associations between newly learned and prior information explicit
- Use lists to facilitate recall (prompts)

Recommended Accommodations

- Keep oral directions short and simple
- Have student to paraphrase directions to ensure understanding
- Provide visual cues
- Increase study and practice time

(Flanagan & Mascolo, 2020)

Retrieval Fluency (Gr)

The rate and fluency at which individuals can access information stored in long-term memory.

(Schneider & McGrew, 2018)

Intermediate Ability

Speed of Lexical Access (LA): An *intermediate stratum* ability to rapidly retrieve words from one's lexicon; Verbal efficiency or automaticity of lexical access.

Major Narrow Abilities

Naming Facility (NA)*: The ability to rapidly call objects by their names.

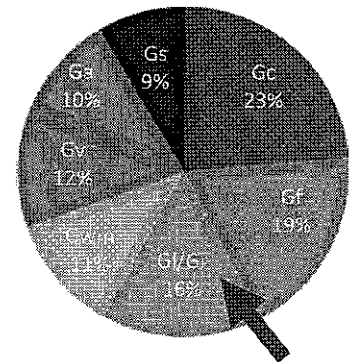
Word Fluency (FW)*: The ability to rapidly produce words that share a phonological or semantic feature

Ideational Fluency (FI): The ability to rapidly produce a series of ideas, words, or phrases related to a specific condition or object.

Expressional Fluency (FE): The ability to rapidly think of different ways to express an idea.

Narrow Ability Subtests

- KTEA-3 Letter Naming Facility
- KTEA-3 Object Naming Facility
- WISC-V Speeded Naming (Pictures, Objects, Letters, Numbers)
- WJ-IV OL Rapid Picture Naming
- WIAT-4 Oral Expression
- WJ-IV COG Phonological Processing
- KTEA-3 Associational Fluency
- WIAT-4 Oral Expression
- WJ-IV OL Retrieval Fluency
- N/A



Minor Narrow Abilities

Associational Fluency
(FA)

Sensitivity to Problems
(SP)

Originality
(FO)

Figural Fluency
(FF)

Figural Flexibility
(FX)

Broad Deficits

- Learning new concepts
- Performing consistently across different task formats
- Rapid retrieval of information

Reading Deficits

- Accessing background knowledge to support new learning

Writing Deficits

- Difficulty finding words to use while writing (circumlocution)

Math Deficits

- Difficulties with fluency in basic skills

Effective Interventions

- Provide background knowledge to prime retrieval
- Make associations between newly learned and prior information explicit
- Use lists to facilitate recall (prompts)

Recommended Accommodations

- Provide wait-time
- Keep oral directions short and simple
- Have student to paraphrase directions to ensure understanding
- Provide visual cues
- Increase study and practice time

(Flanagan & Mascolo, 2020)

Processing Speed (Gs)

The ability to control attention to automatically, quickly and fluently perform relatively simple repetitive cognitive tasks. Attentional fluency or attentional speediness

(Schneider & McGrew, 2018)

Intermediate Ability

Perceptual Speed (P): An *intermediate stratum* level ability that can be defined as the speed and fluency with which similarities or differences in visual stimuli (e.g., letters, numbers, patterns, etc.) can be searched and compared in an extended visual field.

Major Narrow Abilities

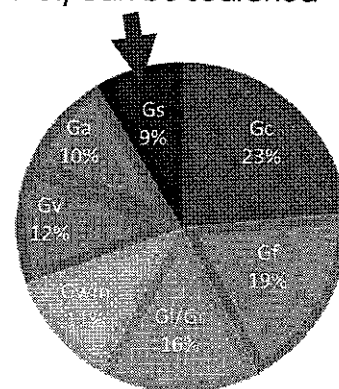
Perceptual Speed- Search (Ps): Speed or fluency of searching or scanning an extended visual field to locate one or more simple visual patterns

Perceptual Speed- Compare (Pc):

Speed and fluency of looking up and comparing visual stimuli that are side-by-side or more widely separated in an extended visual field.

Narrow Ability Subtests

- WJ-IV COG Pair Cancellation
- WISC-V Cancellation
- WJ-IV COG Letter Pattern Matching
- WJ-IV COG Number Pattern Matching
- WISC-V Symbol Search
- WISC-V Coding



Number Facility (N): The speed, fluency, and accuracy in manipulating numbers, comparing patterns or completing basic arithmetic

Minor Narrow Abilities

Reading Speed (RS)

Writing Speed (WS)

Broad Deficits

- Efficient processing of information
- Quickly perceiving relationships (similarities and differences between stimuli or information)
- Working within time parameters
- Completing simple, rote tasks quickly

Reading Deficits

- Slow and labored reading
- Impaired comprehension
- Needing to reread text
- Cannot retrieve information quickly; slow, disrupted speech as cannot get out thoughts quickly enough
- Is slow to process incoming information, resulting in information overload and loss of meaning

Writing Deficits

- Slow writing; poor generation of ideas

Math Deficits

- Slow computational speed
- No automaticity

Effective Interventions

- Repeated practice
- Speed drills
- Computer activities that require quick, simple decisions
- Extended time
- Reducing the quantity of work required
- Increasing "wait" times both after questions are asked and after given reduced

Recommended Accommodations

- Provide extended time or reduced amount of work
- Limit copying activities

(Flanagan & Mascolo, 2020)

Visual Processing (Gv)

The ability to make use of simulated mental imagery to solve problems. Perceiving, discriminating and manipulating images in the "mind's eye."

(Schneider & McGrew, 2018)

Major Narrow Abilities

Visualization (Vz): The ability to perceive complex visual patterns and mentally simulate how they might look when transformed (e.g., rotated, changed in size, partially obscured, and so forth).

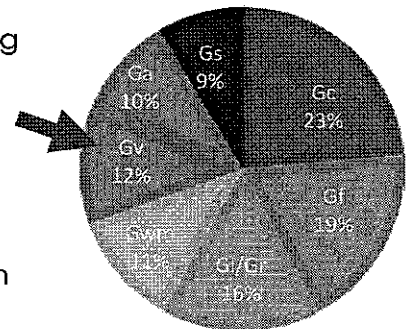
Imagery (IM): The ability to voluntarily mentally produce very vivid images of objects, people or events that are not present.

Visual Memory (MV): The ability to remember complex visual images over short periods of time (less than 30 seconds).

Narrow Ability Subtests

- WJ-IV COG Visualization
- WISC-V Block Design
- WISC-V Visual Puzzles
- KABC-2 NU Conceptual Thinking
- KABC-2 NU Pattern Reasoning
- N/A

- WJ-IV COG Picture Recognition
- KABC-2 NU Picture Recognition
- KABC-2 NU Face Recognition



Minor Narrow Abilities

Serial Perceptual Integration (PI)

Spatial Scanning (SS)

Perceptual Illusion (IL)

Flexibility of Closure (CF)

Closure Speed (CS)

Perceptual Alternations (PN)

Length Estimation (LE)

Broad Deficits

- Recognizing patterns
- Reading maps, graphs charts
- Attending to fine visual detail
- Recalling visual information
- Appreciation of spatial characteristics of objects (e.g., size, length)
- Recognition of spatial orientation of objects

Reading Deficits

- Orthographic coding Sight-word acquisition
- Using charts and graphs
- Comprehension of text involving spatial concepts

Writing Deficits

- Spelling sight-words
- Spatial planning during writing tasks (e.g., no attention to margins, words that overhang a line)
- Inconsistent size, spacing, position, and slant of letters

Math Deficits

- Number alignment during computations
- Reading and interpreting graphs tables, and charts

Effective Interventions

- Provide activities with manipulatives
- Provide copying, tracing, drawing activities
- Provide activities involving construction and design
- Verbally describe graphics and visually-based concepts
- Provide support for tasks requiring spatial organization

Recommended Accommodations

- Reduce extraneous visual stimuli on a page
- Provide spatial and sequential guides
- Provide visual markers to indicate starting location and organization
- Improve rate of task completion
- Reduce expectations on tasks that require spatial organization such as art projects
- Consider grading on skills gained rather than in comparison to peers

(Flanagan & Mascolo, 2020)

Working Memory Capacity (Gwm)

The ability to encode and maintain verbal or visual information in immediate awareness and then manipulate or transform it in some way within a few seconds, which is dependent in part of focus and attention (e.g. attend to task relevant stimuli and ignore task irrelevant stimuli).

(Schneider & McGrew, 2018)

Major Narrow Abilities

Auditory Short-Term Storage (Wa):

The ability to encode and maintain verbal information in primary memory

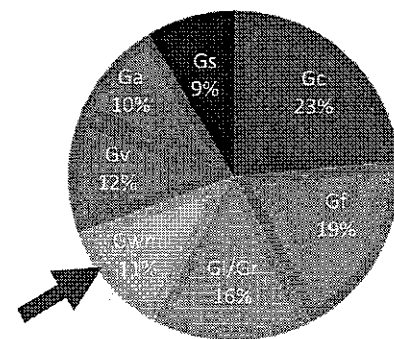
Visual Spatial Short-Term Storage (Wv):

The ability to encode and maintain visual information in primary memory

Attentional Control (AC): The ability to manipulate the spotlight of attention flexibility to focus on task- relevant stimuli and ignore task irrelevant stimuli.

Narrow Ability Subtests

- WJ-IV COG Numbers Reversed
- WJ-IV COG Object Number Sequencing
- WISC-V Letter- Number Sequencing
- WISC-V Digit Span
- KABC-II NU Number Recall
- KABC-II NU Word Order
- WISC-V Picture Span
- KABC-II NU Hand Movements
- WJ-IV COG Verbal Attention



Broad Deficits

- Following oral and written instructions
- Remembering information long enough to apply it
- Remembering the sequence of information
- Rote memorization

Reading Deficits

- Reading comprehension
- Decoding multisyllabic words
- Orally retelling or paraphrasing what one has read

Writing Deficits

- Spelling multisyllabic words
- Redundancy in writing (word and conceptual levels)
- Synthesizing multiple ideas; self-monitoring
- Note taking

Math Deficits

- Rote memorization of facts
- Remembering mathematical procedures
- Multistep problems and regrouping
- Extracting information to be used in word problems

Effective Interventions

- Teach mnemonics
- Teach chunking strategies
- Outline math procedures for student and provide procedural guides or flashcards for the student to use when approaching problems
- Teach students to highlight important information within a word problem
- Have student write all steps and show all work for math computations

Recommended Accommodations

- Employ visual representations
- Provide opportunities for repeated practice and review
- Provide supports (e.g., lecture notes, study guides, written directions) to supplement oral instruction
- Breakdown instructional steps for student
- Provide visual support (e.g., times table) to support acquisition of basic math facts

(Flanagan & Mascolo, 2020)