

## Appendix A

### Cognitive Ability Construct Definitions

These definitions are drawn from Stanek and Ones (2018) Table 13.1. Some constructs (e.g., Visual Processing’s Imagery sub-dimension) do not appear below because they are not in the database meta-analyzed for this book.

Construct	Definition
<i>g</i>	General mental ability refers to the general ability that sits at the apex of all cognitive abilities. It has been described as the ability to learn and problem solve. Measures assessing it were either direct measures or measures combining multiple broad abilities to yield a general factor.
<b>Fluid</b>	Solving unfamiliar problems, in that performance does not depend on prior learning, but rather, on abstract reasoning. It involves processes such as inferential reasoning; concept formation; classification of novel stimuli; generalization of known solutions to new problems and contexts; hypothesis generation and testing; identification of relevant similarities, differences, and relations among diverse objects and ideas; recognition of relevant consequences of newly acquired knowledge; and extrapolation of trends in ambiguous situations. Day-to-day problem solving often relies on Fluid Ability. Measures that included items that assessed multiple, lower-level Fluid Abilities are included in the meta-analytic database as indicators.
Fluid--Induction	Discovering underlying rules or principles is at the core of this specific ability. Distinctions can be made between induction measures that utilize primarily verbal/auditory stimuli in the measures versus those that utilize visual/figural stimuli in the items. An example of the former is 16PF Factor B, an example of the latter is Raven’s Advanced Progressive Matrices.
Fluid--General Sequential Reasoning	General Sequential Reasoning involves deductive reasoning (i.e., rule application). It is the ability to use principles and known premises to reason logically.
Fluid--Quantitative Reasoning	Using induction or deduction in reasoning with quantitative concepts (e.g., numbers, mathematical relations, operators, etc.).
<b>Memory</b>	This higher-order construct combines Short Term Working Memory and Long Term Storage & Retrieval constructs. Since different memory sub-dimensions contribute to this higher-order construct, the category is considered miscellaneous and not homogenous.
Memory-- <b>Short Term Memory</b>	Short Term Working Memory encompasses both primary memory capacity and the efficiency with which information is manipulated within primary memory. It involves attention control mechanisms. Thus, it encapsulates encoding, maintaining, and

	manipulating information in immediate awareness. Measures for this category typically involve multiple categories of short term memory (e.g., memory span and meaningful memory) or they are measures that primarily require short term memory.
Memory--Short Term Memory---Memory Span	'The ability to encode information, maintain it in primary memory, and immediately reproduce the information [typically] in the same sequence in which it was represented'.* (Parenthetical not in original).
Memory--Short Term Memory---Working Memory Capacity	This is the part of Short Term Working Memory that involves focusing attention on the performance of simple operations, manipulations, transformations, and combinations of information in primary memory. It may involve executive control in avoiding distractions.
Memory--Short Term Memory---Attentional Executive Control	'The ability to focus on task-relevant stimuli and ignore task-irrelevant stimuli. The ability to regulate intentionality and direct cognitive processing'.
Memory-- <b>Long Term Storage and Retrieval</b>	'The ability to store, consolidate, and retrieve information over periods of time measured in minutes, hours, days, and years... involves information that has been put out of immediate awareness long enough for the contents of primary memory to be displaced completely.' Measures included in this category tend to capture variance both from Learning Efficiency and Retrieval Fluency.
Memory--Long Term Storage and Retrieval---Learning Efficiency	The overall rate at which one can generally learn new material and store information (beyond what can be stored in working memory).
Memory--Long Term Storage and Retrieval---Learning Efficiency----Associative Memory	'The ability to remember previously unrelated information as having been paired'.
Memory--Long Term Storage and Retrieval---Learning Efficiency----Meaningful Memory	'The ability to remember narratives and other forms of semantically related information...over periods of time measured in minutes, hours, days, and years'.
Memory--Long Term Storage and Retrieval---Learning Efficiency----Episodic Memory	Ability to remember details from single, autobiographical events (e.g., faces, times, places, addresses, and other who, what, when, where, why information).
Memory--Long Term Storage and Retrieval---Learning Efficiency----Free Recall Memory	'The ability to recall lists in any order'.
Memory--Long Term Storage and Retrieval---Learning Efficiency----Long Term Visual Memory	The ability to store, consolidate, and retrieve visual information over periods of time measured in minutes, hours, days, and years ... involves visual information that has been put out of immediate awareness long enough for the contents of primary memory to be displaced completely.
Memory--Long Term Storage and Retrieval---Retrieval Fluency	'The rate and fluency at which individuals can access information stored in long-term memory'.
Memory--Long Term Storage and Retrieval---Retrieval Fluency----Ideational Fluency	'Ability to rapidly produce a series of ideas, words, or phrases related to a specific condition or object. Quantity, not quality or response originality, is emphasized'.
Memory--Long Term Storage and Retrieval---Retrieval Fluency----Associational Fluency	'Ability to rapidly produce a series of original or useful ideas related to a particular concept...quality rather quantity of production is emphasized'.
Memory--Long Term Storage and Retrieval---Retrieval Fluency----Expressional Fluency	'Ability to rapidly think of different ways of expressing an idea'.
Memory--Long Term Storage and Retrieval---Retrieval Fluency----Sensitivity to Problems and Alternative Solutions	'Ability to rapidly think of a number of alternative solutions to a particular practical problem'.
Memory--Long Term Storage and Retrieval---Retrieval Fluency----Originality and Creativity	'Ability to rapidly produce original, clever, and insightful responses (expressions, interpretations) to a given topic, situation, or task'.
Memory--Long Term Storage and Retrieval---Retrieval Fluency----Naming Facility and Speed of Lexical Access	'Ability to rapidly and fluently retrieve words from an individual's lexicon; verbal efficiency or automaticity of lexical access'. Including the ability to quickly call objects by their names.

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Memory--Long Term Storage and Retrieval--Retrieval Fluency----Word Fluency	‘Ability to rapidly produce words that share a phonological (e.g., fluency of retrieving words via a phonological cue) or semantic feature (e.g., fluency of retrieving words via a meaning-based representation). Also includes the ability to rapidly produce words that share non-semantic features (e.g., fluency of retrieval of words starting with the letter ‘T’)’.
<b>Visual Processing</b>	‘The ability to make use of simulated mental imagery (often in conjunction with currently perceived images) to solve problems’.
Visual Processing--Visualization	Visualization is the core of the Visual Processing construct and involves, ‘The ability to perceive complex patterns and mentally simulate how they might look when transformed (e.g., rotated, changed in size, partially obscured, and so forth)’.
Visual Processing--Closure Speed	‘Ability to quickly identify a familiar meaningful visual object from incomplete (e.g., vague, partially obscured, disconnected) visual stimuli, without knowing in advance what the object is. This ability is sometimes called Gestalt Perception because it requires people to “fill in” unseen or missing parts of an image to visualize a single percept’.
Visual Processing--Flexibility of Closure	‘Ability to identify a visual figure or pattern embedded in a complex distracting or disguised visual pattern or array, when knowing in advance what the pattern is’.
Visual Processing--Spatial Scanning	‘Ability to quickly and accurately survey (visually explore) a wide or complicated spatial field or pattern and (a) identify a particular target configuration, or (b) identify a path through the field to a determined end point’.
Visual Processing--Perceptual Illusions	‘The ability to not be fooled by visual illusions’.
Visual Processing--Visual Memory	‘Ability to remember complex images over short periods of time (less than 30 seconds)’.
<b>Auditory Processing</b>	Abilities related to hearing and sounds.
<b>Processing Speed</b>	‘The ability to perform simple repetitive cognitive tasks quickly and fluently’.
Processing Speed--Perceptual Speed	Perceptual Speed constitutes the core of Processing Speed. ‘Speed at which visual stimuli can be compared for similarity or difference’.
Processing Speed--Perceptual Speed---Scanning	‘The ability to scan, compare, and look up visual stimuli’.
Processing Speed--Perceptual Speed---Pattern Recognition	‘The ability to quickly recognize simple visual patterns’.
Processing Speed--Number Facility	‘Speed at which basic arithmetic operations are performed accurately. Although this factor includes recall of math facts, Number Facility includes speeded performance of any simple calculation (e.g., subtracting 3 from a column of 2-digit numbers). Number Facility does not involve understanding or organizing mathematical problems and is not a major component of mathematical/quantitative reasoning or higher mathematical skills’.
<b>Psychomotor Speed</b>	‘The speed and fluidity with which physical body movements can be made’.
Psychomotor Speed--Writing Speed	‘Rate at which words or sentences can be generated or copied’.
<b>Psychomotor Ability</b>	‘Ability to perform physical body motor movements (e.g., movement of fingers, hands, legs) with precision, coordination, or strength’.
Psychomotor Ability--Aiming	‘Ability to precisely and fluently execute a sequence of eye-hand coordination movements for positioning purposes’.

Psychomotor Ability--Finger Dexterity	'Ability to make precisely coordinated movements of the fingers'.
Psychomotor Ability--Manual Dexterity	'Ability to make precisely coordinated movements of a hand or a hand and the attached arm'.
<b>Reaction and Decision Speed</b>	'The speed of making very simple decisions or judgments when items are presented one at a time'.
Reaction and Decision Speed--Simple Reaction Time	'Reaction time to the onset of a single stimulus'.
Reaction and Decision Speed--Choice Reaction Time	'Reaction time when a very simple choice must be made'.
Reaction and Decision Speed--Choice Reaction Time--- Decision Time	The time taken to make a decision when a very simple choice must be made.
Reaction and Decision Speed--Choice Reaction Time--- Movement Time	The time taken to physically respond when a very simple choice must be made.
Reaction and Decision Speed--Semantic Processing Speed	'Reaction time when a decision requires some very simple encoding and mental manipulation of the stimulus content'.
Reaction and Decision Speed--Mental Comparison Speed	'Reaction time where stimuli must be compared for a particular characteristic or attribute'.
Reaction and Decision Speed--Inspection Time	'The speed at which differences in stimuli can be perceived'.
<b>Acquired Knowledge</b>	This higher order construct involves combining constructs from multiple Acquired Knowledge domains (e.g., Quantitative Ability, Verbal Ability, and Domain Specific Knowledge). Because different lower-level acquired knowledge constructs contributed to this higher order construct, the category is somewhat heterogeneous.
Acquired Knowledge-- <b>Quantitative Ability</b>	'Depth and breadth of knowledge related to mathematics...It consists of acquired knowledge about mathematics such as knowledge of mathematical symbols, operations, computational procedures, and other math-related skills'.
Acquired Knowledge--Quantitative Ability--- Mathematics Knowledge	'Range of general knowledge about mathematics. Not the performance of mathematical operations or the solving of math problems. This factor is about 'what' rather than 'how' knowledge (e.g., What does $\pi$ mean? What is the Pythagorean theorem?)'.
Acquired Knowledge--Quantitative Ability--- Mathematics Achievement	'Measures (tested) mathematics achievement'.
Acquired Knowledge-- <b>Verbal Ability</b>	Depth and breadth of knowledge relating to verbal and language skills in one's native language.
Acquired Knowledge--Verbal Ability---Reading and Writing	'Depth and breadth of knowledge and skills relating to written language'.
Acquired Knowledge--Verbal Ability---Reading and Writing---Reading Comprehension	'Ability to understand written discourse'.
Acquired Knowledge--Verbal Ability---Reading and Writing---Reading Decoding	'Ability to identify words from text'.
Acquired Knowledge--Verbal Ability---Reading and Writing---Reading Speed	'Rate at which a person can read connected discourse with full comprehension. Reading Speed is classified as a mixed measure of Gs (Broad Cognitive Speed) and Grw [Broad Reading & Writing Ability] in a hierarchical speed model'.
Acquired Knowledge--Verbal Ability---Reading and Writing---Native Language Usage	'Knowledge of the mechanics of writing (e.g., capitalization, punctuation, and word usage)'.
Acquired Knowledge--Verbal Ability---Reading and Writing---Writing Ability	'Ability to use text to communicate ideas clearly'.

Acquired Knowledge--Verbal Ability---Reading and Writing---Spelling Ability	‘Ability to spell words’.
Acquired Knowledge--Verbal Ability---Comprehension Knowledge	‘Depth and breadth of [verbal] knowledge and skills that are valued by one’s culture’.
Acquired Knowledge--Verbal Ability---Comprehension Knowledge---General Verbal Information	Breadth and depth of knowledge that one’s culture deems essential, practical, or otherwise worthwhile for everyone to know.
Acquired Knowledge--Verbal Ability---Comprehension Knowledge---Language Development	This construct is at the core of Comprehension Knowledge. ‘General understanding of spoken language at the level of words, idioms, and sentences’.
Acquired Knowledge--Verbal Ability---Comprehension Knowledge---Lexical Knowledge	‘Knowledge of the definitions of words and the concepts that underlie them’.
Acquired Knowledge--Verbal Ability---Comprehension Knowledge---Listening Ability	‘Ability to understand speech’.
Acquired Knowledge-- <b>Domain Specific Knowledge</b>	‘Depth, breadth, and mastery of specialized knowledge (knowledge not all members of a society are expected to have)’. Measures listed for this construct are a miscellaneous category, given measures used in studies examined.
Acquired Knowledge--Domain Specific Knowledge---Foreign Language Proficiency	Achieved proficiency, rather than proficiency potential, in a foreign language.
Acquired Knowledge--Domain Specific Knowledge---Arts and Humanities	Knowledge about arts and humanities, including literature.
Acquired Knowledge--Domain Specific Knowledge---Behavioral/Psychological---Behavioral Content Knowledge	Knowledge about behavior and psychology, broadly defined.
Acquired Knowledge--Domain Specific Knowledge---Business Knowledge	Knowledge of accounting, business, finance, marketing, sales, strategy, etc.
Acquired Knowledge--Domain Specific Knowledge---Occupational	Knowledge specific to occupations, such as air traffic controllers, police, and military.
Acquired Knowledge--Domain Specific Knowledge---Occupational---Military & Police	Knowledge specifically tailored to occupations in the military and law enforcement (e.g., patrol, surveillance, combat).
Acquired Knowledge--Domain Specific Knowledge---Realistic Knowledge	Knowledge relating to realistic interests (not occupations), including farming, sports, and the military.
Acquired Knowledge--Domain Specific Knowledge---Sciences---General Science Knowledge	General Science Knowledge includes knowledge about general science or about multiple areas of science (e.g., physics, biology, mechanics, engineering, electronics).
Acquired Knowledge--Domain Specific Knowledge---Sciences---Life Sciences Knowledge	Knowledge about living organisms, including anatomy, biology, botany, genetics, physiology, and zoology.
Acquired Knowledge--Domain Specific Knowledge---Sciences---Mechanical Knowledge	Knowledge about the function, terminology, and operation of ordinary tools, machines, and equipment.
Acquired Knowledge--Domain Specific Knowledge---Sciences---Natural Sciences Knowledge	Knowledge relating to natural sciences, combining knowledge of life sciences as well as physical sciences.
Acquired Knowledge--Domain Specific Knowledge---Sciences---Physical Sciences Knowledge	Knowledge relating to physical sciences, including astronomy, chemistry, Earth sciences, physics, and other related fields.
Acquired Knowledge--Domain Specific Knowledge---Social Studies Knowledge	Social Studies Knowledge covers areas such as economics, geography, politics, and sociology, among others.

\*All quotes in this table are from Woodcock Johnson IV Technical Manual (McGrew et al., 2014).

## References

McGrew, K. S., LaForte, E. M., & Schrank, F. A. (2014). Woodcock Johnson IV Technical Manual. Riverside.

Stanek, K. C., & Ones, D. S. (2018). Taxonomies and compendia of cognitive ability and personality constructs and measures relevant to industrial, work and organizational psychology. In D. S. Ones, C. Anderson, C. Viswesvaran, & H. K. Sinangil (Eds.), *The SAGE handbook of industrial, work & organizational psychology: Personnel psychology and employee performance* (pp. 366–407). Sage.