**Cognitive Function Table and Tags**

Version 1.0

Terms that will be used for tags are italicized and capitalized. Alternative terms are in brackets. Alternative terms will NOT be used as tags.

Discussion on the different functions is at http://accessibility.athena-ict.com/cognativefunction.shtml.

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| **Cognitive Function Tags** | **Dyslexia** | **Non-vocal** | **Down Syndrome** | **Autism** | **Dyscalculia** | **Aging Related Cognitive Decline** |
| ***Memory***  **Duration Based**   * ***Working Memory*** * ***Short Term Memory* -typically lasts seconds** * ***Long Term Memory* - (includes recall and writing - the ability to learn such as learn a new symbol and use it the next day)**   **Context Based**   * ***Episodic Memory*(autobiographical – time, self, )** * ***Semantic Memory* (factual)** * ***Visual* *Memory*** * ***Visuo-Spatial Memory*** * ***Auditory Memory*: memory for sound patterns (um),** * ***Procedural Memory*** * ***Musical Memory*** * ***Prospective Memory* - remembering to do things in the future, such as keep appointments, return a book to the library, or pay bills on time** * ***Emotional Memory***   **Awareness based**   * ***Implicit memory* :(non-declarative memory )** * ***Explicit memory*: (declarative memory, intentional use of memory )**   **Also memories can be stored and recalled as**   * ***Associative memory* (MA)** * ***Meaningful memory* (MM)** * ***Free-recall memory* (M6)** | May have impaired:   * Short Term Memory * Visual Memory * Visuo-spatial Memory * Auditory Memory * Procedural Memory * Prospective Memory | Receptive and Expressive Aphasia may result in impaired:   * Short Term Memory * Visual Memory * Visuo-spatial Memory * Auditory Memory * Procedural Memory * Prospective Memory   Dysphonia or Elective Mutism – may have no duration based memory difficulties unless co-occurring disabilities exist  Cerebral Palsy - range from no memory difficulties to auditory and visual memory difficulties linked to dyslexia and other c-occurring difficulties.  Those with Aphasia may also have contextual and awareness based memory difficulties such as sematic, procedural, prospective and emotional memory difficulties due to aging, dementia and emotional lability |  |  |  |  |
| ***Executive Functions***   * ***Emotional Control and* *Self-Monitoring*** * ***Shift* ( also called task flexibility)** * ***Initiation*** * ***Planning/Organization* and** * ***Execution*** | Sometimes affected:  Planning/Organization | Those with Aphasia may have executive functional difficulties especially if emotional lability is an issue. Cognitive impairment can affect cause and effect and therefore planning and organization as well as execution. |  |  |  |  |
| ***Reasoning***   * ***Fluid Reasoning* (logical reasoning)** * ***Mathematical Intelligence*** * ***Seriation* - reasoning via  seriation including*Organization, Conservation*and *Classification*** * ***Behavioral* -(or conative) component involving memory such as long term autobiographical memory.** * ***Crystallized Intelligence*(sometimes called comprehension- knowledge) is the ability to use skills, knowledge, and experience.** * ***Abstraction*** | Typically not affected | Where intellectual capacity is affected there may be issues with reasoning, learning and thus remembering plus abstraction. |  |  |  |  |
| ***Attention***   * ***Selective Attention* -the ability to attend to some stimuli while disregarding others that are irrelevant to the task at hand.** * ***Divided Attention*** * ***Sustained Attention*** | Selective Attention may be affected | Attention deficit disorder may be a co-occurring difficulty for some non-vocal individuals. Shortened attention span can occur with Aphasia. |  |  |  |  |
| **Language**   * ***Speech Perception*** * ***Speech*** * ***Literacy***   **see below for more details** |  |  |  |  |  |  |
| ***Speech Perception*: This depends on:**   * ***Auditory Discrimination*(Note not L hearing, but the identification and differentiation of sounds also called general sound discrimination (u3),** * ***Temporal Tracking* (uk)** * ***Listening Ability* (ls)** * ***Naming Skills* (n)** * ***Morphosyntax* The system of the internal structure of words (morphology) and the way in which words are put together to form phrases and sentences (syntax).**   **Note, there is also related memory such as working memory, auditory memory -see above**  **There is also knowledge required (see below) such as:**   * **Grammar** * **Metaphors** * **Lexical** | Often affected:  Auditory Discrimination  Temporal tracking  Temporal tracking  Naming skills    Morphosyntax  related memory | Non-vocal individuals may have auditory perceptual impairments, poor listening skills and dysnomia (lack naming skills) and semantic pragmatic disorder. |  |  |  |  |
| ***Understanding Figural Language* - understanding figural language. such as a simile, onomatopoeia, personification , oxymoron, paradox, allusion or idiom and puns. This is the ability to understand figural language and does not include the knowledge of the metaphors.** | Not affected | Receptive / Expressive Aphasia may cause a failure to understand figurative speech.  Intellectual cognitive impairment affect ability to understand figurative speech. |  |  |  |  |
| **Literacy**  **Depends on Speech Perception and visual perception. Also depends on:**   * ***Phoneme Processing*   and phonetic coding (PC)** * ***Cross-Modal Association*(association of sign and concept)** | Affected | Those with poor phonemic awareness skills - often AAC users, Aphasia and poor language skills may be affected. |  |  |  |  |
| ***Visual Perception***  **(visual recognition ) The visual system automatically groups elements into patterns:*Proximity*, *Similarity*, *Closure*,*Symmetry*, *Common Fate* (i.e. common motion), and *Continuity*. (Gestalt psychology) Functions include:**   * ***Object Recognition*** * ***Face Recognition* (seems to be a different process to object recognition [ Face and object recognition ((Alex Huk. (1999) "Object and Face Recognition: Lecture Notes." pp. 5]** * ***Visual Pattern Recognition*** | All can be affected | Those with developmental or acquired dyslexia who are also non-vocal may be affected – can be due to Aphasia. |  |  |  |  |
| **Other Perception**   * ***Auditory Perception* (see Speech Perception above for further classifications),** * ***Motor Perception*** * ***TactilePerception*** * ***Smell Perception*** * ***Psychomotor  Perception*** * ***Kinesthetic* *Perception* ( bodily position, weight, or movement)** * ***Olfactory* *Perception* and** * ***Sensory Perception*** | Auditory Perception affected | Depending on the co-occurring difficulties those with Aphasia, cerebral palsy, MND. MS and other disabilities that cause speech and language impairment may also have other perceptual difficulties. |  |  |  |  |
| **Knowledge**  **Types of knowledge that might be required for use of ICT include:**   * ***Cultural Knowledge*** * **base*Language Knowledge*including:**   + ***Lexical* (UL)**   + ***Jargon* (subject mater)**   + ***Web Jargon* and technology**   + ***Web*and *TechnologyUsages* and *Risks***   + ***Metaphors* and idioms** * ***Symbols*Knowledge(such as icons)** * ***Mathematical Knowledge*** * ***Mechanical Knowledge* (MK)** * ***Knowledge of  Behaviors*** * ***Design Metaphor Knowledge*** * ***Design Functions Knowledge*** | Typically not affected. | Intellectual cognitive impairment causes individuals to struggle with this aspect. |  |  |  |  |
| ***Behavioral***  **Behavioral Abstractions and social –**   * ***Norms* etc** * ***Social Cues*** * **other Behavioral** | Slightly affected: Norms and Social Cues | Aphasia may lead to inappropriate emotional lability where certain types of brain damage have also occurred. |  |  |  |  |
| ***Consciousness*** | Typically not affected. |  |  |  |  |  |

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**Spoken languages**

The basic skills for spoken languages seem to be **Speech perception**:

* Speech perception: sounds of language are heard, interpreted and understood This depends on:
* Auditory Discrimination (Note not L hearing, but the identification and differentiation of sounds also called General sound discrimination (U3),
* Temporal tracking (UK)
* Listening Ability (LS)
* Naming skills (N)
* Related memory such as Working Memory, auditory memory  - (Memory for sound patterns)
* Morphosyntax: T he system of the internal structure of words (morphology) and the way in which words are put together to form phrases and sentences (syntax).
* Understanding figural language. Including a simile (a comparison of two things, such as  “His cheeks were like roses”, A metaphor, onomatopoeia (a word designed to be an imitation of a sound such as  “Bark! Bark!” ), personification ( attribution of a personal nature to inanimate objects) an oxymoron ( opposite or contradictory terms is used together for emphasis such as  “organized chaos” ) a paradox ,a Hyperbole (an extreme  exaggeration such as “ I was so upset I nearly died”) allusion or idiom(such as : You should keep your eye out for him.) and puns.  
  Note: Spoken language also require inability to produce voice

**Sign language**

Sign language without spoken language probably requires a slightly different set of skills such as:

* Visual Recognition Skills
* Non-vocal Naming - Association of sign and concept
* Phoneme Processing  and Phonetic coding (PC)
* Related memory such as Working Memory, Visual memory, Memory for patterns
* Morphosyntax: T he system of the internal structure of words (morphology) and the way in which words are put together to form phrases and sentences (syntax).
* Understanding figural language.

Note that many dyslexics achieve literacy without many of these functions or with impaired functioning

**Perception**

**Other Perception**

Auditory perception (see Speech perception above for further classifications), Motor, Tactile smell Psychomotor  Kinestheti( bodily position, weight, or movement) Olfactory  and sensory perception

**Speed**

Processing speed effect all the functions above. See Caroll.  
A related concept is **fluency**