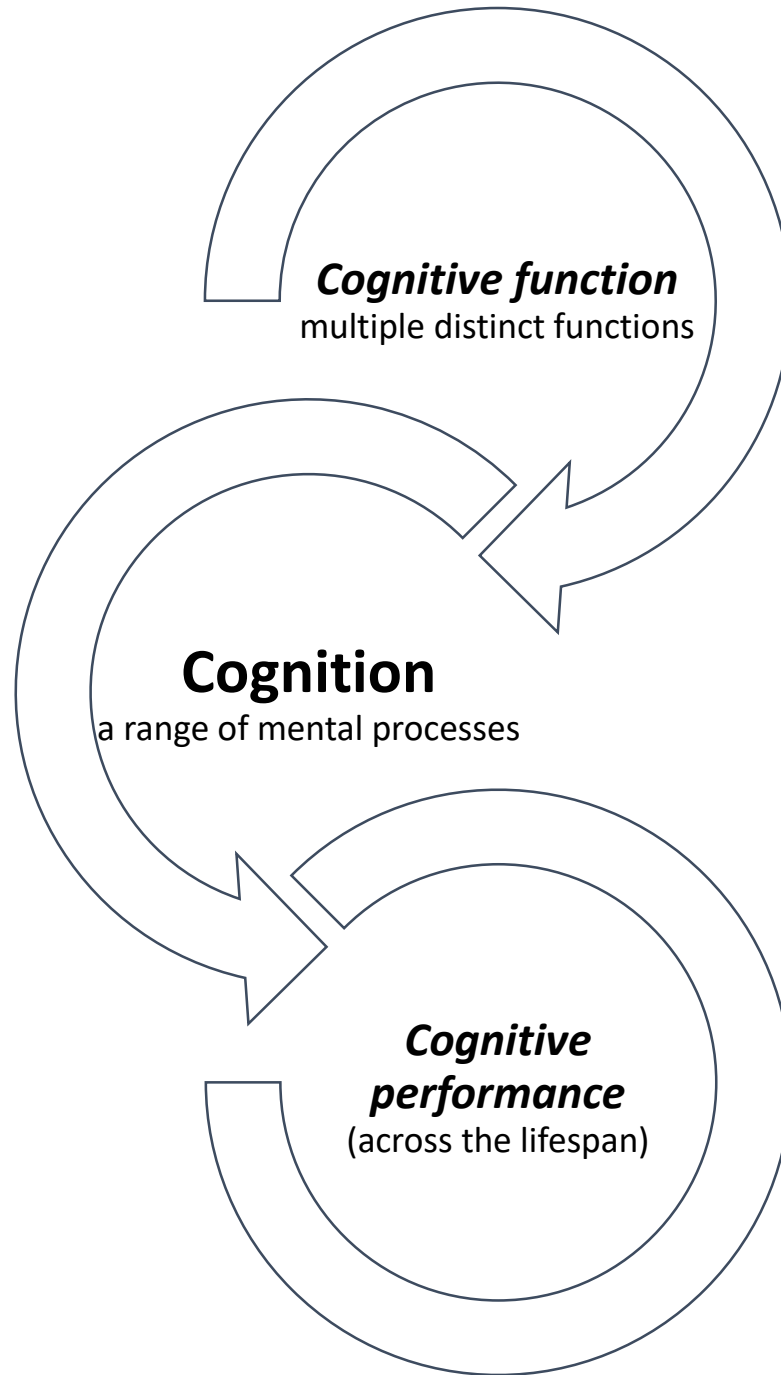


The applicable guide to cognitive assessments

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Gratis!

Understanding cognitive functions:
Different theories or approaches

- The Piagetian paradigm

(developmental stage theory)

- The Vygotskian paradigm

(social cultural theory)

- The systems paradigm

(different environments throughout our lifespan that may influence our cognitions in varying degrees, Urie Bronfenbrenner).

- The neurobiological paradigm

(cognitive functions are dependent on particular brain areas & circuits)

- The information-processing paradigm

(the flow of information that occur in a person's mind while receiving a new piece of information)

Understanding cognitive performance by
observing and analysing behavior:
Different frameworks

Type	Analysis	Manipulating the situation
Naturalistic observation	Open Analysis	No
Semi-controlled observation	Thematic analysis	To a lesser extent
Controlled observation	Given a rating or score	To to a greater extent

Given a rating or score

- Standardized Assessment
- Assessment concessions
- Dynamic assessment

- Standardized Assessment

The psychometric approach

- Tests or rating scales that are standardized on a population of typically developing individuals



- Assessment concessions

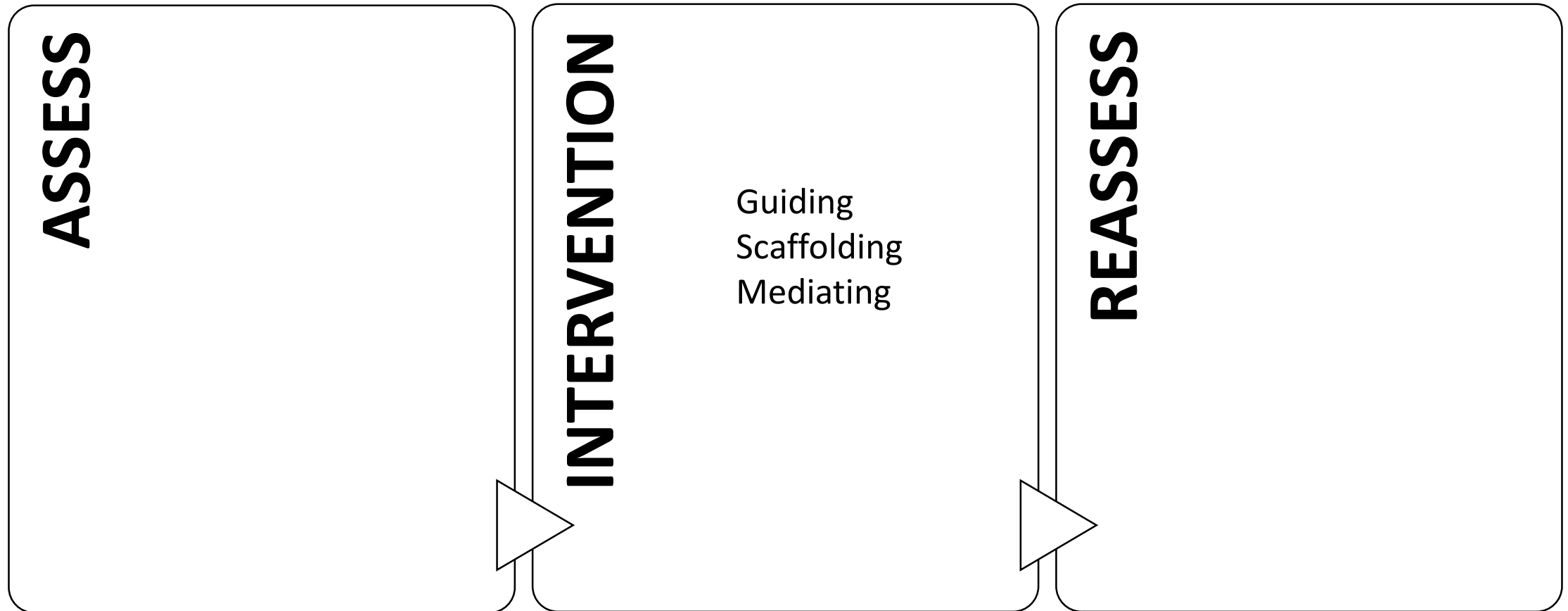
Assessment Concession type	Nature of changes	Examples
Accommodations	Logistical or procedural changes that do not impact on the outcomes of the assessment	Extended time, additional breaks during assessment and extended assessments over days or sessions
Adaptations	Limited adjustments to content or structure	Vocabulary adaptations that do not substantially change the content of the assessment
Modification	Content or procedural changes which significantly alter the context of the assessment	The outcomes of these assessments would thus be different, as the assessment tools will differ substantially.

- Dynamic assessment

What is Dynamic Assessment?

- Dynamic assessment relates to the assessment of learning or cognitive potentials and focuses on the ability of the learner to **respond to intervention**
- In contrast to standardized assessment, dynamic assessment focuses on **the support that an individual requires to successfully perform a task** rather than on the level of difficulty at which performance breaks down.

Dynamic assessment links assessment with intervention



Dynamic assessment is highly interactive and is described as an “assess– intervene – reassess” model of psychological and psychoeducational assessment” (Haywood & Lidz, 2007)

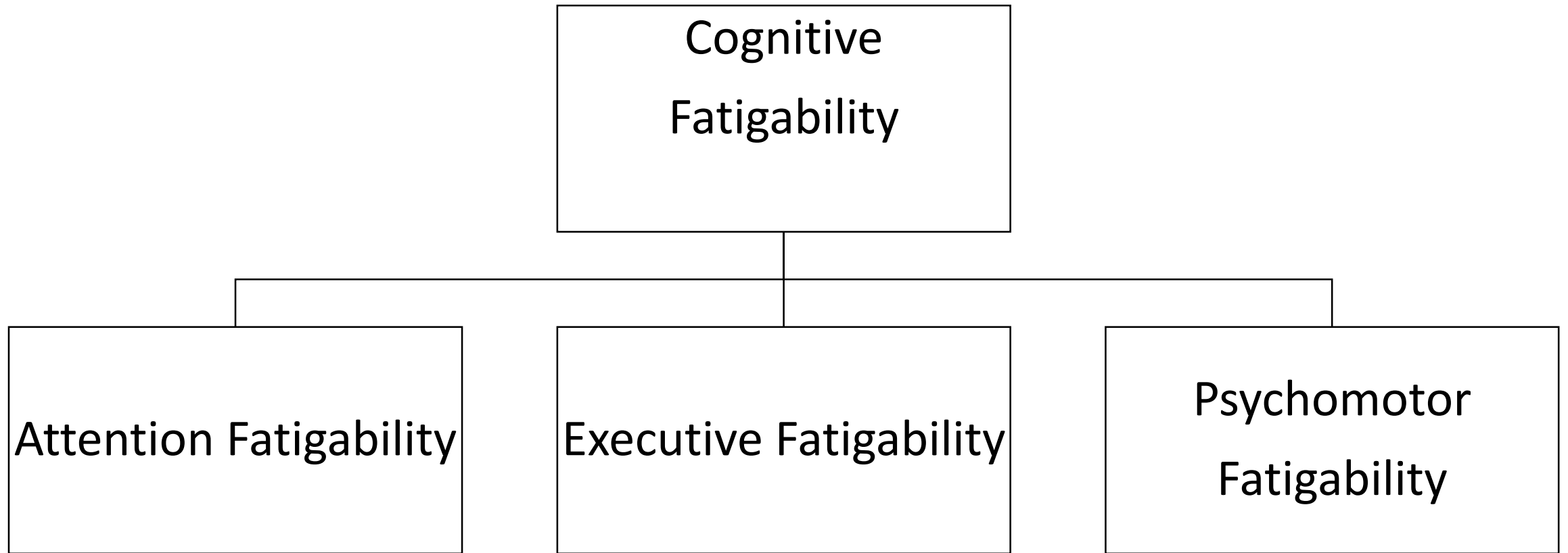
- Cognitive assessment of people who are deafblind

Standardized Assessment

Assessment concessions

- Glasses/contact lenses should be worn; hearing aids/CI be turned on and properly adjusted.
- Enlarging visual materials/using a magnifier; lighting conditions; optimal positioning of test materials; contrast and back ground (e.g., white letters on black paper); reducing back ground noises
- Extra time to respond; extended time; additional breaks during assessment; extended assessments over days or sessions
- Having an interpreter deliver instructions
- Allowing the person to respond in a different communication form
- Braille or tactile adaptations of test items
- Eliminating some test items

- How does mental fatigue (cognitive fatigability) affect the test results of the person with deafblindness?



Specific cognitive tests seem most sensitive to capture the different aspects of cognitive fatigability
Möller et al., (2014) An investigation of attention, executive, and psychomotor aspects of cognitive fatigability.

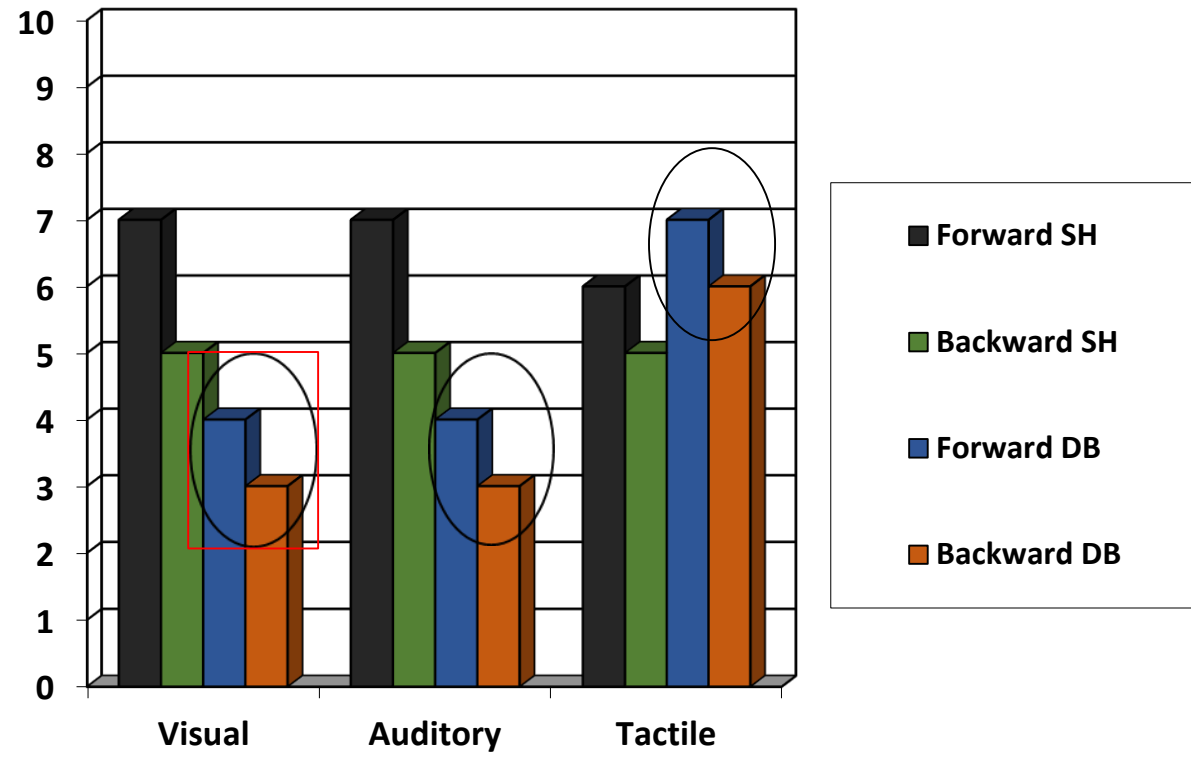
- Using tactile/haptic tests

- Based on the assumption that the people with deafblindness, due their limitations in audition and vision may perform better cognitively in a bodily-tactile/haptic modality

- The somatosensory system is capable of neuroplasticity

- A neuroimaging study on people born with one hand (**congenital one-handers**) indicated that the missing hand area in the somatosensory cortex is functionally modified to support other body parts, including the arm, foot, and mouth (Hahamy, et al., 2017).
- A neuroimaging study has shown that a tactile -based- language activated brain areas similar to spoken language in an **acquired deafblind subject** (Osaki, et al., 2004).
- An electrophysiological study found significant change in the somatosensory brain area of **children with congenital deafblindness** in comparison to a control group of seeing and hearing children (Charroó-Ruíz, et al., 2012).

Individuals with acquired deafblindness (DB) showed **low performance level on the visual & auditory memory span**, but **above average performance level on the tactile memory span** compared with individuals with normal vision and hearing (SH) (Nicholas, 2010).



Visual memory span

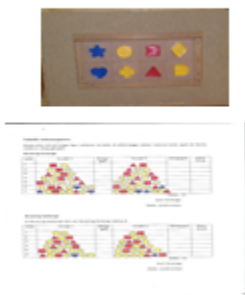


Auditory memory span

Digit span forward
stimuli: 7-1-3-9-4-2-5-6-8
svar: 7-1-3-9-4-2-5-6-8

Digit Backward
stimuli: 7-2-8-1-9-6-5-3
svar: 3-5-6-9-1-8-2-7

Tactile memory scan



- Individuals with dual sensory loss performed significantly better on a **tactile test battery** compared with individuals with dual sensory loss diagnosed with dementia (Bruhn & Dammeyer, 2018)

- Can people with congenital deafblindness be meaningfully cognitive assessed?

- Challenges

- The sole use of **standardized assessment** instruments is inappropriate for children who are deafblind (Nelson, et. al., 2009; Silberman et al., 2004). This is because standardized instruments seldom include children who are deafblind as a norming group.
- In addition, **standardized instruments** require precise administration procedures that may not allow enough flexibility to accommodate the needs during the assessment process (Bruce, et. al., 2018).

- When using standardized tests with people with congenital deafblindness, we must be **extremely cautious** interpreting the results.
- Scores may not be valid once there is departure from standard procedures; they may underestimate an individual's true potential.

- Meeting the Challenges

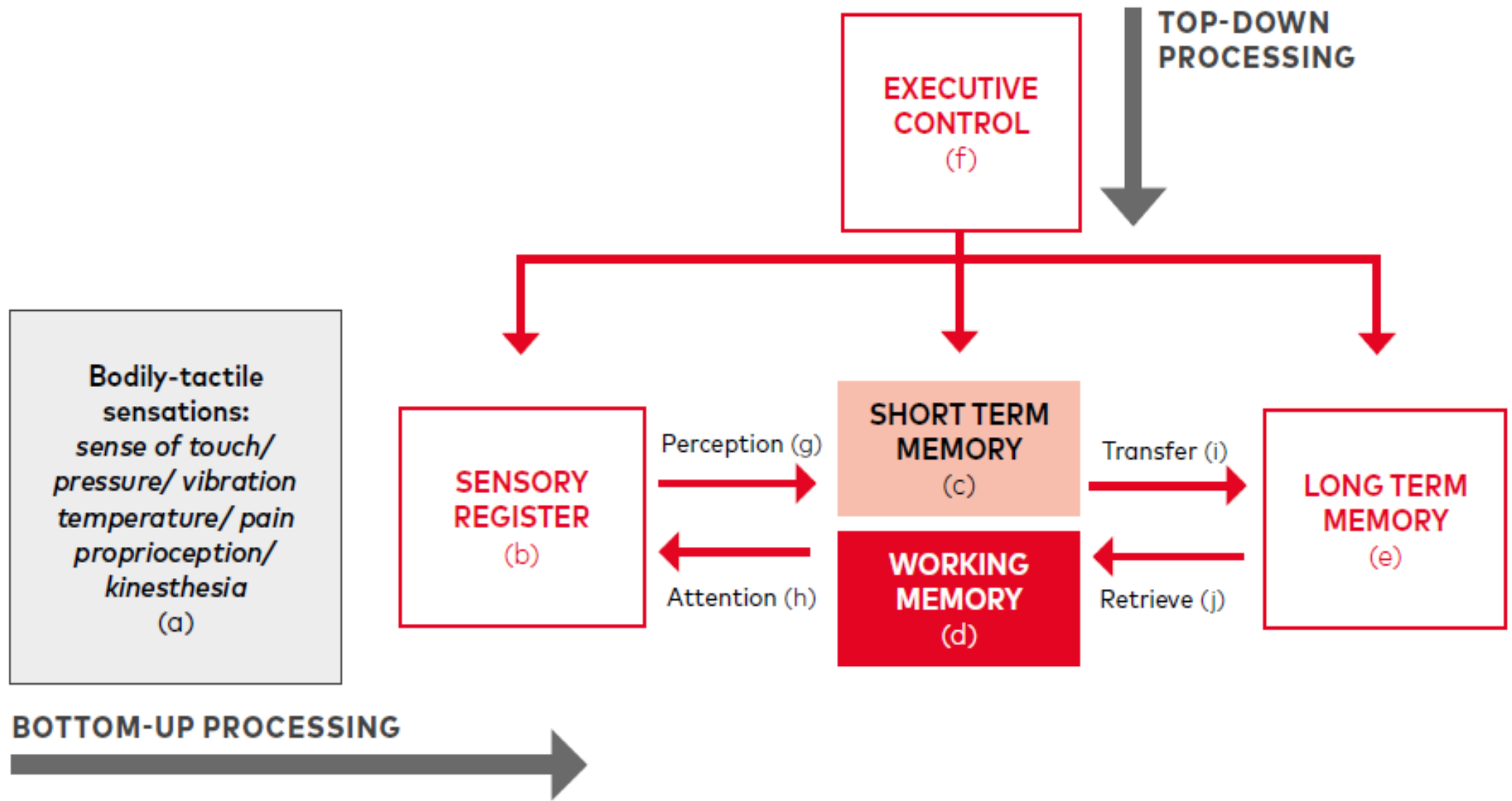
- Combining structured tests and observations of daily living
- Multidisciplinary assessments
- Modality specific assessment
- Dynamic assessment

- Assessment of working memory in the bodily-tactile modality

Tactile Working Memory Scale

A measure of working memory functions in the tactile modality that would yield practically useful information about cognitive and social working memory potentials in people with CDB during tasks/activities and social interactions that are encountered on a daily basis.

- TWMS: Theoretical foundations



Interaction partner

Person

Bidirectional, reciprocal interaction



Working Memory



Time

Assess
TWMS



Intervene

- Optimizing the physical and social environment within a bodily-tactile modality
- Mediating effective working memory strategies within a bodily-tactile modality



Reassess
TWMS

Mediating effective learning strategies within the bodily-tactile modality

Perceptual

- **Perceptual strategies:** strategies to promote perceptual learning and to guide behavior.

Cognitive

- **Long-term working memory strategies:** strategies for enhancing the link between working memory and long-term memory.
- **Maintenance cognitive strategies:** strategies for enhancing working memory and learning.
- **Metacognitive strategies:** cognitive strategies for exercising attentional control and organizing learning.

Social cognitive

- **Social cognitive strategies:** strategies for keeping track of various amounts of social information, managing demands to social cognition and improving social working memory skill.

TWMS:

Development & construct validity: several steps

- 1) Literature review
- 2) Taking into account different theoretical models of working memory
- 3) Selecting the theory model & the items within WM domains
- 4) Identifying the items from behavioral observations during tasks/activities & interpersonal interactions between people with CDB and their interaction partner(s). (Several cases (n=14), different professionals: Norway/Netherlands).

Based on these steps 20 items were generated to construct the three tactile working memory domains.

TWMS: Materials

20 items within 3 theoretically derived domains that measure the different processes of tactile working memory during tasks/activities and social interactions

- **ENCODING** (detection and initial interpretation)
- **MAINTAINING** (temporarily retaining)
- **MANIPULATING** (actively controlling attention)

Domains	Encode						Maintain						Manipulate																											
Present (P)																																								
Emerge (E)																																								
Absent (A)																																								
N/A																																								
Items	1	2	3	5	6	8	4	7	10	11	12	15	16	9	13	14	17	18	19	20																				
Behavioral descriptions	Tactile focused attention		Object manipulation (ventral stream function)		Tactile object identification (ventral stream function)		Tactile object location (dorsal stream function)		Spatial navigation (dorsal stream function)		SWM person oriented		Tactile object recognition (ventral stream function)		Tactile spatial recognition (dorsal stream function)		SWM mutual & joint attention		SWM retaining social info.		Tactile sustained attention		Sustained attention: interaction-time		Selective attention: interaction-novel condition		SWM emotion-perception		Tactile selective attention		Attentional switching		Attentional switching: interaction-topic change		long-term working memory strategies		Attention manipulation: maintenance cognitive strategies		Attention manipulation: metacognitive strategies	

Tactile Working Memory Scale

New book!
**Download
or read
online for
free**

a Professional Manual by

Jude T-Nicholas
Annika M. Johannessen
Trees van Nunen

The tactile working memory scale

The professional manual of Tactile Working Memory Scale describes an 20 item rating scale for assessing working memory in the bodily-tactile modality, identified by patterns of observable behavior in the everyday occurrences (activities/tasks) and during interpersonal interactions.

The manual suggests that the assessment is conducted on the principles based on transactional, dynamic and ecological approaches.

Furthermore, the manual recommends that the intervention process is linked to two main principles. (a) optimizing the physical and social environment within a bodily-tactile modality; (b) mediating effective learning strategies within a bodily-tactile modality, such as perceptual, cognitive and social cognitive strategies.

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**Thank you for
your attention**



Cognitive assessment of people who are congenital deafblind should be carried out as a part of intervention (dynamic) and for the sake of selecting or modifying intervention (communicational, educational, psychosocial concerns).

- Difference Between Within-Subject and Between-Subject Effects: The Answer to Ice-Cream is Always Yes. Within-person (or within-subject) effects represent the variability of a particular value for individuals in a sample. ... Between-persons (or between-subjects) effects, by contrast, examine differences between individuals ..

- How can we reduce the misidentification of children with disabilities who are from culturally and linguistically diverse families?

- Cognitive Function
- Cognitive Ability
- Cognitive Performance

Performance = Function
(ability x motivation x emotion)

- Cattell–Horn–Carroll Theory of Cognitive Abilities (Horn & Cattell, 1966; Carroll, 1993; Schneider & McGrew, 2018)
- The cognitive information processing framework (Miller, 2016)

CHC theory consists of three strata:
a general cognitive ability, broad cognitive abilities and narrow cognitive abilities

