



A retrospective longitudinal view at children with visual impairments in rehabilitation

Drs. Marjolein Dik
GZpsycholoog/neuropsycholoog
Royal Dutch Visio
Amsterdam

As young children

- Behaviour not as expected considering sensory data – acuity, field, etc
- Not mentally retarded
- Severe difficulties in visual recognizing people/objects/pictures
- Difficulties in finding their way
- Wondering which visual function subdomain– next to sensory impairments – or other function was the problem and how to assess that
- The eldest now 15yr and the youngest 6yr of age
- Some known from former CVRS meetings

My discrepancy working model

1. Ophthalmologist/optometrist diagnoses

b210 Seeing functions Sensory functions
*visual acuity functions; visual field functions;
quality of vision; functions of sensing light
and colour, visual acuity of distant and near
vision, monocular and binocular vision; etc.*

**b215 Functions of structures adjoining
the eye** (*movement aspect*)

Team: Can activity and participation
problems be explained by developmental
level and these data?

- Yes: standard approach for sensory impairments

2. No:

Neuropsychologist chooses test material taking into
account all available diagnoses - also
brainstructure information (s110) from
neurologist - to formulate hypotheses

3. Find information about, measure and compare the following functions:

- **b110 consciousness/b130 energy and
drive functions**
- **b117 (verbal) Intellectual functions**
- **b122 Global psychosocial functions**
- **b7.. Movement related functions**
- **b144 non visual memory functions**
- **b140 non visual attentional functions**
- **B164 executive (higher cognitive)
functions**

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↓↑

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- **b1561 visual perception**
- **b1565 visuo-spatial perception**
- **B144 visual memory**
- **b140 visual attention**

4. Team: Validate each visual problem: mild, moderate, severe, complete impairment

5. Team: Help is indicated by one complete/ severe, ? moderate and ? mild
(taking other diagnoses into account as well)

Data of these children

age	diagnosis	acuity	Fld	SIP ☺	M0	VIQ	☺ ear	☺ Lat	Rec ear	DTVP2 FC FB	Vis Mry	Spa Ori	Speed up	Attent S O P	Ps So	Pho LM
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SIP= sensory information processing/ over-, underregistration
 ☺ = looking at you while talking

Motor Function: therapists

Verbal IQ: WPPSI or WISC

DTVP-2 : subtest form constancy and figure background

Visual memory: TVPS

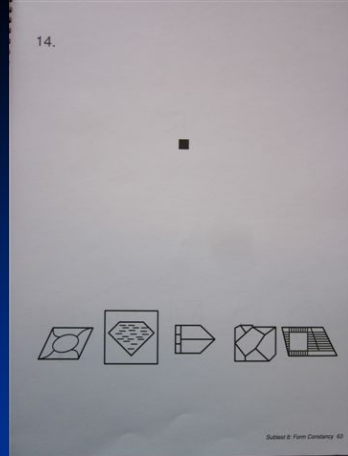
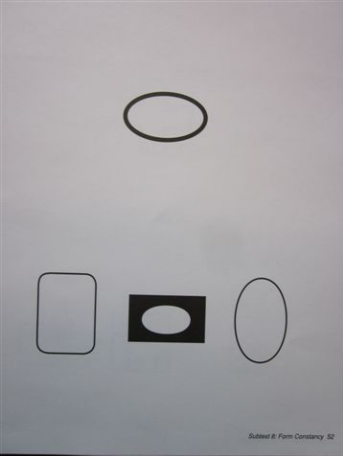
Spatial orientation: mobility trainer, route finding NEPSY

Speed up: reactions times, ask gym teacher, mobility trainer

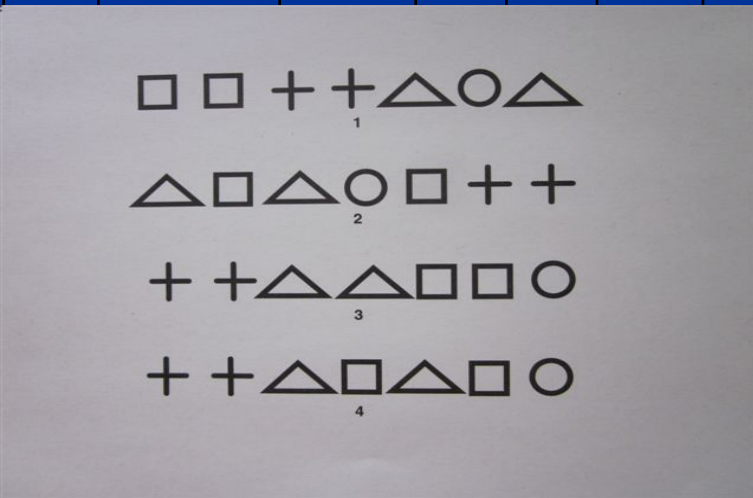
Attention/Planning: NEPSYI&II, Tea-Ch, BADS-Ch

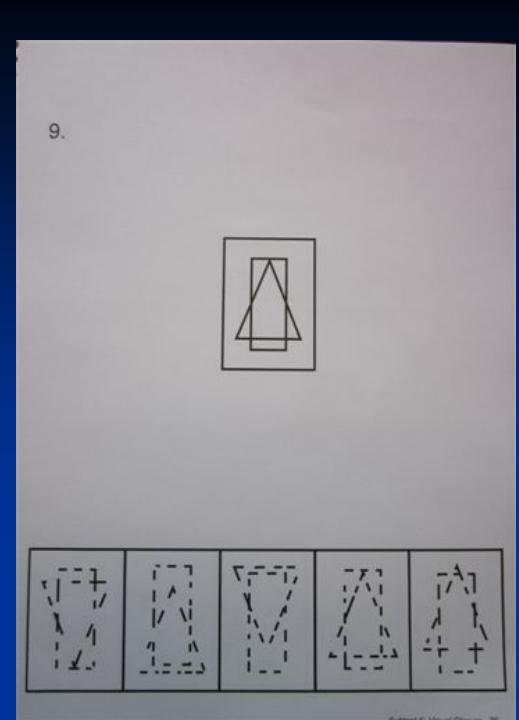
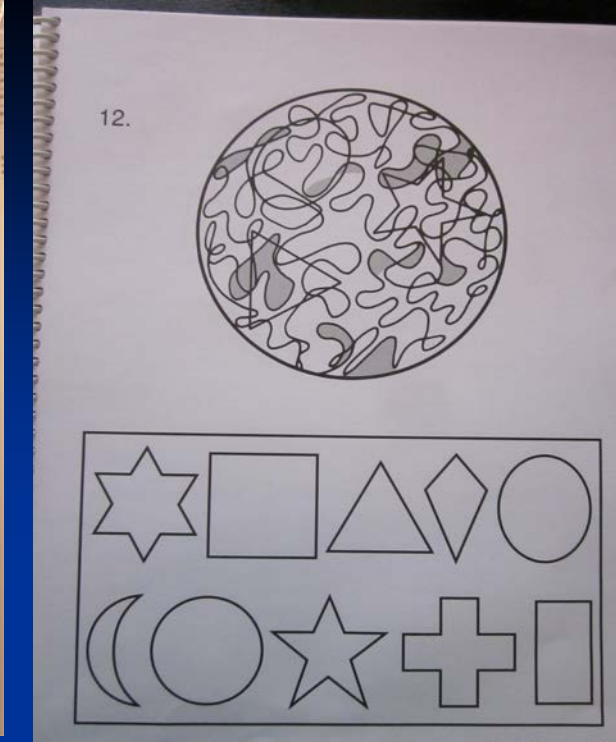
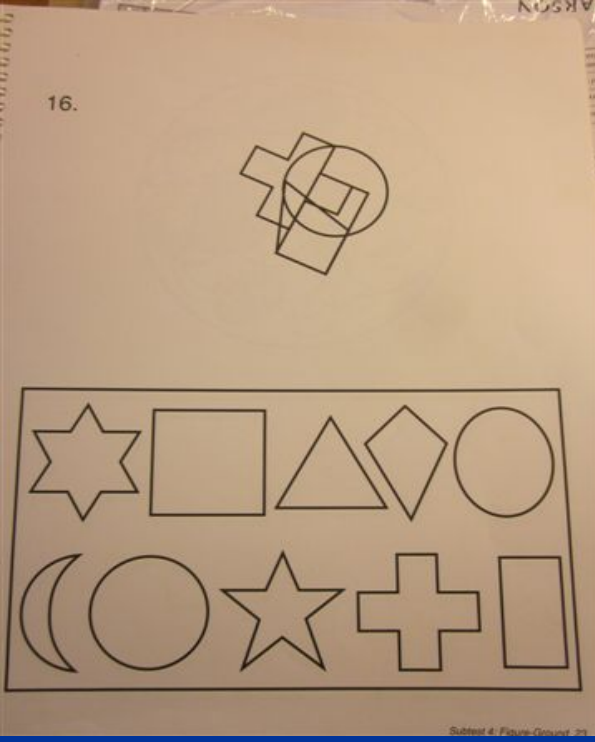
Phonological/auditory: reading (tests), STmemory TOMAL, 15 words,

Standard scores (10 = age average)



age	diagnosis	acuity	Fld	SIP ☺	M0	VIQ	☺ ear	☺ Lat	Rec ear	DTVP2 FC FB	Vis Mry	Spa Ori	Speed up	Attent S O P	Ps So	Pho LM
♂98	ROP+ hydroc	0,08	☼	++	+	98	-	-	-	6 11 VPOR 11of 30	++	±	++	++ -	-	+
♂00	Hydroc 3x	0,1	☼	-+	-	92	+	+	-	+(7) 7	+	±	-	- + +	+	+





age	diagnosis	acuity	Fld	SIP ☺	M0	VIQ	☺ ea r	☹ Lat	Rec ear	DTVP2 FC FB	Vis Mr y	Spa Ori	Spe ed up	Attent SOP	Ps So	Ph o L M
♂95	ROP/PVLI (IFr)	0,25 → 0,7	☼	- +	+	93/80	+	+	+	10 7	+	±RF7	++	- + +	+	-
♂01	ROP/prem	0,6A 0,4L 0,2N	R↓	- +	+	101	+	+	+	11 13	++	+	+	- - +	+	- -
♂02	ROP prem (at 4)	0,1 → 0.5A 0.25L	+	- -	±	103	?	+	?	10 11	+	+	-	- - -	-	+

age	diagnosis	acuity	Fld	SIP ☉	M0	VIQ	☺ ear	☹ Lat	Rec ear	DTVP2 FC FB	Vis Mry	Spa Ori	Spee up	Attent S O P	Ps So	Pho LM
♂03	Catar/metab	0,2 L 0,25 A	+	- -	±	88	-	+	-	11 11	+	+	± DP	- + +	+	--
♂01	car arr/ PrOc/CP	0.25	↓HF	- -	-	79	-	+	-	7 8	9, 8	± RF6	- OA	- + ±	±	--

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♀98	↓ braintss ci	0,1 → 0.6	±	- -	±	110	-	+	-	8 8	8	±	±	- + +	+	+
♂99	asfyxie	0,6A 0,4 L	☼	-	+	82	+	+	+	9 7	9	+	+	- - +	±	-
♀05	Heamorr hypoglyc	0,25/0,2	L +	-	-	91	-	+	-	11 7	+	+	-	- - -	+	-

How about acuity & field?

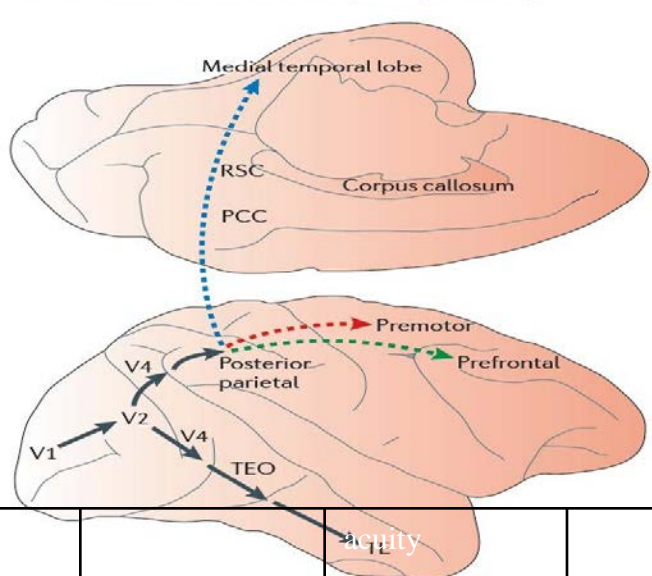
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♂98	ROP+ hydroc	0,08	☀	++	+	98	-	-	-	6 11 VPOR 11of 30	++	±	++	+ + -	-	+
♀98	↓ braintss ci	0,1 → 0.6	±	- -	±	110	-	+	-	8 8	8	±	±	- + +	+	+
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♂01	ROP/prem	0,6A/0,4L/0,2N	R↓	- +	+	101	+	+	+	11 13	++	+	+	- - +	+	-
♂02	ROP prem (at 4)	0,1 → 0.5A 0.25L	+	-	±	103	?	+	?	10 11	+	+	-	- - -	-	+
♂03	Catar/metabl	0,2L/0,25A	+	- -	±	88	-	+	-	11 11	+	+	±	- + +	+	-dp
♀05	Heamorr hypoglyc	0,25/0,2	L +	-	-	91	-	+	-	11 7	+	+	-	- - -	+	-

Visual perception as main problem

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♂00	Hydroc 3x	0,1	☼	-	-	92	+	+	-	+(7) 7	+	±	-	- + +	+	+
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♂03	Catar/metabl	0,2L/0,25A	+	- -	±	88	-	+	-	11 11	+	+	±	- + +	+	-dp
♀05	Heamorr hypoglyc	0,25/0,2	L +	-	-	91	-	+	-	11 7	+	+	-	- - -	+	-

Attention and executive functions

age	diagnosis	acuity	Fld	SIP ☉	M0	VIQ	☹ ear	☺ Lat	Rec ear	DTVP2 FC FB	Vis Mry	Spa Ori	Speed up	Attent S O P	Ps So	Pho LM
♂95	ROP/PVLI(lFr)	0,25 →0,7	☀	-	+	93/80	+	+	+	10 7	+	±RF7	++	- + +	+	-
♂98	ROP+ hydroc	0,08	☀	++	+	98	-	-	-	6 11 VPOR 11of 30	++	±	++	+ + -	-	+
♀98	↓ braintss ci	0,1 → 0.6	±	- -	±	110	-	+	-	8 8	8	±	±	- + +	+	+
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♂03	Catar/metabl	0,2L/0,25A	+	- -	±	88	-	+	-	11 11	+	+	±	- + +	+	-dp
♀05	Heamorr hypoglyc	0,25/0,2	L +	-	-	91	-	+	-	11 7	+	+	-	- - -	+	-



Kravitz model recognizable?

A new neural framework for visuospatial processing

Dwight J. Kravitz*, Kadharbatcha S. Saleem‡, Chris I. Baker* and Mortimer Mishkin‡ Neuroscience, april 2011

	acuity		SIP ☹	M0	VIQ	☹ ear	☺ Lat	Rec ear	DTVP2 FC FB	Vis Mry	Spa Ori	Speed up	Attent SOP	Ps So	Pho LM	
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♂03	Catar/metabl	0,2L/0,25A	+	- -	±	88	-	+	-	11 11	+	+	±	- + +	+	-dp
♀05	Heamorr hypoglyc	0,25/0,2	L +	-	-	91	-	+	-	11 7	+	+	-	-	+	-

How about the "verbal" dorsality?

age	diagnosis	acuity	Fld	SIP ☺	M0	VIQ	☺ ear	☹ Lat	Rec ear	DTVP2 FC FB	Vis Mry	Spa Ori	Speed up	Attent S O P	Ps So	Pho LM
♂95	ROP/PVLI(1Fr)	0,25 →0,7	☼	-	+	93/80	+	+	+	10 7	+	±RF7	++	- + +	+	-
♂98	ROP+ hydroc	0,08	☼	++	+	98	-	-	-	6 11 VPOR 11of 30	++	±	++	+ + -	-	+
♀98	↓ braintss ci	0,1 → 0.6	±	- -	±	110	-	+	-	8 8	8	±	±	- + +	+	+
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♂00	Hydroc 3x	0,1	☼	-	-	92	+	+	-	+(7) 7	+	±	-	- + +	+	+
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♂02	ROP prem (at 4)	0,1 → 0.5A 0.25L	+	-	±	103	?	+	?	10 11	+	+	-	- - -	-	+
♂03	Catar/metabl	0,2L/0,25A	+	- -	±	88	-	+	-	11 11	+	+	±	- + +	+	-dp
♀05	Heamorr hypoglyc	0,25/0,2	L +	-	-	91	-	+	-	11 7	+	+	-	- - -	+	-

conclusions

- In many children visual acuity is developing more than in normal development, some grow from low vision into the (sub) normal range
- Inattention may show as field defect in the beginning
- Apparently crowding/selective visual attention may hinder recognition of faces, objects and pictures in early development. Sensory information processing (early over- and under registration problems) might be the underlying deficit for this problem.
This emphasizes the need of sensory profile instruments in early assessments; also behaviour like looking away while talking may indicate SIP
- Validity of current available “visual” tests is not flawless – adjustments seem to be necessary in order to be more precise per visual sub domain
- In some children early recognition also seems to be hampered by verbal memory problems
- “Visual Dorsal” problems do exist, but probably not as much in the visual system as we have been thinking. Many children end up with phonological information processing problems, some also with dyspraxia
- Rehabilitation practice shows some children “growing out” of visual limitations (into ...). This has consequences for reassessment timing and help offered.
- Sensory information processing, visual attention and executive functioning have been very much underestimated as apparent factors in early visual problems.
The lower the developmental level the more developmental support should focus at those functions.