



Early detection, treatment, and intervention of problems in visual functioning

due to changes in the anterior part of the visual system
and/or in the visual processing functions

Lea Hyvärinen, MD, PhD, FAAP

Faculty of Rehabilitation Sciences, Tech.Univ. Dortmund, Germany

www.lea-test.fi

Early detection

- A great majority of vision problems can be diagnosed during the first year.
- Causes of delay in detection:

1) The largest group of infants at risk of having problems in the development of vision have **another more visible impairment** – registered later as the main cause of disability: infants with asphyxia, Down syndrome and other syndromes, deafness, or atypical general development.

Vision should be thoroughly **assessed during the diagnostic work-up and followed regularly**. Not “once in preschool age”.

Early detection

- A great majority of vision problems could be diagnosed during the first year.
- Causes of delay in detection:
 - 1) The largest group of infants at risk of having problems in the development of vision have **another more visible impairment** that is later registered as the main disability.
 - 2) **Visual milestones are not known** or not thought of.

Early detection

- Early detection now concerns *diseases* more than *vision*
- VISUAL MILESTONES:
 - 1) eye contact at 6, latest at 8 weeks



At birth



At 8 weeks

Communication – at 8 weeks



Visual communication and interaction are the earliest visual functions to observe. If they do not start at 8 weeks, we have VISUAL EMERGENCY.



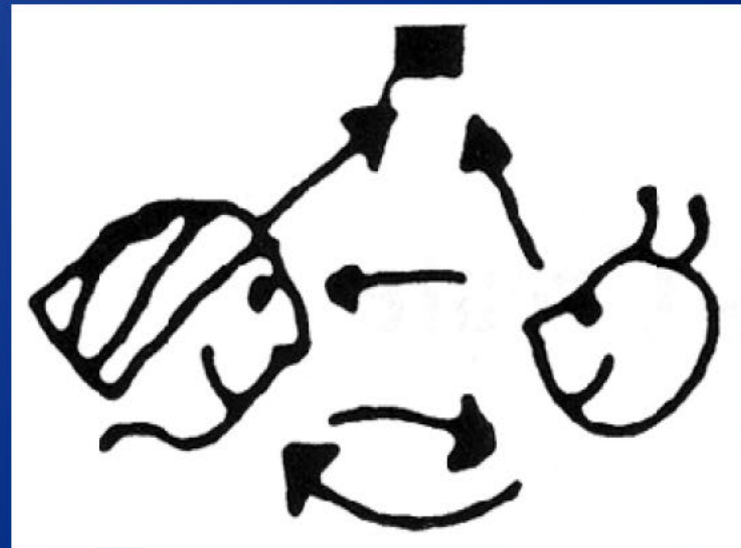
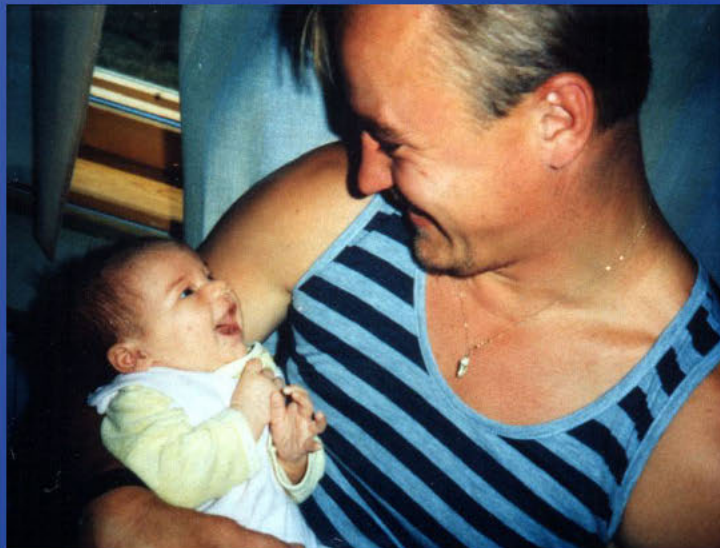
Early detection during the first year

- VISUAL MILESTONES:

- eye contact at 6, latest at 8 weeks

- 2) enjoyable visual interaction at 12 weeks
shared visual interest in objects

12
weeks



Early detection during the first year

- VISUAL MILESTONES:

- eye contact at 8 weeks, - enjoyable visual interaction at 12 weeks

- 3) finding hands, bringing them to midline and into the mouth at 3 to 4 months



Becoming aware of the hands in early intervention training:
infant's hands were placed on a visuotactile picture.

Early detection during the first year

- VISUAL MILESTONES:

- eye contact at 8 weeks, - enjoyable visual interaction at 12 weeks
- finding hands, bringing them to midline at 4 months

4) copying goal directed reach at 5 to 6 months



Eye-hand coordination



Early detection during the first year

- VISUAL MILESTONES:

- eye contact at 8 weeks, - enjoyable visual interaction at 12 weeks
- finding hands, watching & copying goal directed reach at 6 months

5) recognition of familiar faces at 7 - 10 months and age appropriate visual communication and eye-hand coordination



Early detection during the first year

- FIVE VISUAL MILESTONES:

- 1. eye contact at 8 weeks,
- 2. enjoyable visual interaction at 12 weeks
- 3. finding hands, bringing them to midline at 3 - 4 months
- 4. watching & copying goal directed reach at 5 - 6 months
- 5. recognition of familiar faces at 7 - 10 months,

are in pediatric follow-up examinations considered as **emotional maturation** or **social skills** development, the role of impaired vision is not known > **no referral**.

Treatment

- Some of these 5 VISUAL MILESTONE FUNCTIONS, eye contact at 8 weeks, enjoyable visual interaction at 12 weeks, finding hands, bringing them to midline at 4 months, watching & copying goal directed reach at 6 months, and recognition of familiar faces can be treated during the first clinical examination:

#1



#2



+4 glasses
for
“reading”.

Play the video #2 a 2nd time to observe the surprise, convergence, fusion of images , and smile.

Distance penalisation RE + Bifocal LE

Esotropia



Esotropia



With glasses ortho and binocular



PREVENTION OF AMBLYOPIA,
no patching or surgeries needed.

Assessment for Early Intervention

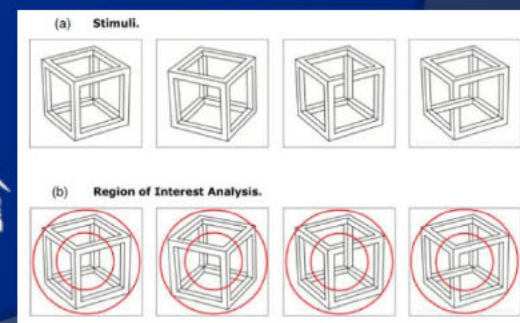
- 1. Atypical eye contact: - **near vision:** accommodation, oculomotor functions, refraction (high hyperopia)
VISION for COMMUNICATION
 - face perception and recognition at low contrast levels
 - figure in motion, impossible figures
 - recognition of faces delayed - neurological assessment



Low contrast Heidi Pictures, 3 months



Figure-in-motion - Pepi



Impossible figures 4 months

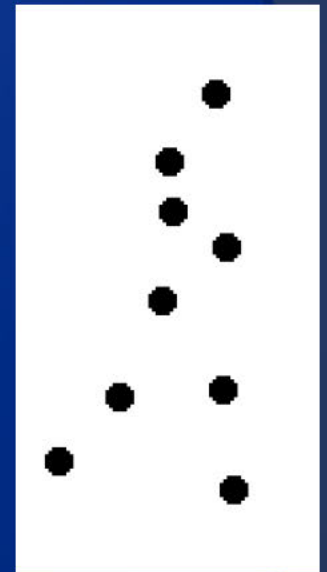
Vision tests for infants



Heidi Low Contrast



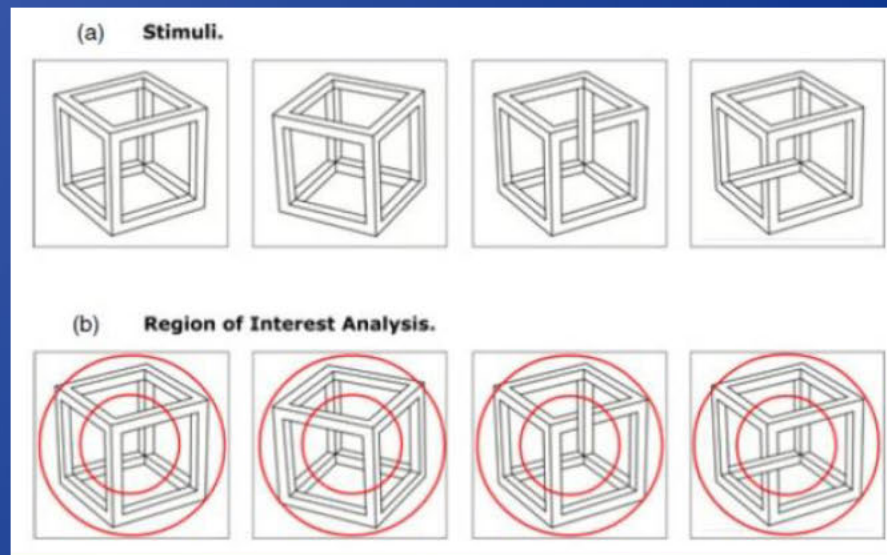
Pepi-figure
in-motion



Johansson's
Walking Man

New tests for assessment of vision

Possible shapes Impossible shapes



Sarah M. Shuwairi and Scott P. Johnson .Oculomotor Exploration of impossible Figures in Early Infancy. *Infancy*, 18(2), 221-232, 2013.

Hiding Heidi test for communication



Response to 25% contrast face picture, not at lower contrasts. Therefore communication distance must be short, good make-up to improve the visibility of faces . Exploration of faces with infant's hands is important.

Include vision in early intervention

Multimodal stimulation



Attention to light
only at midline



Stimulus under normal hand
shadows of fingers form grating



When under the paretic hand
>> FIXATION on the HAND



Training of RE when its response
to 'LEA Gratings' test was lower than
that of the LE.

An 18 month old infant and puzzle



This 18 month old infant tells her parents how she plays with 9 forms, no-color coding

Training for measurement of VA, 26 months



Learning the concept "same" with colours as preparation for the measurement of VA,



with B & W forms, notice the hand.

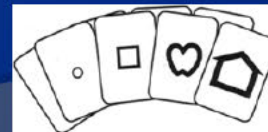


$VA = m/M$

Comparing concrete object with the picture of the object.



Playing Cards



At 6 to 10 months, face recognition may not develop in a child with otherwise typical development.

1.



1. LEA Rectangles
2. LEA Mailbox
3. Colorama

2.



3.



4. Heidi Expressions test pictures

At the age of 2 years and 9 months VA, Contrast Sensitivity, VF normal but in visual communication this child was FACE BLIND, NOT autistic. REPORT to the child's pediatrician and therapists.



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Transdisciplinary assessment of
Profile of Visual Functioning

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