The Foundations of CVI-Rehabilitation

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This talk:

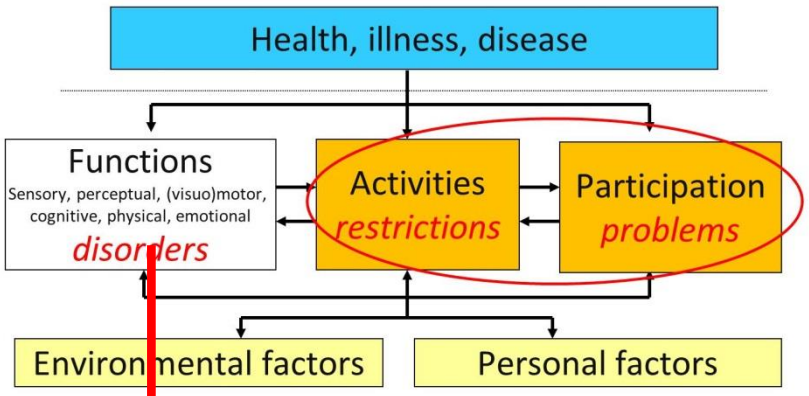
Two main points

1. Good CVI-rehabilitation is based on the COMPLETE picture of the patient

2. The majority of the common CVI-symptoms (Nicola!) is caused by disorders in visual selective attention functions

CVI rehabilitation in Royal Dutch Visio is based on two cornerstones

1. International Classification of Functions (ICF, WHO)



2. Hierarchical model of human behavior with a neuropsychological core

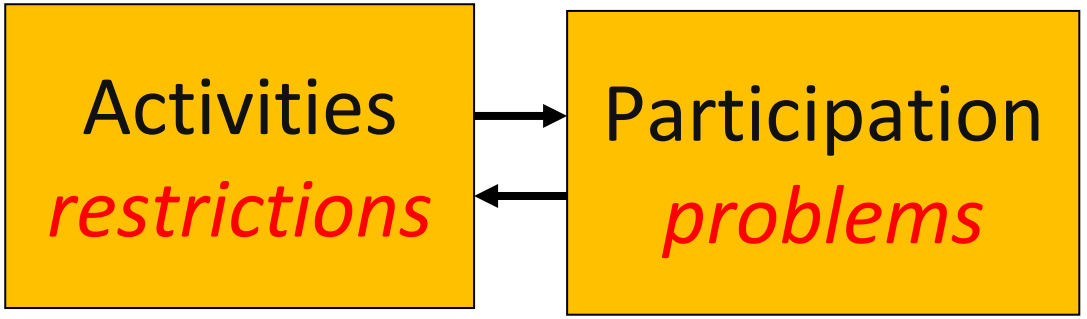
- Emotions, motivations, needs and salience in outside world
- Executive functions
- General attentional functions
- Low visual functions
- High visual functions:
  - Visual selective attentional functions
  - Perceptual functions
  - Visuomotor functions
  - Visual memory functions
  - Visual working memory functions

- Motor
- Verbal

1. ICF helps
   - to get a full list of problems/restrictions
   - to understand all their causes and other relevant factors

2. Our neuropsychological model
   - identifies all visual functions: high as well as low
   - helps to understand visual functions as "part of a human being" :linking them to cognitive and emotional functions

1. International Classification of Functions (ICF, WHO)



- Helps to identify restrictions/problems in 9 life domains:

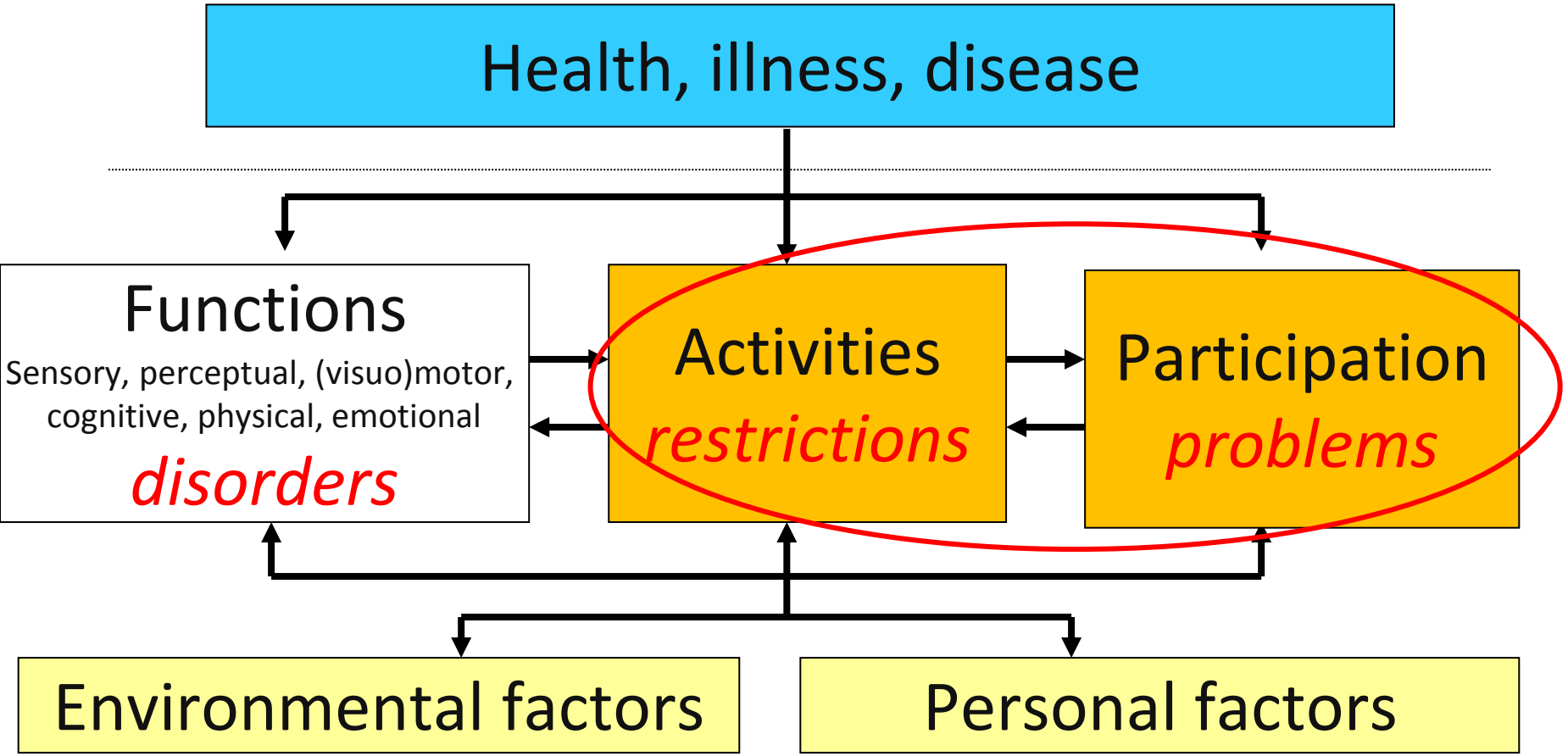
Rehabilitation in Royal Dutch Visio:

- Finding all problems and restrictions in all life domains,
- Trying to find their respective causes as well as the contributing and protective factors of a patient

ICF Life domains, which cover all aspects of life

1. Learing and applying knowledge
2. General tasks and demands
3. Communication
4. Mobility
5. Self-care
6. Domestic life
7. Interpersonal interactions
8. Major life areas
9. Community, social and civil life

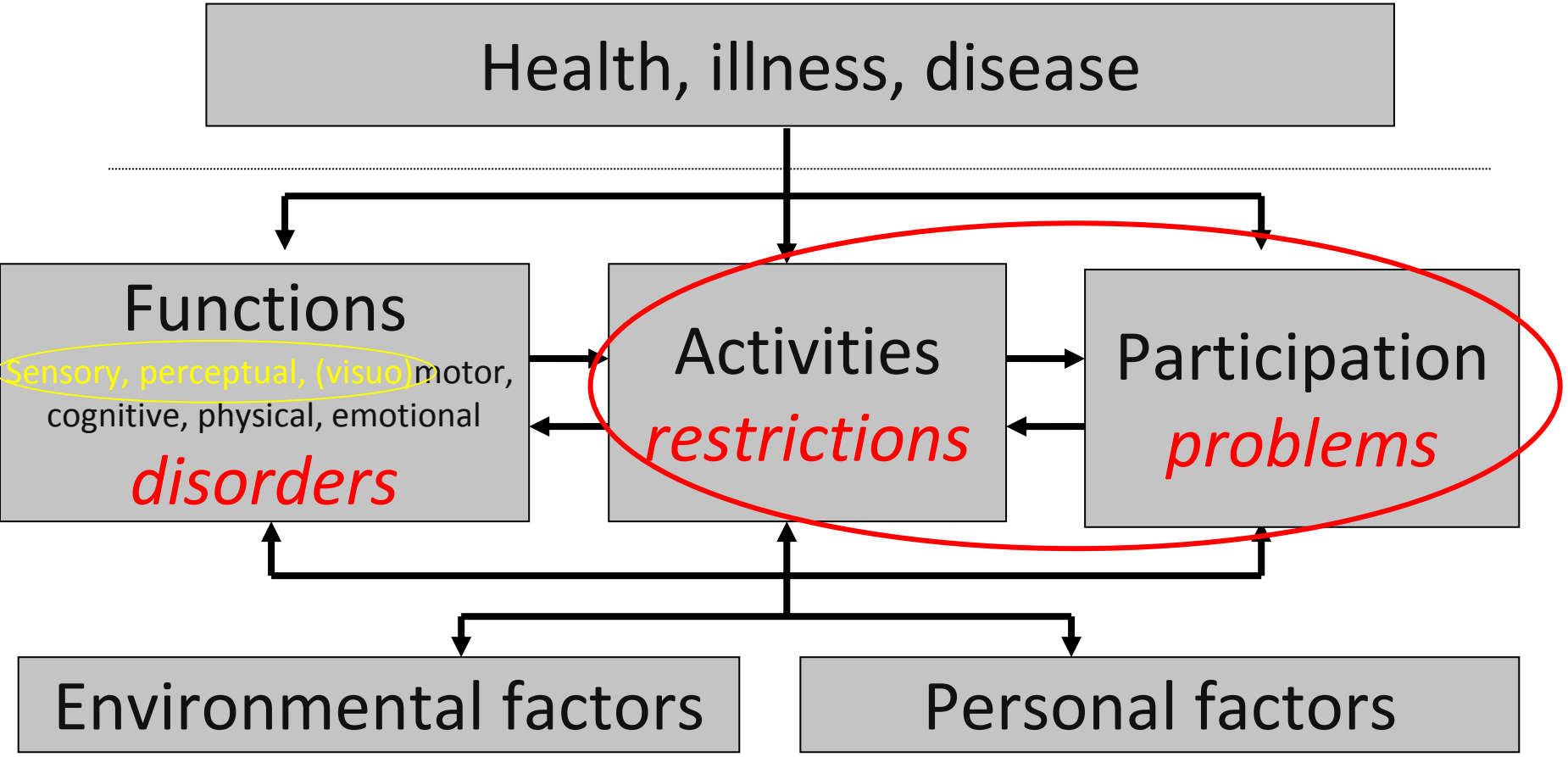
1. International Classification of Functions (ICF, WHO)



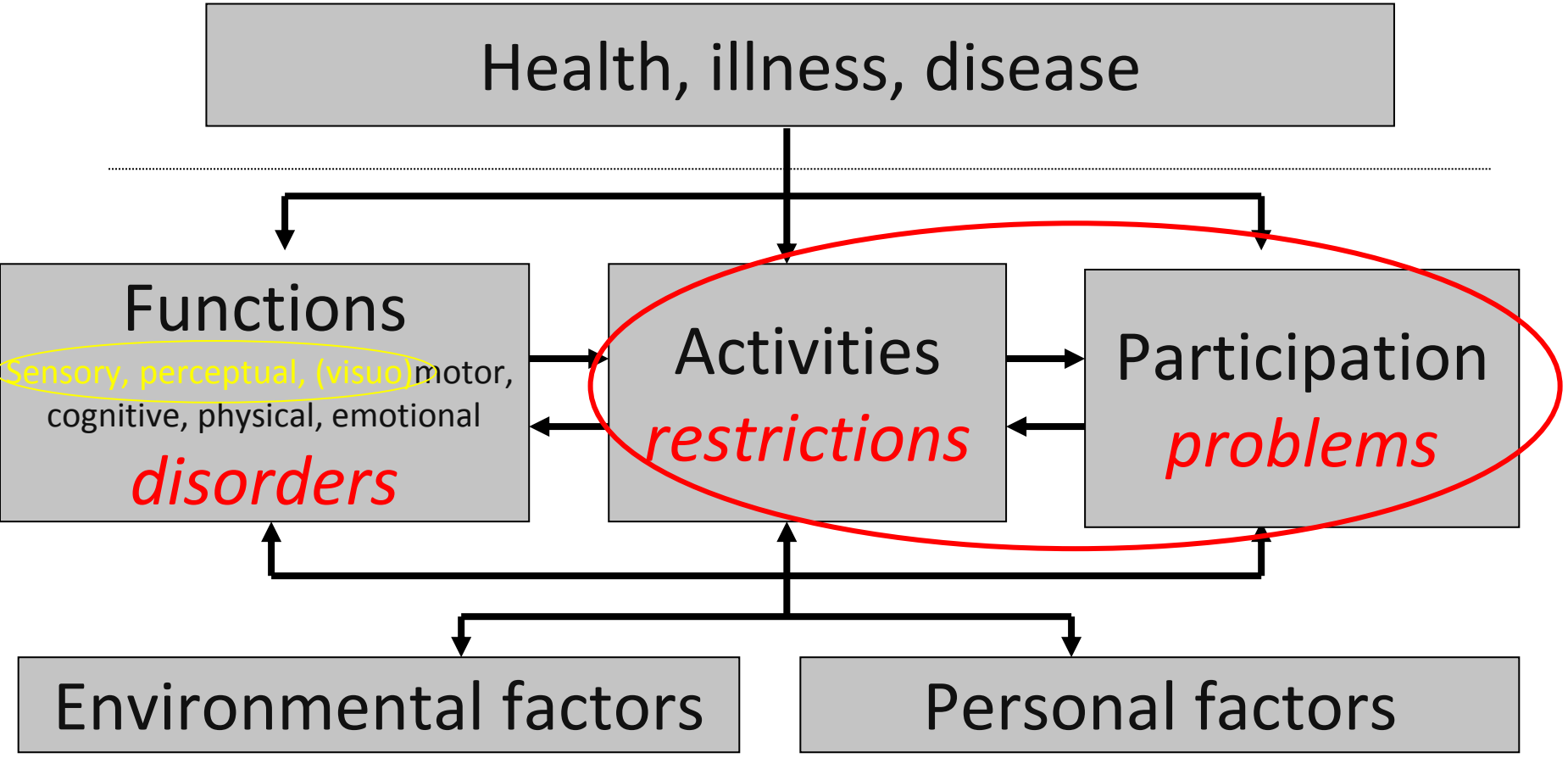
- Helps to identify restrictions/ problems in 9 life domains
- Provides the basis for an explanatory framework, pointing to:

Functions, general health, environmental and personal factors

ICF (WHO): visual functions (in yellow) are only one possible cause for restrictions and problems in daily life

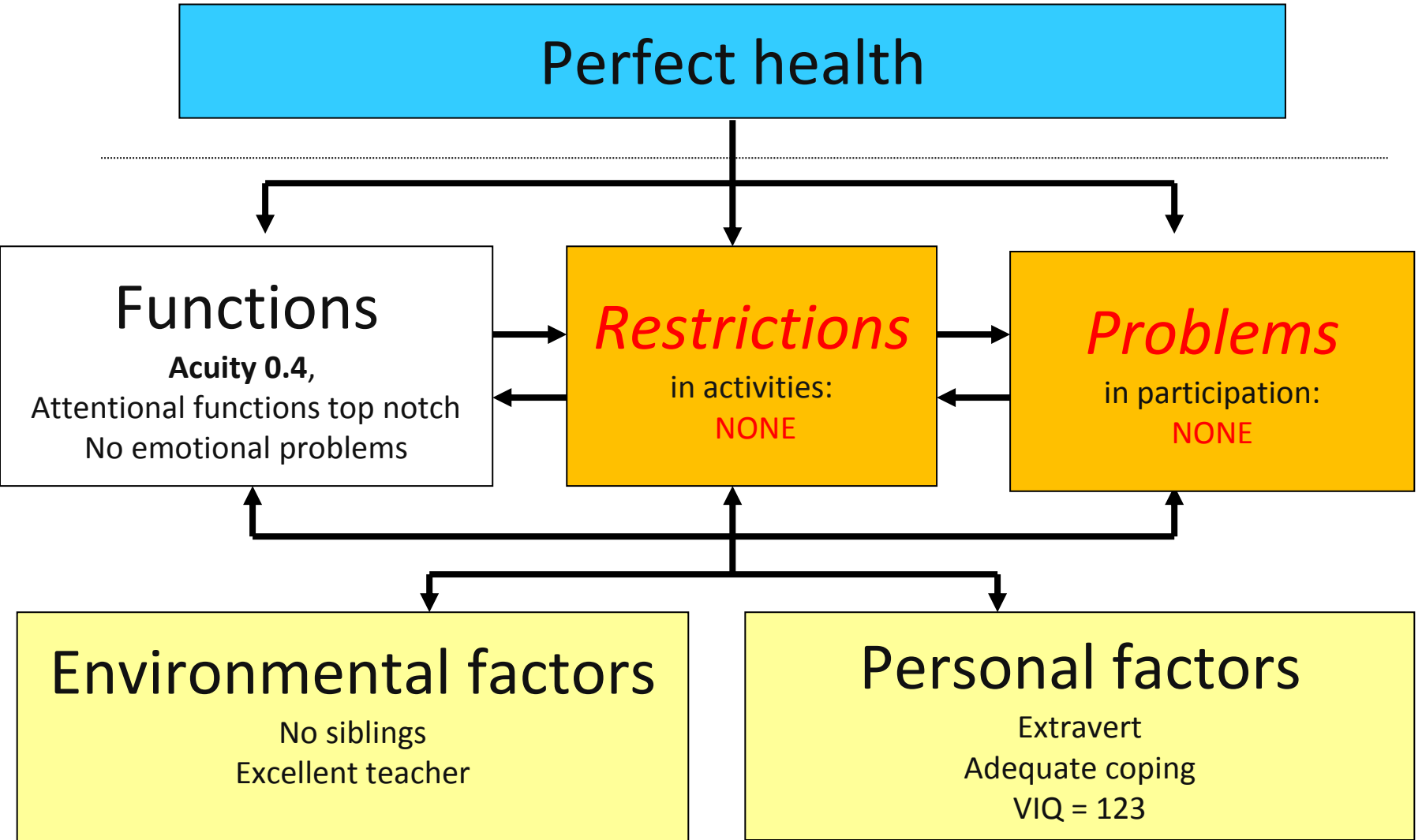


ICF (WHO): looking only at the contribution of visual functions (in yellow) would be a major shortcoming, particularly in CVI (comorbidity!)



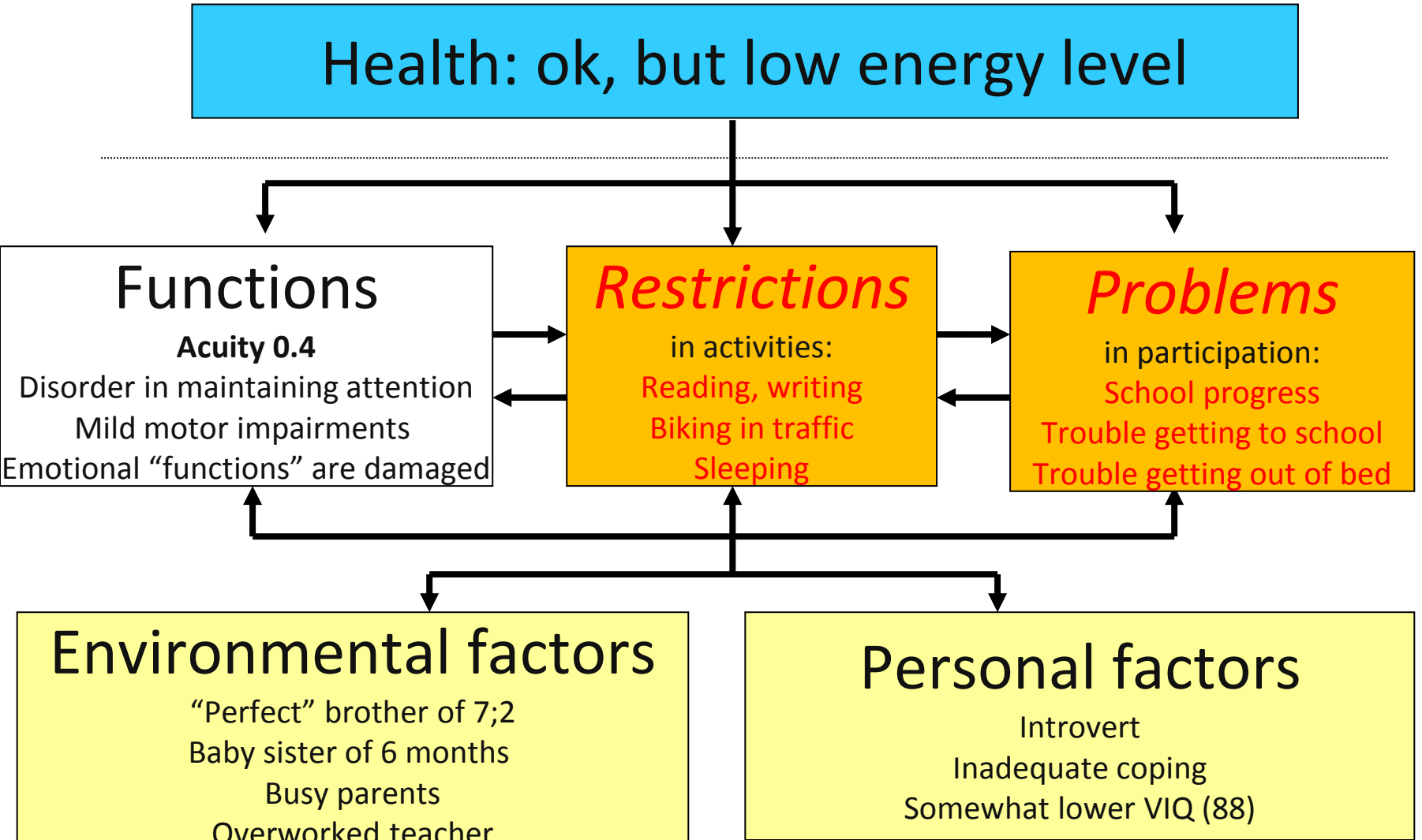
Consider Andrew (8;4 y): acuity 0.4 (damage to optic radiations)

Otherwise perfect possible contributing factors



Now consider Brandon (8;4 y): also acuity 0.4 (damage to optic radiations)

Weaknesses in health, functions, environmental and personal factors: RESTRICTIONS AND PROBLEMS



This illustrates and explains that

1. Good CVI-rehabilitation is based on the complete picture of the patient
2. we need to explain and understand problems and restrictions in daily life in terms of
   - Functions (visual and general)
   - Personal and environmental factors
   - General health factors
   - And their interactions

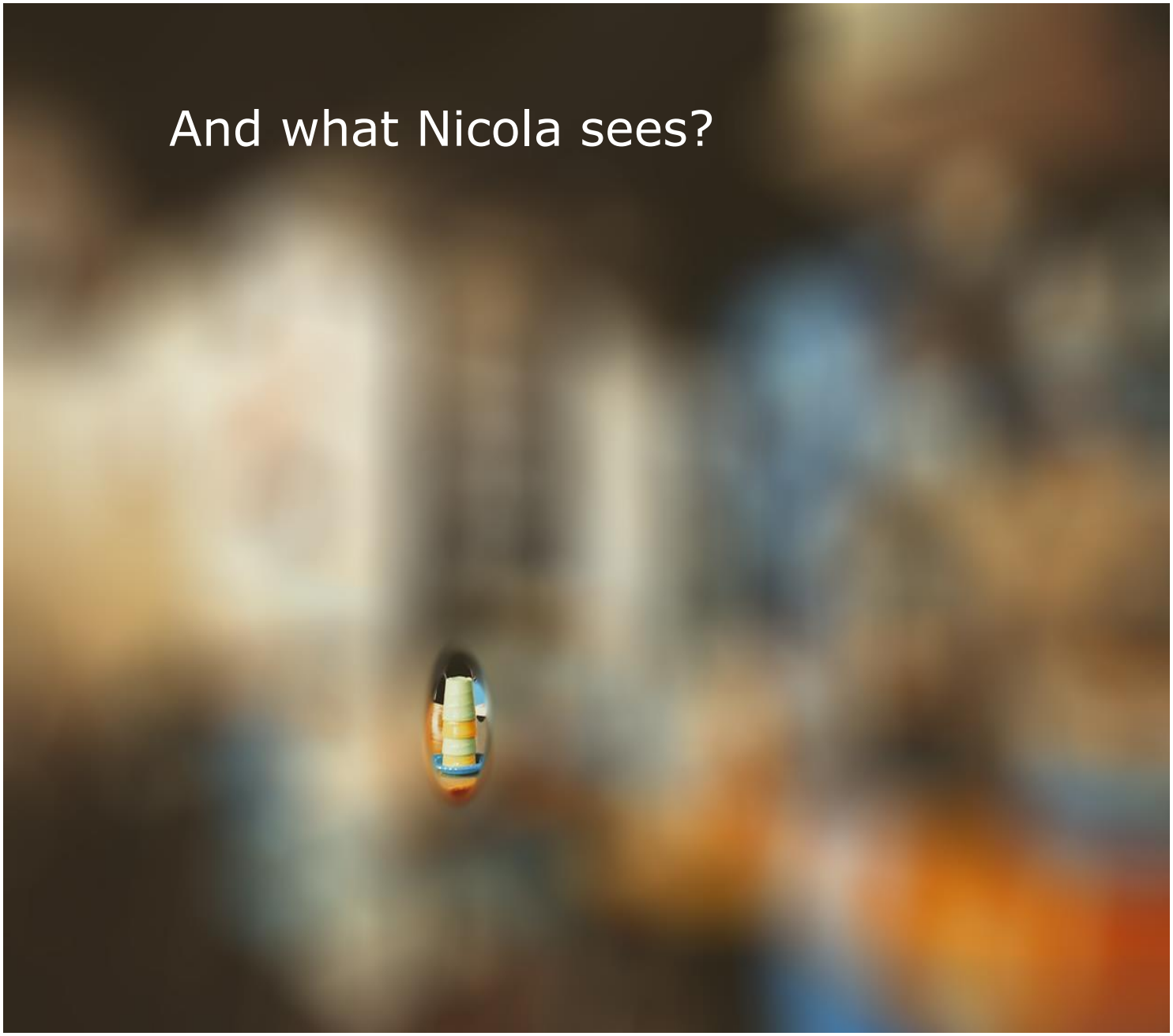
ICF

This talk: Three main points

Now my next point

2. The majority of the most common CVI-symptoms (Nicola!) is caused by disorders in visual selective attention functions! (OUR NEUROPSYCHOLOGICAL MODEL)


Remember this scene?
Casual
Food
Cafeteria
To be continued

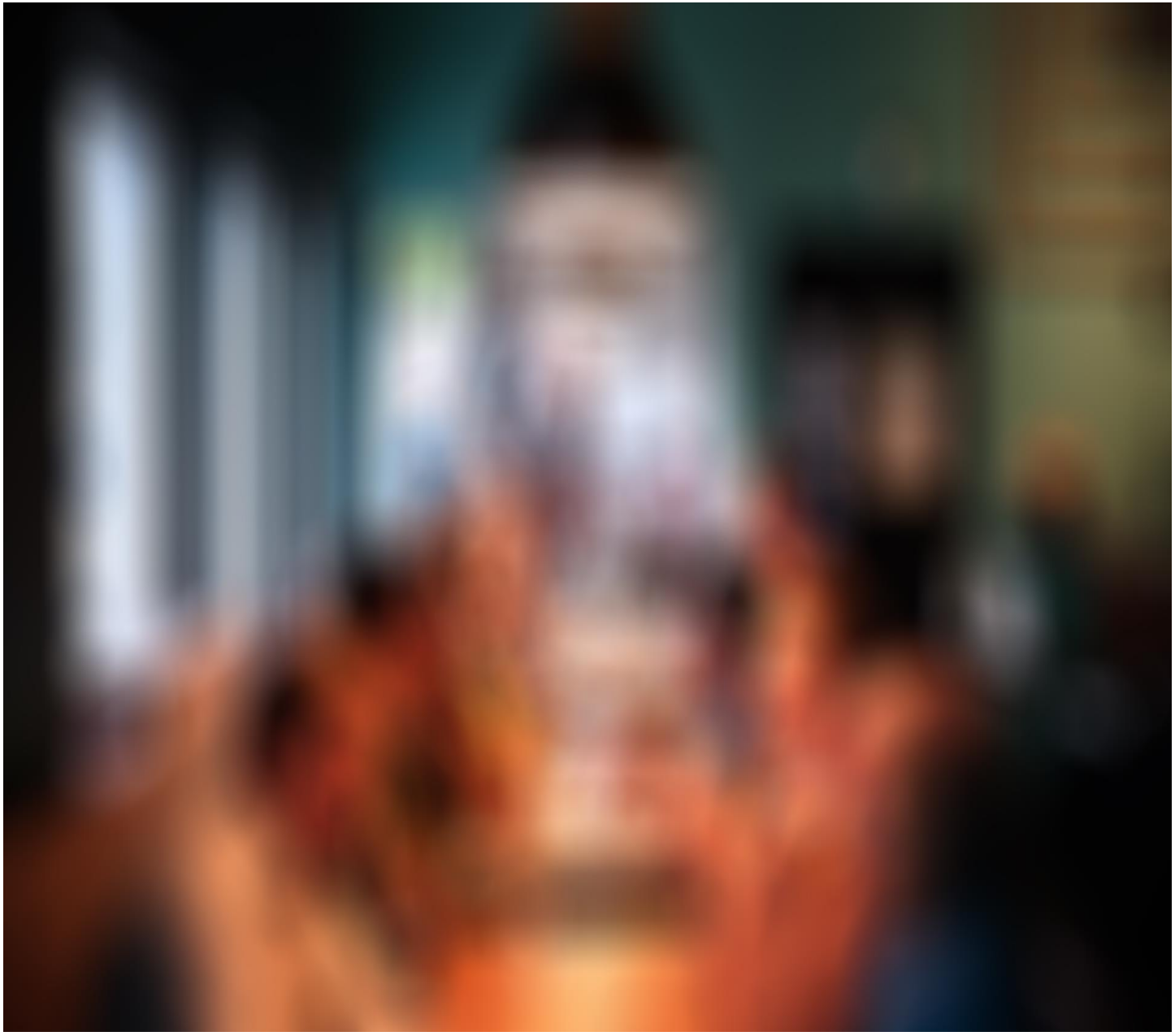

And what Nicola sees?

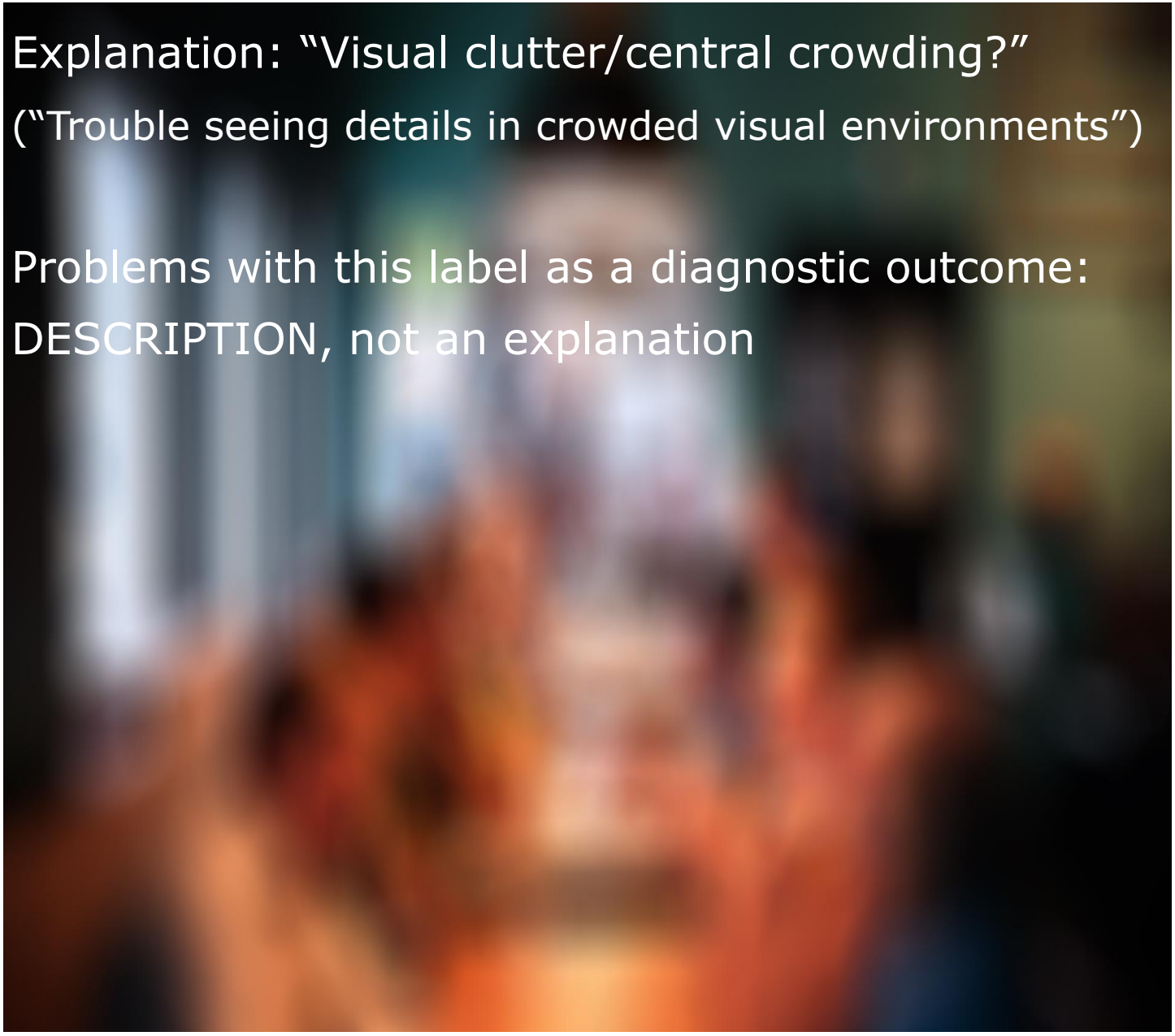
Explanation: SIMULTANAGNOSIA?
("can't see more than one detail at a time"

Problems with this label as a diagnostic explanation:

1. DESCRIPTION, not an explanation
2. Every detail contains multiple details


TWISTED
MATCH
STEP
Pioneer





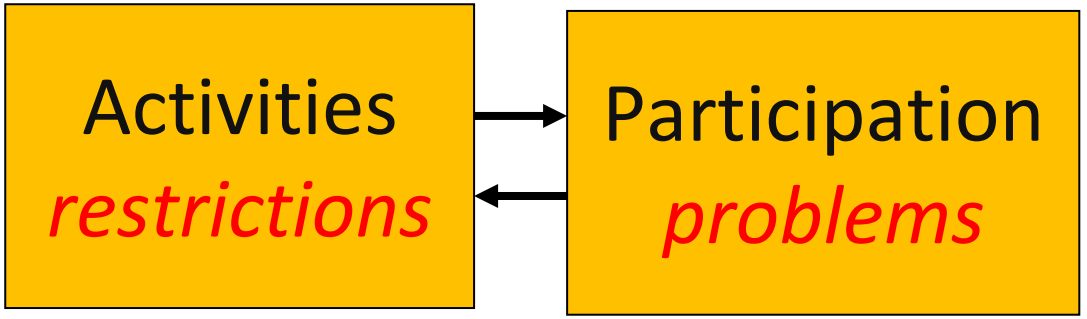
Explanation: “Visual clutter/central crowding?”

(“Trouble seeing details in crowded visual environments”)

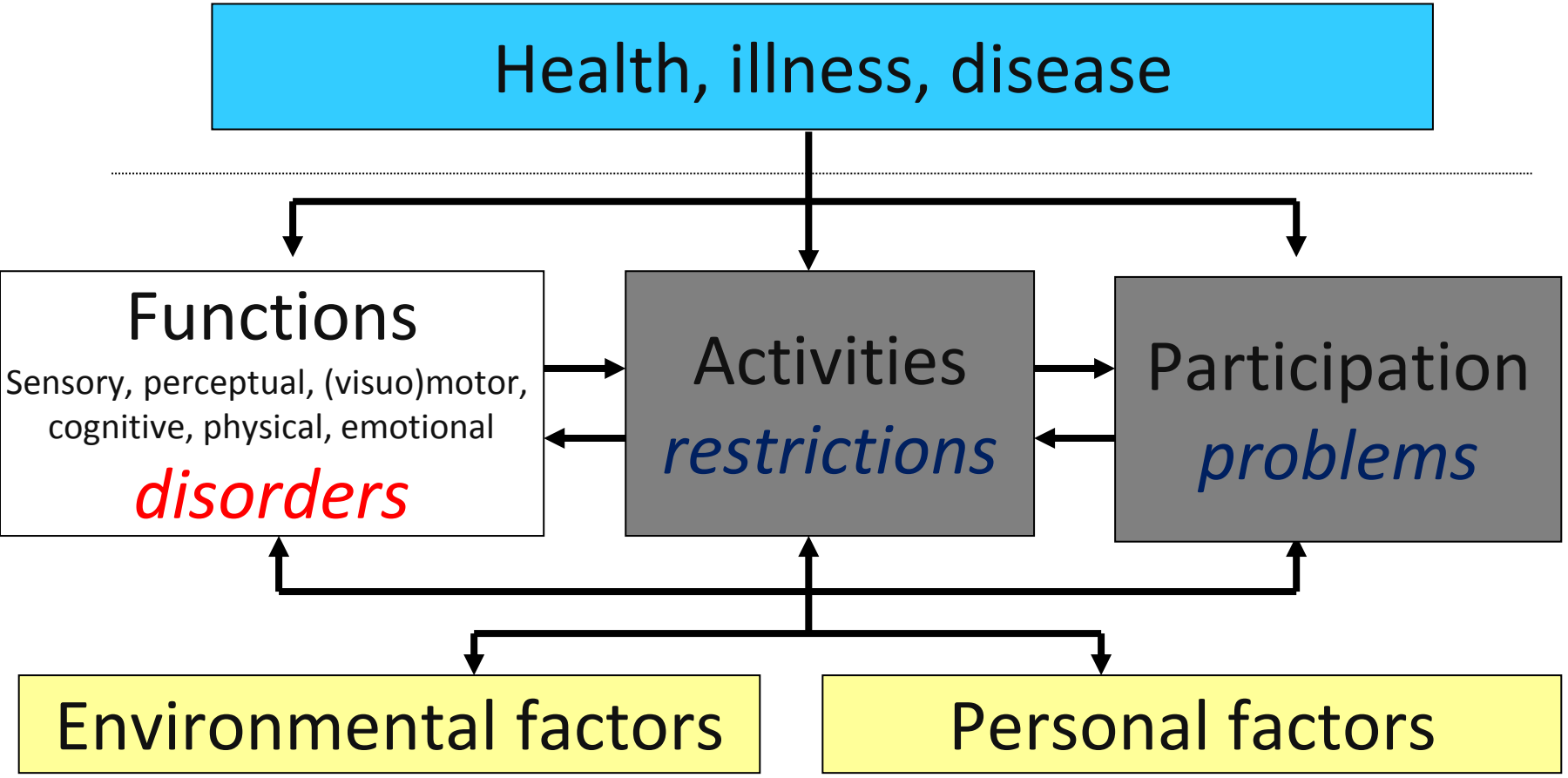
Problems with this label as a diagnostic outcome:

DESCRIPTION, not an explanation

Labels like “CVI”, “simulatagnosia” or “crowding” DESCRIBE the restrictions and problems



.. they don't EXPLAIN them!



Why not explain them? We know the underlying neuropsychological mechanisms

- What we see depends on what we SELECT

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The majority of CVI=patients

Look at the yellow dot and keep looking at it while the next slide appears

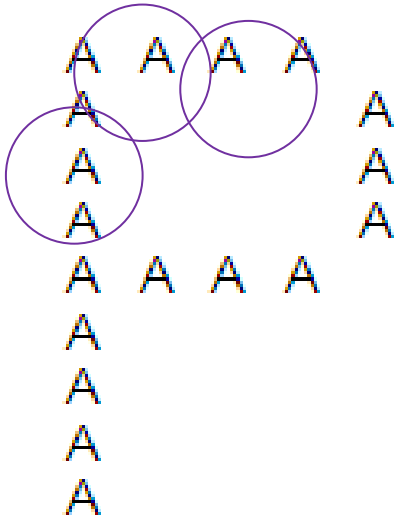
Without moving our eyes we can see the whole car..

.. because we select the whole car

(we spread our attention over the car)

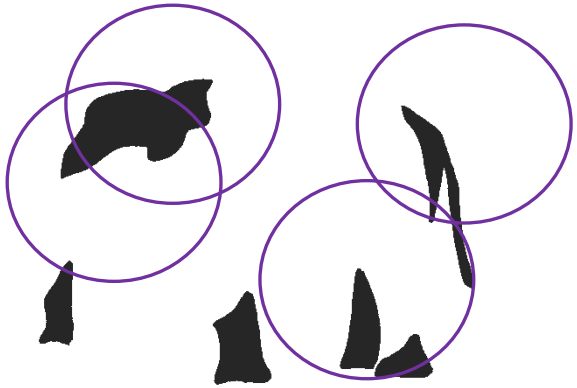
But if for some reason we are interested in the handle, we focus all our attention on the handle and see the handle

A disorder in global visual selective attention results in missing the whole

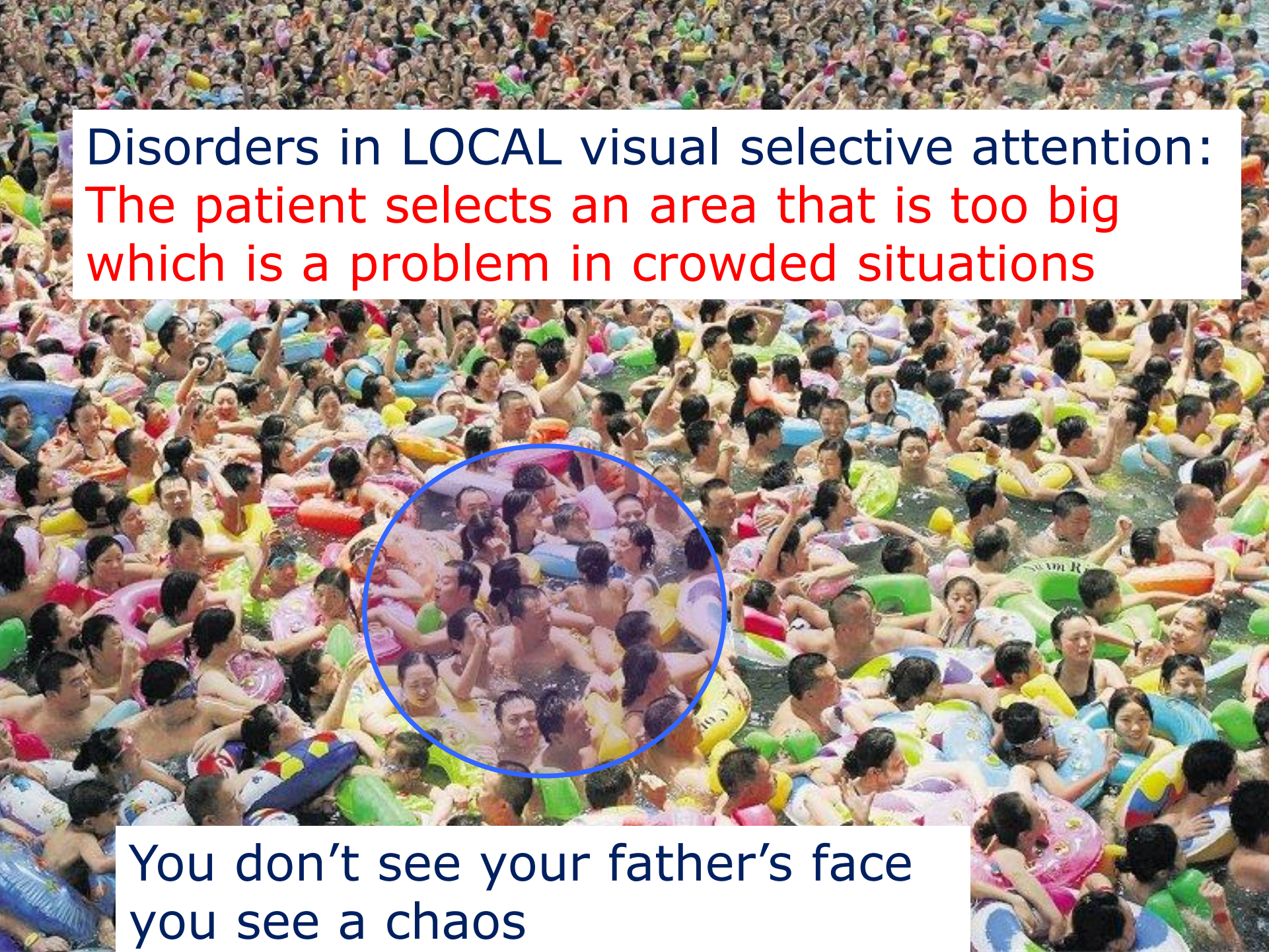


the patient only sees the A's because she selects the A's

A disorder in global visual selective attention) results in missing the whole



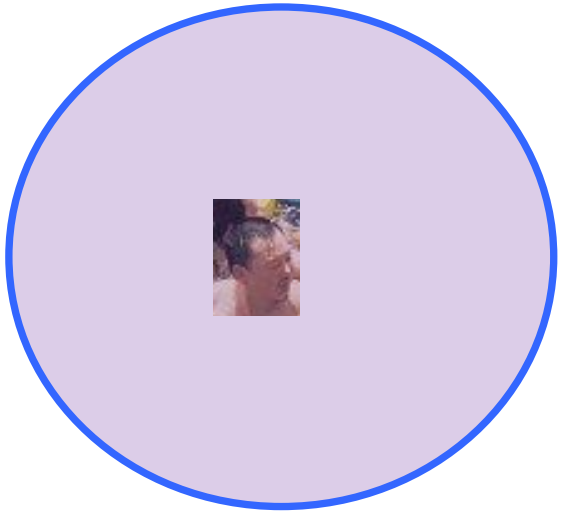
the patient only sees black shapes



Disorders in LOCAL visual selective attention:
The patient selects an area that is too big which is a problem in crowded situations

You don’t see your father’s face you see a chaos

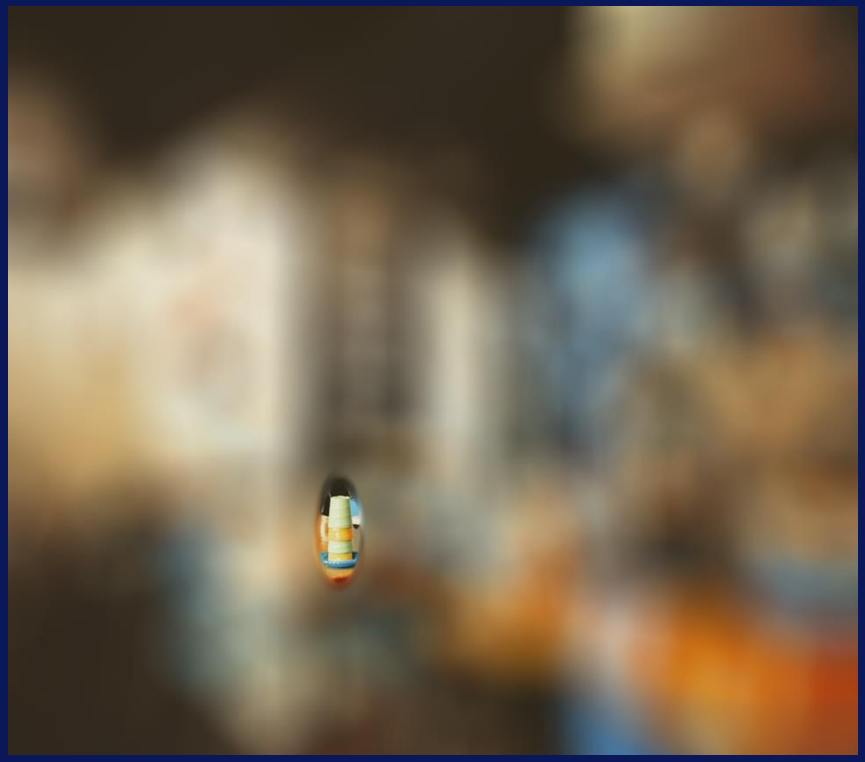
Disorders in local visual selective attention:
The patient selects an area that is too big which is a problem in crowded situations



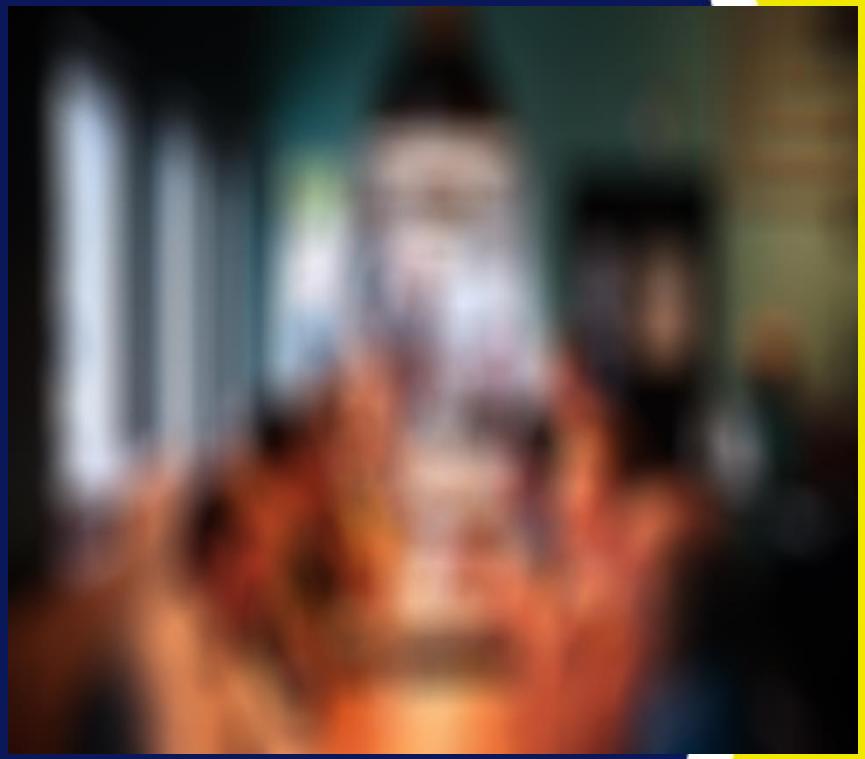
The patient doesn’t see the words
She sees chaos

Does Nicola have disorders in visual selective attention?

Global?



Local?



Maybe.. Again, we need the complete picture.
Selection depends on:

- Saliency in the outside world
- Quality of our exogenous attentional functions (SC)
- Where we want to look at (intentions, needs, motivations, emotional factors)
- Quality of our endogenous attentional control (executive functions and FEF)
- Quality of our general attentional functions
- Quality of our oculomotor functions
- Quality of our sensory functions
- .. And on the quality of our global and local visual selective attention functions

And we need even more information: ICF (the complete picture!)

Attention(al) control depends on

- Alertness
- Energy level
- General Health
- Sleep
- Emotional state
- Stress
- Environmental factors
- Personal and motivational factors
- Strong points

Succesful rehabilitation requires understanding the relationships between these factors in a hierarchical way AND relating them to everyday life

Our rehabilitation of CVI-patients is based on only two cornerstones to provide the complete picture, but..

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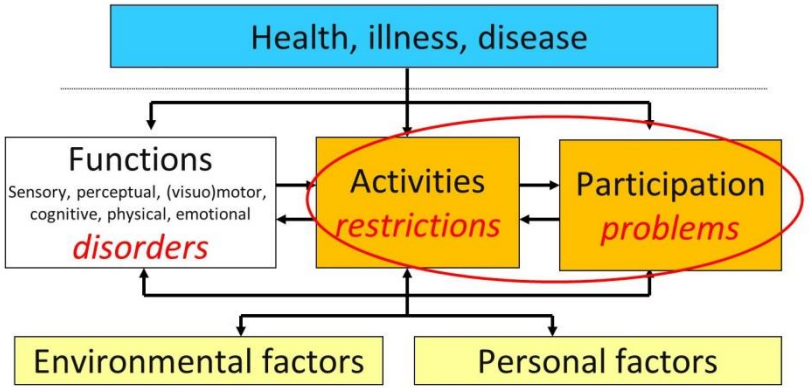

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But it is a very complex process: we sometimes need as many as all of our 17 disciplines to complete the picture

- Motor
- Verbal