

Training the Visual in Visual Attention

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1

Visual Attention

We are aware of only a small portion of information
that is bearing down on us.

What determines what we attend to?

How can we strengthen visual processing for attention?

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2

Vision Involves Two Visual Systems

Focal - identification, eyesight

Ambient - localization in space, speed of processing information, spatial orientation

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3

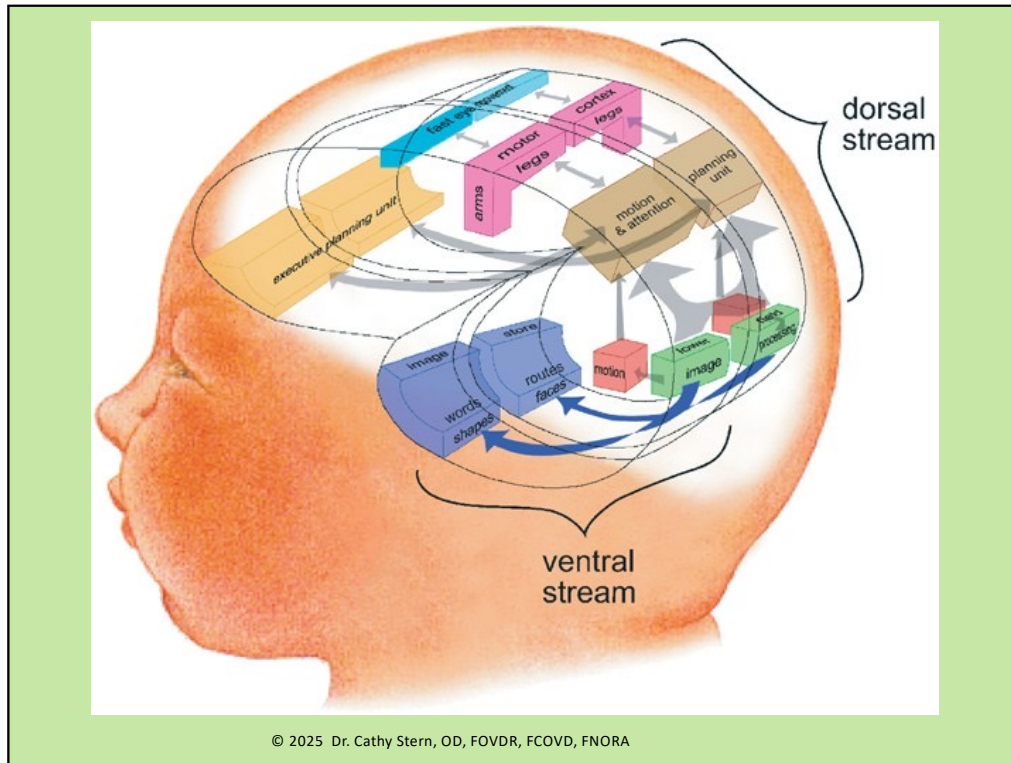
Important Visual Factors

- Fixation / Visual Tracking and Locating
- Focus Flexibility
- Eye Teaming

**These skills lead to sustained visual attention
over time and fast processing speed**

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4



5

Skeffington Circles for Visual Perception

Dr. Arthur Skeffington, known as the “Father of Behavioral Optometry”, developed the 4 circles model for visual perception.

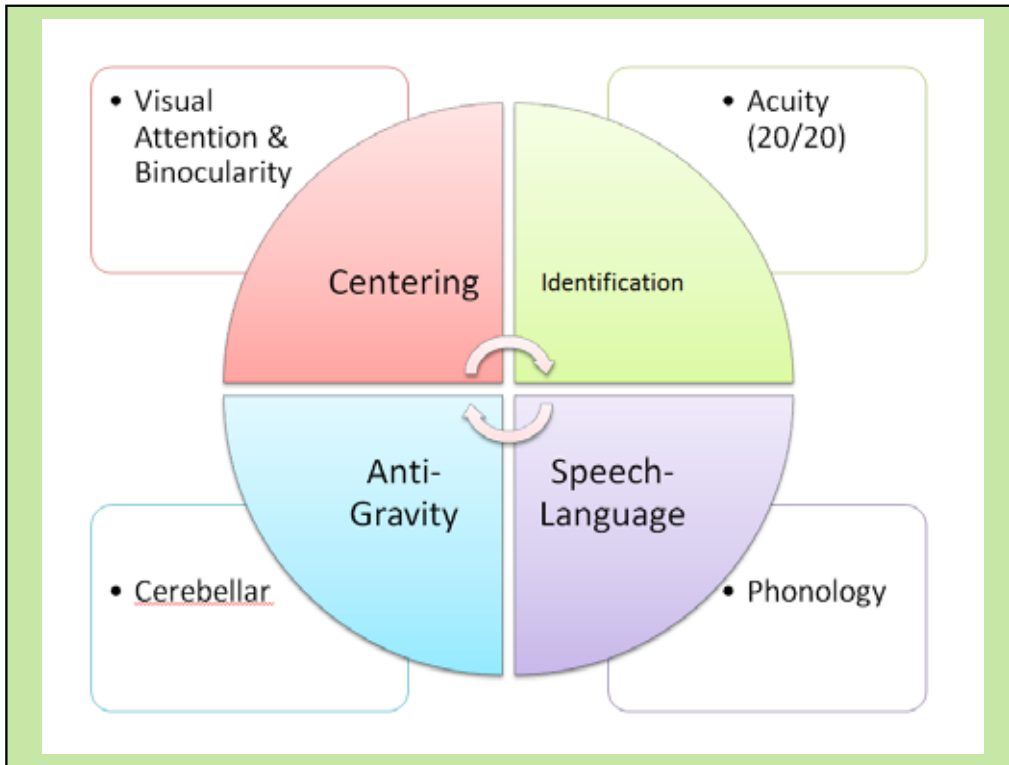
This model illustrates key areas to better understand the vision system and its capacity.

For instance, we can use the model to determine where a patient is in their vision development and diagnosis.

The following diagram illustrates Skeffington’s circles

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6



7

Why is Selective Attention Necessary?

Conscious experience seems to have a limited capacity

We can only attend to one thing at a time.

Attention helps us decide where to move our eyes next.

Our perception of a scene is developed by a combination of attention, eye movements, and memory.

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8

The task has a strong influence on where you attend and look



The Unexpected Visitor

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9

1 Free examination.

2 Estimate material circumstances of the family

3 Give the ages of the people.

4 Surmise what the family had been doing before the arrival of the unexpected visitor.

5 Remember the clothes worn by the people.

6 Remember positions of people and objects in the room.

7 Estimate how long the visitor had been away from the family.

3 min. recordings of the same subject

10

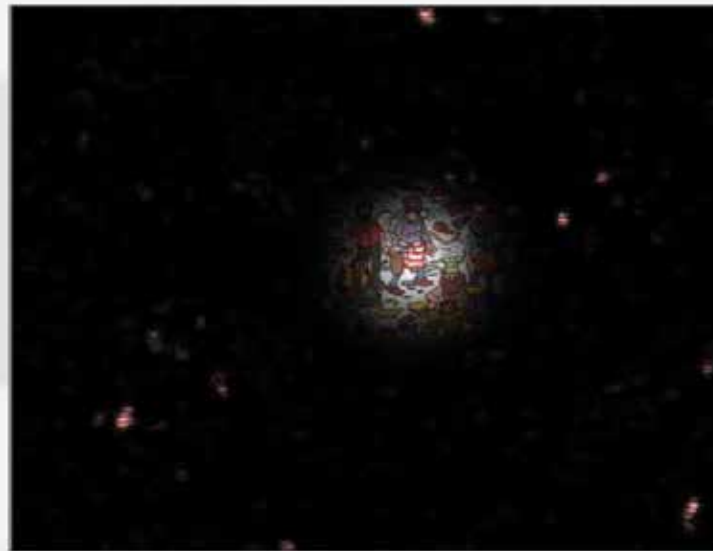
We use attention to determine where to move our eyes (saccade) next.



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11

We use **spatial attention** to highlight everything at a particular location



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12



Where are the horizontal red stripey things?

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13

Spatial attention:
Direction of attention to a particular region of space

Two ways that spatial attention can be directed:

Endogenous: voluntary, or by instruction in laboratory experiments: "attend left"

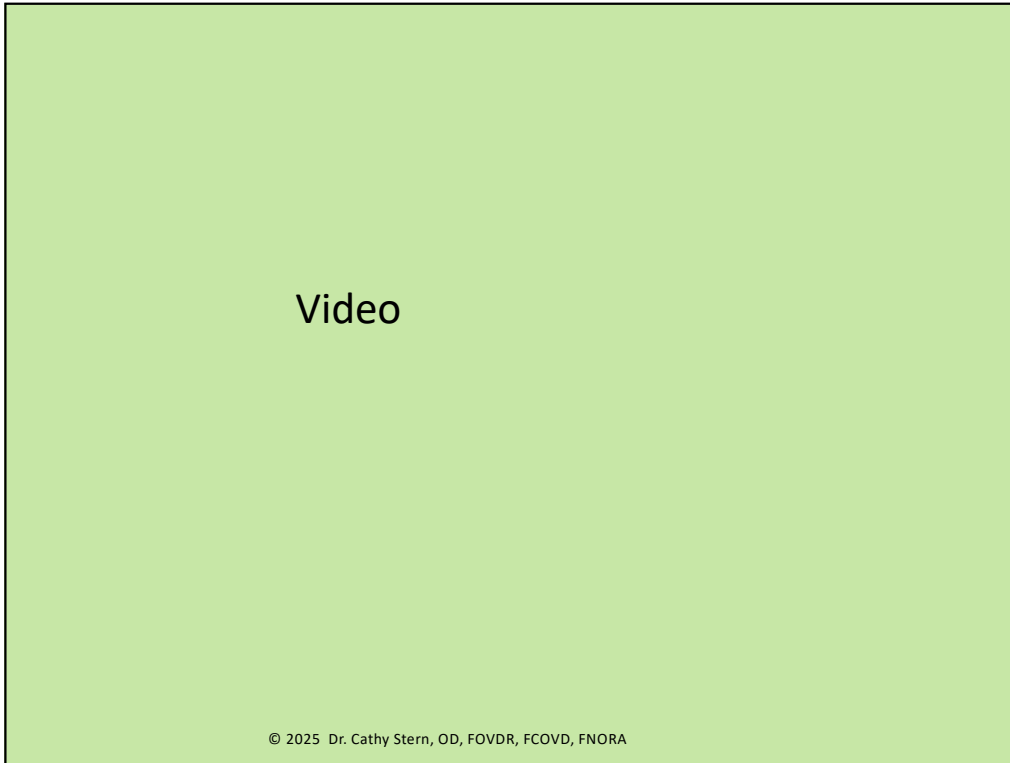
Exogenous: involuntary, often by a flash, sound or any sudden change.

Feature-based attention:
Direction of attention to a particular feature, anywhere in space

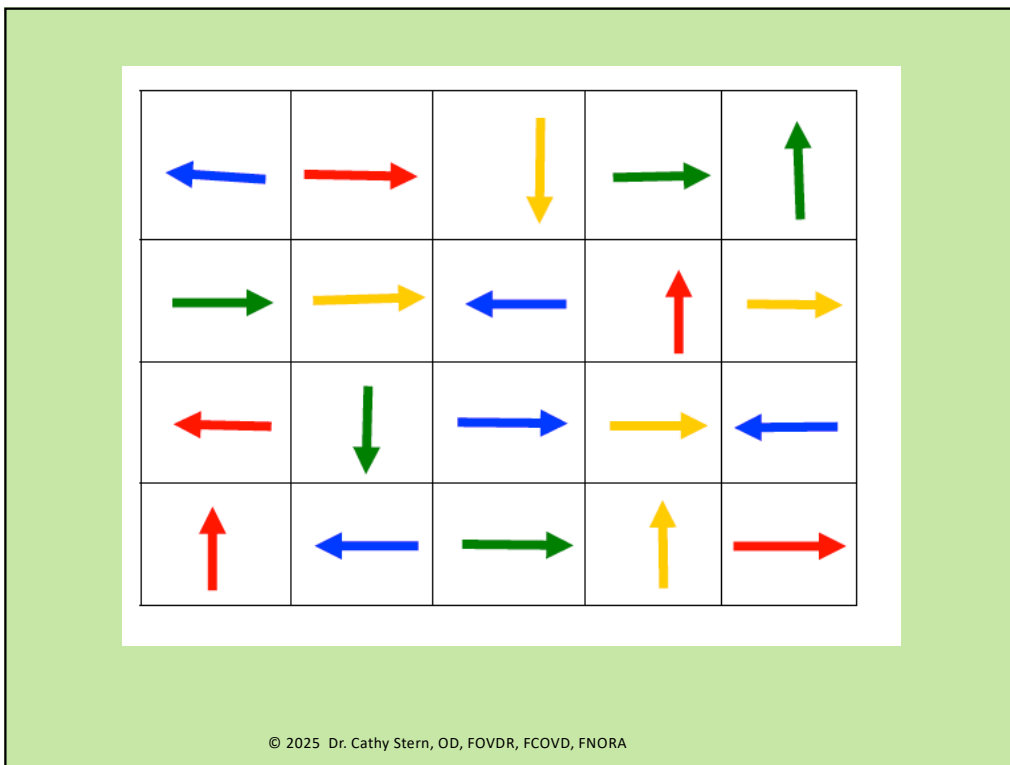
Features include:

- Direction of motion
- Color
- Orientation

14



15



16

O	F	N	P	V	D	T	C	H	E
Y	B	A	K	O	E	Z	L	R	X
E	T	H	W	F	M	B	K	A	P
B	X	F	R	T	O	S	M	V	C
R	A	D	V	S	X	P	E	T	O
M	P	O	E	A	N	C	B	K	F
C	R	G	D	B	K	E	P	L	A
F	X	P	S	M	A	R	D	M	G
T	M	U	A	X	S	O	G	P	B
H	O	S	N	C	T	K	U	Z	L

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17

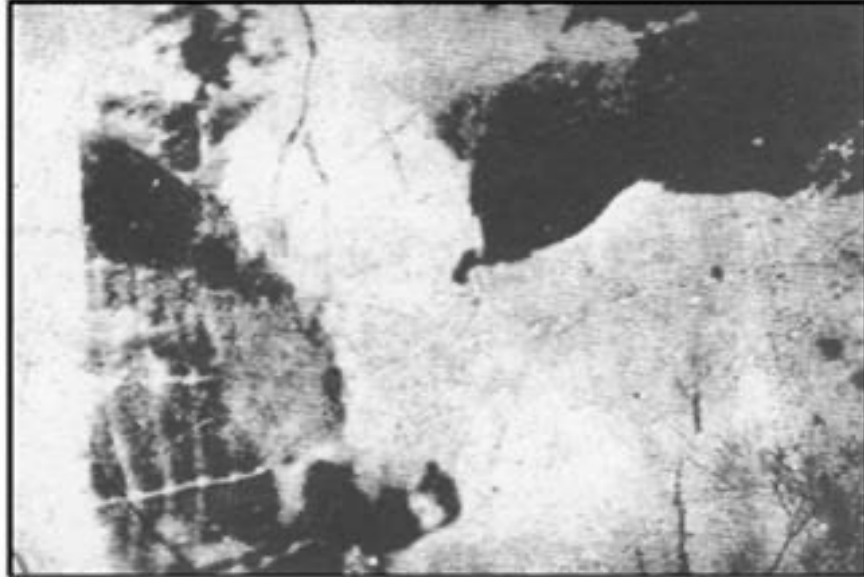
Fukushima Circle

- Start with the number e.g 2.
- Say a word that belongs to the first category in the top left of the circle.
- Move clockwise to the next section of the circle. Add two (+2) to the number you said last (here it's the one you started with) and say the answer: $2 + 2 = 4$.
- Say a word that belongs to the category at the bottom right of the circle.
- Then going clockwise, subtract one (-1) from the last number you said and say the answer: $4 - 1 = 3$.
- Continue moving around the circle clockwise without repeating a word.
- Try to go until you e.g say the number ten or see how long you can go before scoring three outs.

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18

Figure 1: What is this? This picture is not an illusion but a photograph of a familiar subject. Can you see what it is?
Figure 2 overleaf should help you



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19



Figure 2: The same as Figure 1 but with enhancement

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20

Pointer and Straw

Start with one eye patched and the child's dominant hand.

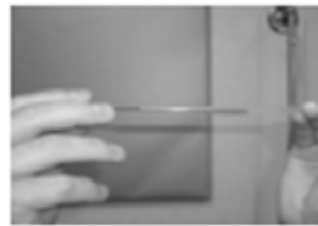
Child holds the pointer behind his ear.

Three positions for the straw:

- a. face on (open end toward the child)
- b. straw held vertical
- c. straw held horizontal

Repeat with the other eye.

Repeat with both eyes together.



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21

Integration of Sensory Movement Action

SLAP TAP - To integrate visual processing with physical action and speech-language.

The shapes and the patterns are read in a left to right, top down sequence with the symbols being converted to both physical actions and verbal labels along with the metronome for processing speed.

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22

Slap Tap A-1

b	b	d	d	P	P	q	q	d	q
b	d	b	b	q	P	b	b	b	d
P	P	d	q	P	q	b	d	b	P
d	P	P	b	P	d	b	d	P	P
q	b	q	d	P	P	P	q	P	b

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23

Slap Tap C-1 (with rests)

b	d	B	g	B	o	g	q	d	q	⊞	d
o	⊞	B	g	d	q	q	B	d	B	o	g
d	q	d	g	⊞	q	o	B	d	o	b	B
g	q	P	d	o	B	o	⊞	b	d	P	B
q	d	o	q	g	q	B	P	q	o	B	b

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24



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25

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26