A Model of Visual Imagery

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A Model of Visual Imagery

• What shape are a German Shepard’s ears?
• Which is bigger – a tennis ball or a pear?
• Which is a darker shade of green – a Christmas tree or a frozen pea?
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Can you think of a penny without all of the attributes of a penny?

- size
- shape
- color
- Lincoln’s head
- inscriptions
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- What did you do to answer the question?
Goals

• To introduce visualization concepts based on current understanding of neuroscientific principles

• To introduce therapeutic techniques that can be used as part of a vision therapy program
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- What are we talking about?
  - Visualization
  - Visual imagery
  - Imagery
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Webster’s Definitions

- **Visualize** “to form a mental image of something not present to the sight, an abstraction”
- **Image** “a mental picture of something, a conception, idea, impression”
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• For the Behavioral Optometrist

Visualization = The ability to create, maintain, manipulate, and recall visual images
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• Damasio
  – Images form the basis of mind
  - Brain creates images in sensory cortex
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- Sensory cortex is active during imagery

Top down processing
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• Images (particularly visual images) provide a rapid entrance into the emotional system

• Can be used for arousal or relaxation
  – horror movies
  – meditation
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- Arnheim – Visual Thinking
- The perception of shape contains the beginnings of concept formation
- Imagery as thought “offers the possibility of reducing a theme visually to a skeleton of essential dynamic features”.
Where am I?

Where is it?

What is it?

What can I tell about it?

VISION
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- Damasio

- Mind requires the ability to display images internally and to order those images in a process called thought
Thought

Where am I?

Where is it?

VISION

What is it?

What can I tell about it?
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- Images are used in reading, spelling, and in recall

- Let’s look at the reading process in more detail
The Reading Process

- Step 1 - Where is the word on page (tracking)
- Step 2 – Both eyes have to point to it (binocularity)
- Step 3 – Focus (accommodation)
- All visual steps – no phonics or reading
The Reading Process

• Step 4 – Interpret what is on the page
  – decoding (what is the word)
  – semantics (what does it mean)

Do good readers typically use much phonics when reading?
The Reading Process

• Phonics is too slow
• What are good readers doing?
  – recognizing the words based on their look
  – that look is the image of the word
  – as if we have an icon in our head
The Reading Process

• Spelling is the flip side of the coin
  – How do you spell …… ?
  – What did you do to answer the question?
The Reading Process

- Reading: visual recognition
  - visual imagery

- Spelling: visual recall
The Reading Process

• So what happens to the child who has difficulty with binocular, accommodative, and oculomotor dysfunction, and has difficulty creating, maintaining, manipulating and recalling visual images?
An Optometric Approach to Reading Problems

- Evaluate oculomotor, accommodative, and binocular skills
- Rx appropriate lens – especially low plus for near, even if VA 20/20
- Vision therapy for oculomotor, accommodative, binocular dysfunction and to develop visual imagery
Visualization in Vision Therapy

• Patients can be taught to create, maintain, manipulate, and recall visual images

• Elliot Forrest – Visual Imagery

• Concrete – less concrete – abstract
Developing Visual Imagery

- two things interfere with imagery
  - verbalization (subvocalization)
  - stress

- Must control verbalization and reduce stress
Visualization Techniques

- Visualize themselves
- Object Visualization
- Pterodactyl Game (Steve Ingersoll)
- Math Facts Visualization
- Spelling visualization
- Reading Visualization
- Writing/study skills
- Resistant imagers
- Relaxation
Visualization for Planning Action

- Colin – impulsive 7 yr old (Dx ADHD)
  - difficulty with memory
  - problems organizing

- What to do?
  - STOP!! - make a picture in your head
  - See yourself doing each component (make a movie in your head)
Relaxation Technique

• Sit in a quiet, comfortable place in low lighting and close your eyes
• Picture a beautiful, quiet, peaceful beach
• Slow, deep breath in through your nose and out slowly through pursed lips
• No one else around you
Relaxation Technique

- Safe and comfortable place
- See the crisp, clean water
- See the sun up in the cloudless sky
- Imagine yourself lying on a beach
- Feel the warmth of the sun on your skin
- Slow, deep breath in and out
A Model of Visual Imagery - Summary

- Visual imagery is a brain process that uses the visual input system to create top down images, which in turn can be manipulated to think, plan, and remember.
- The manipulation of those images is thought
- Imagery can be developed and used as part of a comprehensive vision therapy program
- Important to control stress and verbalization
References

• Webster's New World College Dictionary, Fourth edition - 2001
References


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